

Implementing Interventions in Indigenous Primary Health Care: A Realist Evaluation

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Glossary

Knowledge Translation	<p>Knowledge translation is the synthesis, exchange, and application of knowledge by relevant stakeholders to accelerate the benefits of global and local innovation in strengthening health systems and improving people's health (World Health Organisation 2005)</p> <p>A dynamic and iterative process that includes the synthesis, dissemination, exchange and ethically sound application of knowledge to improve the health of Canadians, provide more effective services and products and strengthen the healthcare system' (Canadian Institute of Health Research (CIHR).</p>
Implementation research	<p>Implementation research is the scientific inquiry into questions concerning implementation—the act of carrying an intention into effect, which in health research can be the process of policies, programmes, or individual practices (collectively called interventions) (Peters et al. 2013, p. 1).</p>
Implementation	<p>The process of putting to use or integrating evidence-based interventions within a setting' (Tabak 2012:339).</p>
Implementation strategy	<p>Methods or techniques used to enhance the adoption, implementation, and sustainability of an intervention</p>
Implementation program theory	<p>The theory of how implementation process work for the research program</p>
Implementation outcome	<p>Process or quality measure to assess the impact of the implementation strategy</p>
Successful implementation	<p>A planned facilitated process, involving the interplay between individuals, interventions or new ways of working, and context to make evidence-based changes by organisations, teams and individuals that result in improved practice (Rycroft-Malone et al. 2013).</p>
Indigenous primary health care	<p>Collective term for Aboriginal Community Controlled Health Services (ACCHS), State and Territory Government funded and managed health services, and services that are a partnership between ACCHSs and Government Services</p>

Abstract

Implementation of evidence-based health interventions in Indigenous primary health care is a significant strategy to improve health equity for Aboriginal and Torres Strait Islander people. However, the outcomes achieved when implementing interventions in Indigenous primary health care services are variable. Improving implementation depends on understanding the complexities involved in implementing research evidence within this context. Against this background, a realist evaluation, framed by the Promoting Action on Research Implementation in Health Services (PARiHS) conceptual framework, was designed to explore how, for whom, and under what circumstances does new knowledge get implemented in Indigenous primary health care.

This realist evaluation found that implementation success in Indigenous primary health care is likely to be mediated by three types of mechanisms: Firstly, mechanisms that related to the nature of the interventions. Secondly, mechanisms that relate to motivational theories. And thirdly, mechanisms that relate to facilitation processes. Health professionals' narratives supported the proposed mechanisms of '*trusting to follow*', '*sense of direction*' and '*seeing a use for it*', and for managers and Continuous Quality Improvement facilitators, '*believing they are making a difference*'. Activation of these mechanisms within the local and organisational context is likely to be contingent upon the main contextual influences of: the level of organisational support for change; leadership of cross-cultural teams; workforce stability and synergies with rival programs. The study found no evidence of congruence between the proposed facilitation-related mechanisms of '*feeling valued*', and '*connecting and relating*' and the experiences of health professionals. Despite this lack of congruence, facilitation-related mechanisms are considered fundamental for the effective engagement needed with and between Indigenous health professionals, non-Indigenous health professionals and Aboriginal communities for the successful implementation of interventions.

Applying these findings to knowledge translation in Indigenous primary health care requires a shift of focus toward implementation strategies that trigger mechanisms 'in tune' with the context of implementation. A path for improving implementation success is presented that integrates collaboration, engagement, facilitation, and capacity building.

The strength of this study is threefold: firstly, the use of a realist evaluation design that made explicit the Context-Mechanism-Outcome (CMO) configurations that resonate for both researchers and health professionals; secondly, the presentation of an integrated approach to improve implementation success that is responsive to context; and thirdly to contribute to the PARIHS mid-range theory of implementation, and more generally the field of Implementation science.

Declaration

I Louise Ann Clark, certify that this work contains no material which has been accepted for the award of any other degree or diploma in my name, in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

In addition, I certify that no part of this work will, in the future, be used in a submission in my name, for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

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Louise Ann Clark

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Chapter 1: Introduction

Improving the health outcomes of Aboriginal and Torres Strait Islander people¹ and closing the life expectancy gap between Indigenous² and non-Indigenous people are a priority on the Australian health policy agenda. Indigenous primary health care has long been acknowledged as a focal point for addressing the health equity gap between Indigenous and non-Indigenous Australians (Griew et al. 2008). Over the last decade, there has been a substantial push for investment and reform in Indigenous primary health care to adapt and respond to the rising prevalence of chronic diseases and the public outrage over the poor health experienced by Aboriginal and Torres Strait Islander people (Wakerman 2009). Research efforts to improve health equity have focused on intervention research to provide the evidence base for clinical care and health service systems within Indigenous primary health care. However, the implementation of interventions in health services has met with varied success. To date, little guidance, either theoretical or pragmatic, has been published on how to successfully implement interventions in this context, and thereby accelerate change (McCalman et al. 2012). Moreover, the organisational capacity of Indigenous primary health care services to support implementation differs; with those with the greatest tension to change, found to have the least capacity to change (Gardner et al. 2010). Amongst health service researchers and research funders, there is a growing recognition of the importance of Knowledge Translation with the promise that it holds for deepening the understanding of the evidence, and the conditions and processes required to successfully implement new knowledge, and hence improve health care and health outcomes for Aboriginal and Torres Strait Islander people.

This thesis describes a theory-driven realist evaluation of the implementation of intervention research in Indigenous primary health care. It explores how researcher-informed implementation program theories work in practice, for whom and under what circumstances.

1 Australian Aboriginal people include people of Aboriginal descent, those who identify as an Aboriginal person and are accepted as an Aboriginal person by the community in which they live; Torres Strait Islanders come from the islands of the Torres Strait, are of Melanesian origin with their own distinct identity, history and cultural traditions (Australian Human Rights Commission 2017).

2 The term 'Indigenous' is a generic term encompassing both Aboriginal and Torres Strait Islander peoples (Australian Human Rights Commission 2017).

As a realist study, it was assumed that health professionals' response to the ideas and opportunities offered by an intervention, the conditions in which change is expected to happen, and the impact or outcome of the intervention, are all interrelated. From the outset, the study outcomes were threefold: to produce evidence-informed program theories that add to the understanding of generative mechanisms and how they influence what happens in the context of Indigenous primary health care, to add to the Promoting Action on Research Implementation in Health Services (PARIHS) conceptual framework; and, to provide guidance for future knowledge translation (KT) in Indigenous primary health care.

The purpose of this introductory chapter is to introduce the research question and research objectives explored in this thesis— namely, how to implement new knowledge in Indigenous primary health care. The chapter begins by introducing KT, and how KT is positioned in the evidence-based paradigm. As KT is a field known for confusing and competing terminology, key KT terms and how they are used in this thesis are clarified. Section 1.2 situates the study by first outlining the political and policy influences that have paralleled the increase in evidence-based practice, including the development of Aboriginal Community Controlled Health services, and the well-recognised need to increase KT in Indigenous health research. This research study is positioned at the nexus of intervention health research and Indigenous primary health care service delivery. Section 1.3 sets out the rationale for selecting the theory-driven research approach of realist evaluation. Section 1.4 presents the core research question and outlines the research objectives that shaped the scope of the study. Section 1.5 acknowledges the personal motivation for this study arose from recognising the impact of sub-optimal implementation across the policy, practice, and research sectors. Section 1.6 outlines the flow of the thesis and summarises chapters that follow.

1.1 Positioning KT in the Evidence-Based Agenda

From the emergence of evidence-based medicine in the 1980s, the rise of the evidence-based agenda rapidly diversified into other areas, most prominently into evidence-based practice and evidence-based policy. According to Nutley, Walter and Davies (2003) the challenge of research uptake, or finding effective implementation strategies for the evidence-based agenda soon became apparent. They recommended finding the commonalities about what counts as evidence in what circumstances, creating and disseminating evidence to priority areas, to

recognise that simple models (linear, rational) were insufficient, and, to be more explicit about the underlying theoretical or conceptual frameworks. Creating an appropriate evidence-base through intervention research also required a greater understanding of KT.

The next section attempts to show how this study is positioned within the field of KT research by making explicit the definitions and terminology that is central to this thesis -definitions of KT, intervention research and implementation research.

1.1.1 What is KT?

KT is a relatively new term used to describe the link between knowledge and practice. KT is renowned for an abundance of terminology, some of which are used interchangeably. Graham et al. (2006) identified 29 different terms used to describe all, or components of, the knowledge-to-action cycle. Commonly used terms include knowledge transfer, knowledge exchange, research utilisation, implementation, diffusion, and dissemination. However, the tension inherent in 'KT' goes well beyond inconsistent nomenclature, to the contested assumptions that knowledge equates to objective research findings, that knowing and doing are distinct, and that practice necessarily involves a sequence of rational decisions (Greenhalgh & Weiringa 2011).

KT has been defined as:

the synthesis, exchange, and application of knowledge by relevant stakeholders to accelerate the benefits of global and local innovation in strengthening health systems and improving people's health (World Health Organisation 2005).

a dynamic and iterative process that includes the synthesis, dissemination, exchange and ethically sound application of knowledge to improve the health of Canadians, provide more effective services and products and strengthen the healthcare system (Canadian Institute of Health Research 2008).

Key elements of these definitions are the reference to KT as a process and the application of knowledge for strengthening health services and improving health outcomes. KT as a process should not be confused with 'bench to bedside', translational research. A further concept is that of a knowledge-user, also referred to as a stakeholder or end-user. A knowledge-user can be individual health professionals, policy makers, clients or organisations such as health service, a community, media provider or research funder.

KT in this thesis is thought of as an integrated process. It is inclusive of the many ways of knowing, including recognising distinct Indigenous ways of knowing. It rejects the assumption that translation is a bidirectional linear process between researcher and knowledge-user. Instead it conceptualises the KT processes of synthesis, transmission and application of knowledge as dynamic and purposeful. The assumption is that KT is an iterative process that occurs between researchers and knowledge-users in the Indigenous primary health care setting, whether they are individual health professionals or organisational managers, facilitators or policy makers. This is distinct from KT that describes knowledge transfer or dissemination activities that happen at the end of a research project.

1.1.2 Intervention Research vis a vis Implementation Research

Intervention research can be distinguished from implementation research in a number of ways. Intervention research, is research focused on the systematic investigation of the causal relationships between interventions and anticipated outcomes. The premise for intervention research is that the outcome effect is attributable to the intervention, not contextual factors. Intervention protocols guide implementation with fidelity of the intervention measured by deviation from these protocols. Intervention research designs attempt to control for bias or confounders that may impact on attributable causality, or threaten validity in the context of implementation or statistically (Sidani 2014). Intervention research focuses on effectiveness of evidence-based solutions, such as clinical care, for beneficial health outcomes, with strategies such as electronic clinical reminders to implement the interventions. Significantly, intervention research relies on establishing effective implementation, but rarely identifies the conditions under which outcomes are achieved, thereby limiting what can be learned about the nuances within the context of implementation (Marchal et al. 2012).

Implementation is the process of applying evidence-based interventions, such as putting in place evidence-based interventions within a practice environment. Implementation research is defined as the:

scientific study of the processes used in the implementation of initiatives as well as the contextual factors that affect these processes. It can address or explore any aspect of implementation, including the factors affecting implementation,...the processes of implementation themselves,...and the outcomes, or end-products of the implementation under study (Peters et al. 2013, p. 9).

Thus, the defining feature of Implementation research is the attention paid to processes, context, the end-users of the intervention, and the improvements achieved in quality and effectiveness of health service care, when interventions are implemented (Sobo, Bowman & Gifford 2008). In contrast with intervention research, implementation research focuses on uptake of the interventions in the real-world and the 'doing' of KT, whether it be passive, active, or collaborative. Despite intervention effectiveness research and implementation research arising from different research traditions, there are hybrid research designs that combine both (Curran et al. 2012).

Implementing evidence-based practices is challenging in all health systems, but is particularly important for populations who have much to gain from access to more effective health interventions (Peters et al. 2013). In Australia, Indigenous primary health care services are targeted for intervention research that relies on the implementation of complex interventions (Gardner et al. 2010). Therefore, implementation research has much to offer in helping understand implementation in Indigenous primary health care services, particularly with the increasing focus on the importance of contextual factors as important influences on outcomes (Greenhalgh et al. 2004).

1.2 Situating the Study

Australian Aboriginal and Torres Strait Islanders like other Indigenous peoples globally, have significant disparities for health outcomes relative to non-Indigenous people. However, the pattern of health outcome disparity varies between different Indigenous populations within the same country and between countries (Anderson et al. 2016). In Australia, the political recognition of the unacceptable gap in life expectancy between Indigenous and non-Indigenous people led to renewed effort to tackle the lag of evidence-based care and perceived inertia within the primary health care services (Griew et al. 2008).

Indigenous primary health care services in Australia provide care for Aboriginal and Torres Strait Islander people in urban, regional and remote areas and have a distinct political, structural and cultural context. Unsurprisingly, given the strong public policy focus on improving the health of Aboriginal and Torres Strait Islander people, Indigenous primary health care services are the setting for most of the intervention research in Indigenous health

(Anderson et al. 2006). At the national level, the policies and strategies of the National Health and Medical Research Council (NHMRC) aim to encourage both KT and intervention research. Against this background, this implementation research study focuses at the level of the local Indigenous primary health care centre in a multi-site health service in the Northern Territory of Australia. Menzies School of Health Research (Menzies) is a research organisation at the nexus of Indigenous primary health care services and national research policy. Over the last decade Menzies has successfully bid for NHMRC competitive grant funding for intervention research. The case studies of implementing intervention research in this study were identified from Indigenous health research programs undertaken by Menzies School of Health Research.

1.2.1 Indigenous Primary Health Care

Primary health care is most commonly recognised as the first level of health care in the health system. In 2005, a definition of primary health care was developed by the Australian National University Australian Primary Health Care Research Institute which was endorsed by the Aboriginal Medical Services Alliance of the Northern Territory (AMSANT). This defines it as:

Primary health care is socially appropriate, universally accessible, scientifically sound first level care provided by health services and systems with a suitably trained workforce comprised of multi-disciplinary teams supported by integrated referral systems in a way that: gives priority to those most in need and addresses health inequalities; maximises community and individual self-reliance, participation and control; and involves collaboration and partnership with other sectors to promote public health. Comprehensive primary health care includes health promotion, illness prevention, treatment and care of the sick, community development, and advocacy and rehabilitation (Australia 2009).

In Australia, most primary health care services are delivered by Medical Practitioners working in privatised general practices. Funding in this sector is a complex mix of publicly funded state and national programs drawing down on the Medical Benefits Scheme and Pharmaceutical Benefits Scheme and can include schedules of client co-payments. The Australian primary health care system is complicated: professional scopes of practice and funding limit health care provision and the Medicare rebate system fragments care. In 2010, the National Health Reform Agenda restructured the Australian primary health care sector into 'Medicare Locals' and developed the first national primary health care strategy (Australia 2010). In 2013, a changed national political leadership dismantled these initiatives and by 2015 the underlying

program funding was reframed and transitioned into 'Primary Health Care Networks'. However, Indigenous primary health care services operate in parallel or outside of this mainstream approach to primary health care.

Indigenous primary health care is a collective term for Aboriginal Community Controlled Health Services (ACCHSs), State and Territory Government funded and managed remote health services, and, services that are a partnership between ACCHSs and Government services. Indigenous primary health care services are characterised by being in areas with large Indigenous populations, some are in cities, but most are in rural towns, or on remote designated Aboriginal land. They provide health services for Aboriginal and Torres Strait Islander people, and in the case of remote services in towns with a high proportion of Aboriginal and Torres Strait Islander people, all the population.

ACCHSs are a unique sub-set of organisations within the broader Australian health care system. Beginning in the mid-1970s, with a surge during the 1990s, ACCHSs were established in both cities and rural areas, following the availability of Commonwealth funding for improving health services for Aboriginal and Torres Strait Islander people. Across Australia there are some 170 ACCHS of which approximately 40 deliver primary health care (Dwyer, Shannon & Godwin 2007). They have distinct governance structures, ideological foundations and a discourse for primary health and public health care that draws upon community development theories, principles of self-determination and progressive ideologies of participatory development (Lea 2008). The variation in Indigenous primary health care organisational structures and resourcing is thought to be one reason for their vastly differing levels of capacity to mobilise resources (Gardner et al. 2010).

Philosophically, ACCHSs seek to deliver comprehensive primary health care which includes health promotion and preventive services. Implementing comprehensive primary health care in the Australian context is complicated: providers are limited by professional scopes of practice and funding fragmentation (Australia 2010).

Although ACCHSs have a collective voice through jurisdictional and national peak bodies they remain diverse entities, primarily responsive to their own contexts and Aboriginal controlled boards (Wakerman 2009). Under Australian Government funding agreements Indigenous primary health care services are all required to provide aggregated data on clinical service provision to populate a national set of key performance indicators (nKPIs) for Aboriginal and

Torres Strait Islander primary health care. These nKPIs monitor major health issues relating to maternal and child health, chronic disease prevention and health risks such as smoking status and proportion of the population categorised as overweight and obese (AIHW 2014).

Noteworthy, are the distinct characteristics of the Indigenous primary health care workforce. The largest professional group is the Remote Area Nurses (RANs), followed by Aboriginal and Torres Strait Islander Health Practitioners(ATSIHPs), and Medical Practitioners (MPs). Their scope of practice, legislation for pharmaceuticals and workforce patterns differ from health professionals working in other settings. Many work in professional isolation in remote areas that are emotionally, socially, and geographically harsh environments. This is a context characterised by a high workforce turnover, a lack of clinical capabilities to manage clients with complex disease and high health needs. There is typically a lack of leadership commitment and resourcing, distrust or resistance to change by health professionals, and reports of client resistance to connect with health professionals because of negative past experiences (Baillie et al. 2014; Wakerman et al. 2016).

High staff turnover has been an enduring and increasingly prominent feature of the remote health workforce (Wakerman et al. 2016). Staff turnover weakens relationships with Indigenous families and contributes to the constant shortage of skilled staff (Lenthall et al. 2009). Violence against staff, the demands of working on-call in addition to normal hours, and managing health issues beyond scope of practice and expertise contribute to high levels of occupational stress (Lenthall et al. 2009). A sense of burden and hopelessness about the possibility of change in a community with high levels of social disadvantage has also been found in this workforce (Lea 2008). At an organisational level, this sense of burden is thought to be a source of inertia (Gardner et al. 2010).

National and local agendas influence evidence-based practice and policy agenda in the NT. The first policy framework to drive the development of Indigenous primary health care services was the 1989 *National Aboriginal Health Strategy* developed through extensive consultation with Aboriginal people and health experts. It followed the international principles of primary health care as set out in the 1978 Declaration of Alma-Ata, emphasising comprehensive primary health care that addresses the social determinants of health, including housing. The *1989 National Aboriginal Health Strategy* was never fully implemented and evaluation

concluded that it had been a significant policy failure (National Aboriginal Health Strategy Evaluation Committee 1994).

Table 1.1 Timeline of Australian and Northern Territory Government Policy Initiatives

Australia Wide	Date	Northern Territory
National Aboriginal Health Strategy	1989	
	1996	NT Aboriginal Health Policy
	1997	NT Aboriginal Coordinated Care Trials (-1999)
	1998	CARPA clinical guidelines widely adopted
NHMRC Road Map 1 NHMRC Target of 5% Funding	2002	4 th Edition of CARPA
National Strategic Framework for Aboriginal and Torres Strait Islander Health (-2013)	2003	Cooperative Research Centre for Aboriginal Health (co-located with Menzies)
NHMRC Keeping Research on Track	2005	
Aboriginal and Torres Strait Islander Health Performance Framework	2006	
	2007	Little Children are Sacred report presented to NT Parliament Northern Territory Emergency Response (NTER) the intervention
National Apology Council of Australian Governments Closing the Gap Strategy	2008	
	2009	NT Aboriginal Health Forum Pathways to Community Control (-2014)
NHMRC Road Map 11 Medicare Locals	2010	
National Key Performance Indicator Framework	2012	Stronger Futures in the NT Act Menzies Knowledge Translation Symposium
National Aboriginal and Torres Strait Islander Health Plan (2012-2023)	2013	
National Aboriginal and Torres Strait Islander Health Plan- Implementation Plan (2013-2023) Primary Health Networks	2015	
NHMRC-Lowitja Institute Symposium on Research Translation	2017	

As a major jurisdictional contributor to the Australian Aboriginal health policy environment, the Northern Territory (NT) reflects the waves of policy change affecting the Indigenous primary health care sector. The 1996 NT Aboriginal Health Policy identified an epidemiological transition for the Aboriginal population related to the increasing incidence rates of chronic

diseases. Health bureaucrats framed the underlying problem as a systematic underfunding of primary health care.

In 1997, the Australian Government attempted to address the underfunding of Indigenous primary health care by supporting Aboriginal Coordinated Care Trials designed to improve care coordination for those with complex conditions at the primary health care level. These trials ran in two health zones of the NT between 1997 and 1999 and required health system changes including establishing Aboriginal community-controlled health boards, developing of screening and best practice guidelines, development of standardised care plans, shifting to a computerised information system, an expanding the clinical workforce and implementing evaluation through clinical audits. These changes aimed to introduce evidence-based care and uniformity across the government and non-government sector. The screening and best practice guidelines were incorporated into the 4th Edition of the Central Australian Rural Practitioners Association (CARPA) standard treatment manual in 2002. Since 1998, CARPA was endorsed as the clinical guidelines for primary health care in the NT by the NT Department of Health, the largest provider of primary health care services both currently and at the time. CARPA has been embedded into NT Department of Health clinical policies since 2001(Weeramanthri et al. 2002). These changes aimed to introduce evidence-based care and uniformity across the government and non-government sector.

From the mid-1990s, NT Government policy shifted to advocating for the development of evidence-based strategies and a health economic perspective of implementing 'best buys' for chronic disease management. In 2004, for the first-time, the NT Government Health Plan mentioned evidence-based policy and practice designed to:

increase the use of evidence and research to inform our policy and practice...train policy personnel on the relevance and use of research in policy development...support the transfer of knowledge into practice by encouraging the use of best-practice guidelines and auditing their uptake. (Northern Territory 2004, p. 35)

Today intervention research in Indigenous primary health care is an undisputed area for focused NT Government and ACCHOs' attention, evidenced by strategic objectives and regular partnering on research grants. However, historically the relationship between the research process and Indigenous people has been a difficult one. Tensions arise over lack of power for

Indigenous people in the control of research stemming from research ideologies of a colonialist past (Smith 1999). These tensions and distrust between research, dominant culture researchers and Indigenous people can extend into Indigenous health organisations.

1.2.2 Indigenous Health Research and KT

Internationally, there has been an inclusion of KT as a specified component of research policy, with funding bodies expecting that KT criteria will be addressed in grant applications (Cordero et al. 2008; Tetroe et al. 2008). For example, in the United Kingdom, KT is considered a 'basic responsibility' of researchers and evidence of research translation and impact is now included in the framework for assessing research quality (Ward et al. 2010). Likewise, the Canadian Institute of Health Research (CIHR) expects a researcher to focus on solutions and uptake of research findings (CIHR 2009).

The Australian Government has been driving an agenda for increasing Indigenous health research through the Australian National Health and Medical Research Council (NHMRC). The NHMRC Strategic Plan 2010-2012 positioned KT as the tool for improving health care and reducing health inequalities for Indigenous Australians. NHMRC research grant proposals for Aboriginal and Torres Strait Islander health research are required to include research translation activities, research transfer processes and involve community and health services representatives (NHMRC 2010).

Since 2002, NHMRC policy has required that 5% of available research funding be targeted to Indigenous health research (Stewart et al. 2010). In 2010, an NHMRC research policy specific to Aboriginal and Torres Strait Islanders - *Road Map 11* – was developed. *Road Map 11* gave strong support for KT strategies and promoted intervention research, undertaken in partnership with ACCHSs, as underpinning the closing of the health inequity gap (NHMRC 2010). In 2003, the Australian Government funded the Cooperative Research Centre for Aboriginal Health, which was incorporated into the Lowitja Institute in 2010. A key strategy of the Lowitja Institute is the facilitation of knowledge transfer and translate research into policies and programs (Lowitja Institute 2015).

This PhD study drew upon Menzies School of Health Research (Menzies) research programs to explore KT in intervention research case studies. Menzies was established by the NT

Government (NTG), under the *Menzies School of Health Research Act 1985*, with a principal mandate to:

promote improvement in the health of all people in tropical and central Australia by establishing and developing a centre of scientific excellence in health research and health education...(Northern Territory of Australia 1985).

Menzies is the only health research entity with a central office based in the NT and one of the few in Australia to have Indigenous health as a major research focus. It has a track record in competitive research grants that have laboratory, population based and clinical components, in particular, testing innovative health interventions in both hospitals and remote Aboriginal communities. As a research organisation, Menzies has been highly successful. A 2015, Deloitte Access Economics report concluded that investment in Menzies activities generated exceptional returns. This report gave an economic and social assessment of the quantifiable economic impacts, growth of knowledge and skills, health benefits and policy and program improvements. It concluded that Menzies makes a core contribution to the development of Northern Australia with a benefit cost ratio of 2.17 (Deloitte Access Economics 2015).

Menzies organisational commitment to Indigenous involvement includes Indigenous leadership, Indigenous researchers, an Indigenous employment strategy, a reconciliation action plan, Indigenous research advisory and reference groups specific to research programs, a nationally accredited research training program for Aboriginal research assistants and an Indigenous ethics committee hosted by the organisation. Menzies partners with health services and ACCHs, including the national Indigenous research organisation, Lowitja Institute. In the early phases of this study the Menzies 2012-2016 Strategic Plan introduced 'translating research into action' as a strategic goal, and set out what KT meant for the organisation:

Knowledge Translation ensures that research is relevant, useful, and will be taken up by end users. Successful knowledge translation requires a constant dialogue between research producers and a range of research users, from agenda-setting to implementation into policy and practice. This ensures that the right research questions are being asked, and that research results are communicated in a way that is meaningful and accessible to decision makers, practitioners and consumers (Menzies 2012, p. 8).

The Menzies 2012-2016 Strategic plan included KT strategies underpinning a dialogue with policy makers, included actively seeking ways to influence policy and to adopt integrated

research translation designs. Menzies hosted a Knowledge Translation Symposium in 2012 and by 2013 had created new implementation officer roles in two major projects. It has an expressed commitment to shift from 'ad hoc' to evidence based KT, drawing upon the knowledge of experienced researchers and long-standing partnerships with health services leaders.

1.3 Selecting an Appropriate Methodological Approach

Health services research is conducted using a range of research methodologies. Frequently, researchers choose an outcomes-focused research design, such as the randomised control trial (RCT). The focus of a randomised control trial is on determining if an intervention works and building evidence of associations between outcomes and intervention(s). RCTs seek to neutralise other variables to control for bias and maximise validity (Marchal et al. 2012). However, variables are isolated from each other and from the real world. By, excluding context, limits the use of evidence in improving implementation effectiveness or in understanding how and why an intervention worked in the real world, or how to scale up that evidence into practice contexts (Bhattacharyya, Estey & Zwarenstein 2011).

The research practice of using theory-driven approaches for implementation and evaluation has gained momentum over the last two decades. Arguments for an explicit use of theory to inform implementation have been driven by the need to improve generalisability across contexts to assist with the spread of interventions and improved reliability across locations (ICEBeRG 2006). The higher level of abstraction offered by a theory-driven approach has the potential to increase the transferability of interventions by providing theoretical guidance for adapting in new locations, thus overcoming the problem of the same intervention having variable implementation success in different places (ICEBeRG 2006). The increase of generalisability and transferability offered by a theory-driven approach has the overall benefit of increasing the methodological strength of a study, particularly for qualitative research designs. Using a theory driven approach to evaluate intervention research provides a level of analysis beyond issues of implementation fidelity and effectiveness that 'it works' or not, to abstract how it worked and for whom (Funnell & Rogers 2011).

Theory-driven evaluation approaches are operationalised by first identifying the program or intervention theory. The program theory describes an explicit theory or model of how a

program is expected to work. When investigating a 'real world' program implementation a theory driven approach can help identify the underlying causal mechanisms, the contextual factors that influence how something works, and provide an generalisable explanation of the outcomes. These are two common theory-driven evaluation approaches, realist evaluation and theory of change. Of the two, realist evaluation is seen to offer the 'best fit' for building explanatory understanding with a focus on the context of implementation, rather than a focus on the characteristics of the intervention, as is the tendency of a theory of change approach (Rogers 2014).

A basic premise of the realist perspective is that change processes and contexts are complex (Pawson 2013, p. 33). This acceptance of complexity has made it an attractive research design for exploring health systems or health care organisations. A number of realist evaluations have been conducted of health service interventions, notably Byng, Norman and Redfern (2005), Greenhalgh et al. (2009), (Marchal, Dedzo & Kegels 2010a), Rycroft-Malone et al. (2010), (Rycroft-Malone et al. 2011) and Schierhout et al. (2013). Many of these realist evaluations focus on KT processes for health interventions (Salter & Kothari 2014).

The lessons learnt from a realist evaluation of the Katherine West Health Board Indigenous Coordinated Care Trials was that the methodology was suitable to generate valuable new knowledge for Indigenous primary health care stakeholders. It was also able to respond to the context issues that were too important to be relegated to the background, and was relevant to the processes of implementation that happen in Indigenous primary health care settings (d'Abbs, Togni & Bailie 2004). Recognition of realist evaluation for its explanatory focus on context and processes, including use within the Indigenous primary health care setting, add to the justification for choosing this methodology in this study.

In their 1997 book '*Realistic Evaluation*', Pawson and Tilley set out the two primary assumptions of realist evaluation: 1) that interventions are an attempt to create change; and 2) that a successful change (outcome) will happen if the ideas and opportunities (or reasoning and resources -collectively known as mechanisms), are introduced into the appropriate social and cultural conditions (context). When realist assumptions are put into the context of this thesis the logic follows that an intervention research program is an attempt to create change, that change will only occur with appropriate reasoning (choice making) and availability of resources (capacity), and that the reasoning and resources might be generated at all or one of the

individual, organisational or political levels. The theory building process of taking the findings to a higher level of abstraction can lead to a better understanding of what influences intervention success in certain contexts -knowledge that is useful for scaling up interventions.

This section has argued that a theory-driven realist evaluation approach offers deep explanatory power as it focuses on causal explanations in comparison to other types of research approaches, that focus solely on outcomes or processes. Realists are concerned with understanding change – they are concerned with what it is about a program that generates change, and in which circumstances. This PhD study was shaped by the goal of understanding how to maximise the contribution of intervention research in the Indigenous primary health care context, what are the challenges and opportunities, how do different contexts impact upon outcomes, and how can a better understanding of KT improve the future implementation of interventions.

1.4 Research Question

The research policy agenda advocating for effective KT, and the challenges faced by research organisation to successfully implement interventions in Indigenous primary health care, were influential in the development of the research question for this thesis. The literature indicates that Indigenous primary health care is a challenging context, yet there is insufficient knowledge of how contextual factors influence implementation outcomes and which generative mechanisms are likely to be important. The purpose of this evaluation is primarily explanatory – understanding how interventions introduce new resources and ideas that generate change for some people in some Indigenous primary health care locations.

Realist evaluation is a methodology that promises to enhance the understanding of how successful implementation occurs, utilising a process known as the 'unpacking of the black box'. A fundamental realist proposition is that successful implementation of interventions requires an understanding of the generative mechanisms through which the interventions work, for whom, and in what circumstances.

The core research question was framed as a realist evaluation enquiry:

'How, for whom, and under what circumstances does new knowledge get implemented in Indigenous primary health care?'

1.4.1 Research Objectives

The research aims to build upon what is known and provide a realist perspective on the following questions:

1. Which implementation program theories inform KT approaches to intervention research in Indigenous primary health care? (Chapter 2 & 4)
2. What mechanisms are likely to influence implementation success (or not) in Indigenous primary health care? (Chapter 5)
3. What are the important contextual factors to implementation success? (Chapter 4, 5 and 6)
4. What theoretical understanding of successful implementation can be learnt from this realist evaluation? (Chapter 6)
5. How can this study inform KT strategies of future intervention research in Indigenous primary health care? (Chapter 6)

The research question and research objectives underpin the research design (Chapter 3) with the sequencing of steps in the research cycle informed by the work of (Van Belle et al. 2010) and (Salter & Kothari 2014). Key to the research design are the two phases of data collection: Phase One data collection relates to objective 1, to make explicit the researchers' theory for implementation processes; Phase Two data collection, relates to objectives 2 and 3, to seek the experiences of the health professionals working in Indigenous primary health care. Overall, this approach to realist evaluation is consistent with that set out by Pawson and Tilley (1997).

1.4.2 Ethics Approval

Ethics approval for this PhD study was obtained from the Human Research Ethics Committees of the Northern Territory Department of Health and Menzies School of Health Research (HREC-2011-1607) and the Human Research Ethics Committee of the University of Adelaide (H-150-2011).

1.5 A Sense of Purpose

Despite high-level strategic drivers within policy and health services organisations to 'scale up' health interventions, the inherent tension remains unresolved between researchers who design

health interventions and health professionals who implement them. Both researchers and health professionals grapple with the challenges and complexities of implementing health interventions in the Indigenous primary health care setting.

My own response to the emerging field of KT was one of relief. It validated my experiences as a senior policy officer. In this role, I was advocating for and constructing evidence-informed health policies and strategies to 'tackle the wicked problem' and developing policies focused on improving Indigenous health outcomes. However, the objectives of this work were only partially realised, and then, only in particular locations. Typically, these policies and strategies emerged from a policy cycle that mixed (in no predictable amounts or with any prescribed degree of consensus) political directives from afar, the opinions of clinical experts and program managers, with the financial restraints imposed by health services budgets and health system structures. Subsequent progress and evaluation reports routinely revealed a degree of success in some places, while in other places what appeared to be incomplete implementation, partial implementation, implementation failure and at times the use of the resources for alternative objectives.

Later experiences working in an academic role were consistent with the earlier experiences of intervention implementation. Researchers sought assistance with designing KT plans, educational programs or training materials as one of the strategies to introduce an intervention or change to practice. Despite the added consideration given to using cultural and language appropriate educational strategies - such as, plain English language and instructional materials in Aboriginal languages to inform the intervention - researchers reported finding the implementation of research interventions in the Indigenous primary health care setting to be problematic. Challenges were experienced in negotiating access to the primary health care service organisations, in harnessing the interest of health professionals and in producing bespoke materials suitable for use by Remote Area Nurses, Aboriginal and Torres Strait Islander Health Practitioners and Indigenous clients. The roles of researcher and implementer were often blurred. If driven by researchers, implementation tended to occur on a shoestring budget, as traditionally research grants do not fund the extensive consultation or additional strategies required to negotiate or implement respectfully in Indigenous communities. If driven by a collaborating primary health care service organisation, the

intervention could be changed significantly and/ or competing for resources and organisational attention with other programs and change strategies.

To date, experiential knowledge has provided guidance. rather than theoretical understanding. Hence, this PhD study takes a theory-driven approach to better understand how change happens and learn how to replicate change in future interventions. (Cane, O'Connor & Michie 2012).

1.6 Flow of Thesis

This chapter has introduced the argument that if we are to accelerate intervention implementation in Indigenous primary health care settings, understanding how successful implementation happens in this context is paramount. Context is central to the research question and considered to be a key factor in both implementation research and realist evaluation. How these elements come together in a novel research design is set out in the following chapters.

Chapter 2, *KT in Indigenous Primary Health Care*, provides an overview of the knowledge translation and implementation science fields; presents theories that are relevant to understanding KT, and introduces the Promoting Action on Research Implementation in Health Services (PARIHS) conceptual framework as the implementation-focused mid-range theory framing this study. This chapter also presents a literature review of implementation of interventions undertaken in Indigenous primary health care in the period 2000-2014. Three observations are made of this literature: (1) the literature is limited, (2) implementation aspects are inadequately described to guide future implementation strategies (3) there is a paucity of theory-driven evaluations, with only one study using a realist approach identified. This literature review establishes that implementation research is an underdeveloped area in Indigenous health research. It positions this study within that area identifying that it will contribute evidence-informed program theories that describe the main contextual factors and identify mechanisms that are likely to influence the responses of health professionals to the ideas and opportunities introduced by an intervention.

Chapter 3, *Designing a Realist Evaluation*, describes how the philosophical paradigm of realism and the principles of realist evaluation shape the methodological design of this study. The research design follows the realist research cycle, beginning with a series of semi-structured

interviews to build a description of the research programs' implementation strategies and elicit the underlying implementation program theories. Analysis using the realist evaluation concepts of 'context', 'mechanism', 'outcome' led to building the propositions in the realist format of context-mechanism-outcome (CMO) configurations (Chapter 4). Semi-structured interviews and observation of health professionals in three comparative locations provide a further step in the realist research cycle (Chapter 5). The final steps in the realist cycle were the refinement of the CMO configurations to generate evidence-informed program theories. How these evidence-informed program theories add to the PARIHS mid-range theory and can be applied in future research are discussed in Chapter 6.

Chapter 4 *Reasoning of Researchers*, introduces three research program case studies. Researchers who design and implement health interventions in Indigenous primary health care were interviewed about their intervention research programs. From the semi-structured interview narratives and published papers, a rich description was built of the interventions, the KT strategies, the researchers expectations of how change would happen, the implementation outcomes sought, how the implementation process proceeded, and the adaptations made to the intervention to better fit the Indigenous primary health care context. Following realist methodology, the researchers' narratives are synthesised to make the implementation program theories explicit. These then are used to generate realist propositions, presented as a proposed (candidate) Context-Mechanism-Outcome (CMO) configurations for each program theory. All six proposed CMO configurations are assumed to be interconnected.

Chapter 5 *Experiences of Implementing Change*, presents the experience of health professionals in implementing change in three Indigenous primary health care centres in Aboriginal communities. The health professionals represent the workforce categories of Remote Area Nurses, Remote Area Midwives, and Aboriginal and Torres Strait Islander Health Practitioners, some of whom were in management and facilitation roles. The health professionals provided 'real world' reflections on how they saw change happen, or not, what was important for change, and what outcomes they attributed to interventions at the primary health care level. Exploring these narratives, through looking for congruence (or not) with the researcher program theories, refine the proposed CMO configurations.

Chapter 6, *Mechanisms as Agents of Change*, responds to each of the five research objectives set out in this chapter. It discusses the refined CMO configurations and how the emergent

mechanisms types relate to implementation in Indigenous primary health care. This chapter strengthens the thesis in two ways. Firstly, to highlight the contribution this new knowledge makes to the mid-range theory, the PARIHS framework through the constructs of evidence, context and facilitation. Secondly, to argue that this new knowledge can inform an integrated approach using collaboration, engagement, and facilitation to guide cultural and context-sensitive implementation strategies in Indigenous primary health care.

Chapter 7, *Reflections on Using a Realist Approach in Indigenous Health Research* concludes the thesis by reflecting on the emergent methodology of realist evaluation and the challenges encountered on the journey. And, as a final reflection, makes recommendations on how researchers and health service organisations can take actions to strengthen the implementation of interventions and contribute to improved Indigenous health outcomes.

1.7 Summary

Evidence-based change relies upon robust evidence, effective interventions and successful implementation. Maximising the beneficial impact of health interventions through successful implementation offers a compelling argument for researchers who are developing effective interventions that embrace KT processes to 'scale up' and thereby make a positive impact on the health of Aboriginal and Torres Strait Islander people. Crucial to achieving this outcome is a better understanding of the unique clinical, cultural, governance, workforce, and geographical contextual issues in Indigenous primary health care. During the timeframe of this study (2011-17), Indigenous primary health care services, particularly during the data collection phase (2011-13), were attempting to cope with the rolling waves of reform in the sector, including the impact of a significant increase in the short-term workforce, reporting on performance indicators and organisational shifts toward community control. The timeline of Indigenous health and research policies and events outlined in this chapter demonstrate that context factors are too important to be background information.

In Chapter 2, the basic KT concepts, theories and frameworks are described along with a review of the literature relevant to implementation in Indigenous primary health care to understand what is known about the processes that fit contextual and cultural circumstances.

Chapter 2: KT in Indigenous Primary Health Care

2.1 Introduction

The aim of this chapter is twofold: firstly, to outline the KT perspective that frames this evaluation, and, secondly, to begin the process of unpacking the 'black box' of implementation in Indigenous primary health care. The chapter begins with a brief outline of the KT processes and the translational gap between research and practice. As KT has become established as an expected activity for health research, there has been a paralleled demand to increase the understanding of how KT happens through researching the activities and processes of KT (known as implementation science). Numerous theories, models and frameworks to assist in the theoretical and conceptual development to enhance the spread of evidence-based interventions have developed across what is described by Tabak et al. (2013) as a dissemination-implementation continuum. An implementation-focused conceptual framework, the Promoting Action on Research Implementation in Health Services (PARIHS) was chosen for this PhD study (Kitson, Harvey & McCormack 1998). PARIHS and the three core constructs of the conceptual framework: evidence, context, and facilitation are described. The last section of this chapter is a pragmatic literature review of studies that report on implementing interventions in Australian Indigenous primary health care settings, published during the period 2000-2014. The PARIHS conceptual framework provides an organising framework for the literature review. The themes that emerge from the literature review provide a preliminary sense of what is working and what are the challenges that are encountered when implementing interventions in the Indigenous primary health care setting.

2.2 An overview of KT

Today KT is an accepted fundamental component of health and health research policy platforms, research funding proposals and ethical requirements. However, KT terminology, concepts and processes are complex and not always well understood by either researchers or health organisations.

The rising interest in KT in health care systems parallels the increasing recognition of the difficulties experienced in uptake of research knowledge in practice. Beginning in the mid-

1980s, evidence-based medicine aimed to make health care safer and more effective by directing the health practitioners to the most recent, effective practices and by providing them with the skills to critically appraise research papers. Three decades on, the evidence-based medicine paradigm remains strongly promoted, including in the Australian, Canadian, United States of America, European, and United Kingdom health systems. However, the promise of uptake of evidence-based practice, following the dissemination of evidence-based information has not always unfold as expected. Instead the pattern that has emerged is of slow, inconsistent, and unpredictable, sporadic spread of evidence into practice. The uptake of evidence is variable. Uptake of evidence into practice is hindered by poor knowledge flow across professional and organisational boundaries, and across different settings, conditions and populations (Glasgow & Emmons 2007). Poor uptake of evidence, also described as 'failure of adoption', 'knowledge or uptake lag' or 'knowledge gaps' and is typically framed as a knowledge transfer problem, thereby spurring studies on how to speed up knowledge transfer, spread of innovation and narrowing of the research-practice gap. Determinants in the translating knowledge-to-action process are multiple and complex. They occur at all levels of the health system, across health organisations, within health care teams and for individual health professionals. They are wide-ranging including contextual issues such as resources and capabilities or the quality and multifaceted nature of the evidence (Straus, Tetroe & Graham 2009). In the sections that follow outline the broad landscape of KT, presenting the alternative perspectives for framing KT, the underlying assumptions, and the common KT processes.

2.2.1 Conceptualising KT

The differing conceptualisations of KT have implications for the processes and the roles that engage with knowledge. One conceptualising of KT is of knowledge moving from one community to another community - those who research and those who practice. From this 'two-world' perspective, the knowledge-practice gap results from the divergent views of knowledge. The underlying epistemology of knowledge of those who produce knowledge, considered largely theoretical knowledge and produced 'context-free' (episteme), is distinct from the view that knowledge that is contextualised, known as knowledge for practice (praxis). Furthermore, it is argued that the different perspectives value knowledge differently, researchers see 'knowledge as possession' which contrasts with the practitioner view of 'knowledge as practice' (Cook & Brown 1999).

In the 'two-world' conceptualisation of KT, the flow of knowledge is understood as unidirectional, from researchers to knowledge-users (in policy or practice) following a linear progression with either a 'pull' momentum from end users, or the 'push' momentum of the knowledge producers, such as researchers or intermediary groups. The 'push-pull' flows of evidence from researcher to practitioner, is also known as a 'pipeline of evidence'. Hence, knowledge transfer processes are designed to move knowledge across segments of a linear continuum from research to practice. Accordingly, transfer strategies call for messages produced in a 'user friendly' format for 'pushing'. One strategy for recommended for transferring research findings is the 1:3:25, 1-page of key messages, a 3-page summary, and a 25-page report (Lavis 2006). The 'push-pull' KT strategies rely on transfer by a) passive diffusion to such as publishing a journal article b) active transfer such as by tailoring the key messages to target an audience and c) active dissemination by systematically identifying and addressing barriers to knowledge use (Lomas 1993). In a 'push-pull' conceptualisation of KT, poor translational outcomes are understood as a transfer issue of 'weak power', either due to a lack of direction or insufficient volume. One response to lessen the risk of an underwhelming 'push out' of singular research findings has been to undertake large-scale synthesis of research evidence, such as systematic reviews, disseminated by clinical guidelines.

When KT is conceptualised as knowledge transfer from research to practice the most common emphasis is on transferring evidence about the effectiveness of an intervention. Effectiveness encompasses acceptability, adoption, appropriateness, feasibility, fidelity, implementation cost, coverage, and sustainability. Effectiveness information is usually incorporated into clinical guidelines and is overwhelmingly derived from clinical trial research designs (Peters, Tran & Adam 2013). The knowledge transferred from clinical trials is mostly 'context-free', as the underlying assumption of the clinical trial methodology is that interventions can be implemented either independent of context, or with an attempt to control for contextual barriers. Framing knowledge translation as a 'push-pull' linear transfer of knowledge is a common approach in Australia, and significantly for this thesis, common in the primary health care sector, where it underpins the Health Services Research Impact Framework (Buykx et al. 2012).

An alternative conceptualisation of KT was put forward by Graham et al. (2006) who described the relationship between knowledge creation and action as an integrated process. This is

known as the knowledge-to-action (KTA) cycle. KTA makes a distinction between the process of knowledge creation and the actioning of knowledge. The KTA cycle is a dynamic model with interdependence between the knowledge creation and knowledge actioning concepts. The knowledge creation component is a process of knowledge inquiry and synthesis. The action cycle describes the process for implementing knowledge. Knowledge in the KTA framework is conceptualised as socially constructed and valued. Context gives different meaning and value to knowledge, whether that be different social contexts, organisational, professional, or functional. KTA is representative of a process model. Each of the steps are set out to guide the dual sequencing of knowledge creation and translating knowledge into practice (Nilsen 2015). Research adaptiveness is intended to be at the local level. The KTA framework has made significant impact on influencing the knowledge translation agenda, particularly in Canada where it has been adopted as a component of the national KT framework.

Van de Ven and Johnson (2006) proposed an alternative strategy for reducing the knowledge-practice gap - deliberate collaborations between academics and practitioners to coproduce knowledge. They put forward the approach called 'engaged scholarship' as a way to overcome the problems that arise from two divergent views of knowledge, arguing that through a process of exploiting the tensions between academics and practitioners it is possible to leverage off the differing perspectives and capabilities to produce knowledge that fills the theory-practice gap. Engaged scholarship shifts away from the fixation of framing the challenge of KT as a challenge of a theory-practice dichotomy (Greenhalgh 2010). The resulting co-produced knowledge is a way to both increase the usefulness and relevance of knowledge to the practice domain, and increase the likelihood of implementation of theoretical knowledge (Van de Ven & Johnson 2006). This integrated approach to co-produced knowledge has been used as a research design principle underpinning nine Collaborations for Leadership in Applied Health Research and Care (CLAHRCs) in the United Kingdom (Harvey et al. 2011; Heaton, Day & Britten 2015).

Regardless of how KT is conceptualised, the knowledge boundaries between research and practice are perceived as problematic. Carlile (2004) categorised knowledge boundaries as syntactic, semantic, and pragmatic, each requiring an increasing level of capacity to enable knowledge to move across organisational boundaries. Syntactic requires shared language, semantic requires shared meaning and pragmatic requires shared interests. The stronger the

boundaries between social and professional groups the more the spread of innovations is inhibited (Ferlie et al. 2005). Strategies employed to overcome the boundary issues include boundary objects and employing people with influence that can communicate effectively across social networks, known as boundary spanners, champions, facilitators, collectively referred to as change agents. For change agents to be successful at facilitating change across boundaries their personal characteristics need to 'fit' the context, and the context requires strong leadership support and a supportive culture (Harvey et al. 2011; McCormack et al. 2013).

Over time the focus of KT has shifted towards recognising that the nature of evidence is complicated, that it cannot be isolated from context, and that the closer knowledge producers can be facilitated to work with end users, the more likely evidence is to be relevant and fit for the context of implementation. As contexts are highly variable, KT processes, that are dynamic, iterative and accepting of complexity will have more adaptive utility. Correspondingly, the descriptors KT have shifted from 'logical' and 'linear' to 'messy' and 'fuzzy', 'nonlinear', 'bidirectional' and disorderly sequences that respond to the context (Ferlie et al. 2005; Greenhalgh et al. 2004; Van de Ven & Johnson 2006).

Like KT, different research traditions also define and conceptualise innovation differently. Evidence-based medicine thinks of innovation as the 'best' research evidence that is spread to fill a knowledge gap. Narrative studies conceptualise innovation as a story of change shared across a community of practice in positive stories (Greenhalgh et al. 2004). However, innovations are mostly simply referred to as 'new ideas'. In the 1960s, Everett Rogers theorising on the diffusion of innovations, identified the characteristics of an innovation (relative advantage, compatibility, complexity, trialability, observability and reinvention) as universally relevant to the adoption of innovations (Rogers 2003). His argument was that the stronger the attribute, the more that it would positively influence the rate of adoption. Innovations in service delivery and organisations are described as:

a novel set of behaviours, routines, and ways of working that are directed at improving health outcomes, administrative efficiency, cost effectiveness, or users' experience, and that are implemented by planned and coordinated actions (Greenhalgh et al. 2004, p. 582).

The Greenhalgh et al. (2004) synthesis of diffusion of innovation in health services found evidence to support the innovation characteristics of Rogers, and built on his work to design

a multi-layered model of uptake and implementation of innovations for health care organisations. A strong evidence base was found to support the importance of the following factors related to the 'hard core' of the innovations within health services: relative advantage, in effectiveness, cost-effectiveness, implementation ease; compatibility with values, norms and perceived need or simplicity; trialability, the ease of adoption; and observability, that the benefits visible to adopters. They also coined the term reinvention to describe the idea that if adopters can adapt and refine an intervention it is more likely to be implemented. The focus for the diffusion of innovation is at the organisational level and the importance of influential actors within the health system. The characteristics of the innovation were described as the 'hard core' of innovations, which contrasted with the 'soft periphery', the organisational structures, context and systems factors that interact with the innovation that effect the 'fit' of the innovation with the context (Greenhalgh et al. 2004). Characteristics of innovation can also include:

flexibility/adaptability, involvement, centrality to daily work routine, pervasiveness, magnitude, duration, form of the innovation, the degree decisions require collective action and how the innovation is presented (Grol et al. 2007, p. 100)

However, not all innovations or interventions are the same, they vary in complexity, and differ in important elements such as the setting, the mode of delivery, the intensity, the duration and level or multiple levels at which the intervention is targeted (Michie et al. 2009). Interventions are either complicated or, alternatively, as having complexity. Applying a 'complicated lens' leads to a focus on layers of components, while a 'complexity lens' recognises that many factors are potentially involved, and that the relationship between interventions and outcomes is not necessarily linear. Understanding complex implementation processes is described as an unpacking of the 'black box'. Notwithstanding, that this phrase is awkward in a thesis about Indigenous people, it is a phrase commonly used to describe unknown space between interventions and outcomes and where ideas are shaped by interactions within a context (Clark 2013).

2.2.2 Indigenous KT

The increasing recognition of KT in dominant system health research, has led to Indigenous researchers exploring and sharing concepts of Indigenous KT. This is against a background of understanding the effects that colonisation, racism, and discrimination has had on the health

of Indigenous people, and the associated history of negative impacts resulting from researchers and research methodologies that exclude Indigenous perspectives.

Indigenous knowledge systems conceptualise health as aligning with a socio-ecological perspective, knowing is intertwined with doing. Cultural and contextual approaches to engagement are valued. Sense-making happens through intuitive logic and analysis of the entire system of relationships related to the idea. Wisdom is gained from life-long analysis of complex ideas, rather than using the linear logic of Western science of reductionism (Wilson 2008).

Understanding the Indigenous processes of knowledge creation, dissemination and utilisation are the essential for doing KT in with Indigenous people. Wilson (2008) uses the metaphor of 'research as ceremony' to describe the Indigenous research process, with the Indigenous researcher as a mediator, or facilitator, in the relationship between the community and the research ideas, with the responsibility of relational accountability, both to the community and to the research ideas. Similarly, Canadian Indigenous researcher, Smylie et al. (2004) outlined the process for the generating and translating Indigenous knowledge as starting with 'stories' as the base units of knowledge; proceeds to 'knowledge' where there is an integration of the values and processes described in the stories; and culminates in 'wisdom,' an experiential distillation of knowledge. This process is cyclical, as 'wisdom keepers' in turn, generate new stories as a way of disseminating what they know. Stories become knowledge vessels, incorporating new knowledge and increasing semantic meaning. Stories as a way of communicating new knowledge to Australian Indigenous people was described by Weeramanthri (1996) as having:

the purpose of providing information at a community level is two-fold: first, to demystify an issue, process, or structure and second, to get people talking. It is useful in communicative practice to view health information as having two equally important components: statistics and stories. All statistics are built up from individual stories, and effective information programs incorporate the story approach (Weeramanthri 1996, p. 3).

Additional Canadian Indigenous KT practices include transfer of meaning through totems, tattoos, and recognition of elders as repositories of wisdom. A review of Canadian Indigenous KT practices reinforced the preference for knowledge that is local and contextualised, valued

and relevant, resulting in research and KT activities that are inseparable (Morton Ninomiya et al. 2017).

Principles for working with Indigenous people on KT include: valuing the experiential knowledge of Indigenous people, respecting the local mechanisms for sharing and disseminating knowledge through the cultural and kin networks, and, use research methodologies that ensure participation and leadership roles for Indigenous people (Smylie, Kaplan-Myrth & McShane 2009). This requires a shift to doing research 'with' communities on issues that are community relevant, and away from doing research 'on' communities (Estey 2008). An example of implementing an intervention 'with' a community, is demonstrated by the four principles of the Kahnawake Schools Diabetes Prevention Project, in Canada:

1. *the integration of community people and researchers as equal partners in every phase of the project;*
2. *the structural and functional integration of the intervention and evaluation research components;*
3. *having a flexible agenda responsive to demands from the broader environment;*
and,
4. *the creation learning opportunities for all those involved*
(Potvin et al. 2003, p. 1295).

The Indigenous KT concepts that inform this study are from the publications and presentations of predominantly Canadian Indigenous researchers. Research focused on Indigenous conceptualising of KT and implementation has yet to be mirrored by Australian Indigenous researchers. However, the work of Wilson (2008) has demonstrated the relevance of the key concepts to both Australian and Canadian Indigenous people. McCalman et al. (2012) concluded that the lack of theoretical conceptualisation of the processes of transfer and implementation in Australia Indigenous contexts resulted from a lack of capacity or authority, and a lack of evidence of effectiveness.

Overall, the recommendations from Indigenous researchers are to engage Indigenous people in knowledge generation rather than seek permission for the research, but then disengage after data collection and exclude Indigenous people from the generation of knowledge. This type of research practice results in a decontextualised knowledge, and ignores the Indigenous relationship between ideas and the context in which the ideas are generated Wilson (2008).

2.2.3 Role of Theories, Models and Frameworks

As interest in KT rises there has been a corresponding surge in implementation science activity resulting in the development of numerous theories, models and frameworks. Theories, models and frameworks aim to operationalise the theoretical domain and explain how to implement change. Grol et al. (2013) make a distinction between the assumptions of how an intervention will facilitate change (impact theories) and how best to implement (process theories). These theories relate to different levels of the health system: individual professionals, the context of care and organisations. Theories on implementation of change explain: which factors and intervention contribute to the implementation of an innovation (Grol et al. 2013, p. 20).

Theories can be differentiated by their scope. A grand theory is used to describe a very broad theory about the nature and goals of a discipline. Grand theories are described as having a high level of abstraction beyond existing knowledge (ICEBeRG 2006). In contrast, a mid-range theory is:

more limited in scope, less abstract, addresses specific phenomena, and reflects practice...mid-range theories are made up of relatively concrete concepts...designed to guide empirical inquiry (ICEBeRG 2006, p. 3).

Program theories describe an explicit theory or model of how a program works and can be based on either research theory or tacit sources of knowledge such as practice wisdom (Funnell & Rogers 2011). Examples of organisational level implementation theories that have prominence in the implementation science literature and are acknowledged as having theoretical resonance within KT frameworks are the absorptive capacity, organisational readiness for change, and implementation climate theories. Absorptive capacity is the knowledge acquisition and assimilation potential along with the potential to capitalise on those capabilities (Zahra & George 2002). Organisational readiness for change is about how an organisation values change and includes the commitment to change, and the shared belief in their collective capability, known as change efficacy. Thus the higher the value, commitment and belief leads to more effective implementation (Weiner 2009). According to Jacobs, Weiner and Bunger (2014) implementation climate is an organisational level of how well an innovation is rewarded or supported or expected is a predictor of use of the innovation, which when sustained can lead to desired outcomes.

Frameworks are recognised as being useful for providing both a retrospective and prospective focus on strategic complex change processes. Both models and frameworks use logic to link elements or structures to explain the KT process. According to Nilsen (2015) theories, models and frameworks have three main purposes within KT: firstly, to shape KT processes, secondly, to aid the understanding of how implementation processes happen and, thirdly, to guide the evaluation of implementation of interventions. When theories, models and frameworks are used to guide implementation processes it is more likely to result in enhanced effectiveness of the intervention, by increasing focus on the implementation process, and the option of being able to build on existing constructs (Tabak et al. 2012).

Furthermore, frameworks provide a frame of reference they 'can organise thinking, guide, interpret, facilitate, lead to development of propositions as a basis for theory building' (Rycroft-Malone et al. 2010, p. 226). The most frequently cited determinant frameworks are shaped around a common set of significant characteristics: the implementation object or the innovation, the users (health care practitioners and patients), the context (the culture of the practice setting and organisational context), and the process of facilitating implementation (Grol et al. 2013; Nilsen 2015).

Differentiating between, and guiding the choice of which of these frameworks are fit for purpose, has become the subject of many implementation science papers (Nilsen 2015). Tabak et al. (2012) differentiated between theories and frameworks according to the degree of orientation toward dissemination or implementation. The Promoting Action on Research Implementation in Health Services (PARIHS) conceptual framework and the Consolidated Framework for Implementation Research (CFIR) were two of the twelve implementation-focused frameworks identified in the Tabak et al. (2012) typology of KT models, theories and frameworks. PARIHS was categorised as having greater flexibility for use in more contexts, whereas the constructs of CFIR were categorised as more detailed. In the Nilsen (2015) taxonomy the PARIHS conceptual framework was recognised as a determinant framework.

The characteristics of innovation, the users, the context and the means of facilitating implementation are reflected in the PARIHS core constructs of evidence, context and facilitation (Kitson, Harvey & McCormack 1998). The CFIR framework, published in 2009, has similarities to PARIHS in that it structures the characteristics of implementation into five domains, that of the intervention being implemented, the inner domain which aligns with the

culture of the organisations and includes the tension to change and leadership, the outer domain which includes political and economic drivers, the individuals attitude and role, and the process of implementation (Damschroder et al. 2009).

Yet, the usefulness of continuing to build theoretical frameworks to guide implementation is a contested space. Those that reject the multitude of theories and frameworks argue that they offer complex evidence but have little predictive value or guidance for practice. Instead, they advocate for knowledge to evolve from rigorous and rich evaluations of organisational interventions (Bhattacharyya, Estey & Zwarenstein 2011; Oxman, Fretheim & Flottorp 2005).

In summary, KT theories, models and frameworks are tools for structuring and making things in the real world more understandable. The next section introduces the elements of the PARIHS conceptual framework.

2.3 PARIHS Conceptual Framework

The PARIHS conceptual framework was first described in 1998, by Kitson, Harvey and McCormack (1998). The framework developed iteratively with the developers drawing upon experiences working with clinicians (mostly nurses), on implementing evidence-based clinical guidelines, quality improvement, and change management projects.

The fundamental proposition of the PARIHS framework is that:

successful implementation is a function of the relation between the nature of the evidence, the context in which the proposed change to be implemented, and the mechanisms by which the change is facilitated (Kitson, Harvey & McCormack 1998, p. 150)

A distinguishing feature of the PARIHS conceptual framework was the notion of an interrelationship between each of the core constructs of evidence, context and facilitation and the sub-elements within each construct. Evidence is described as a combination of the sub-elements of research evidence, clinical experience, and patient preferences. The core construct of context in the PARIHS conceptual framework refers to the setting of implementation and embraces the sub-elements of leadership, culture and measurement as factors influencing the ability of the context to cope with change. Facilitation, described as the support needed to make things easier for others, considers the individual characteristics of the facilitator, the role of the facilitator and style of facilitation as significant sub-elements that need fitting to the

context to enable a successful change process. Constructs and sub-elements were initially described as being on a continuum from low to high (Kitson, Harvey & McCormack 1998).

Refinements to the original framework were done by a concept analysis of each of the core constructs, and empirical case studies, was published in the period 2002 – 2004 (Harvey et al. 2002; McCormack et al. 2002; Rycroft-Malone et al. 2004b). Quality and varied sources of evidence are important; however, how well the evidence interacts with the context of implementation is qualified by the valuing, relevance and organisational fit of the evidence (Rycroft-Malone et al. 2004a).

The construct analysis of context found that a stronger implementation context is more likely when the leadership style is more facilitative, and humanistic values such as trusting relationships, self-worth of individuals and networking are incorporated into the culture of an organisation, and that sub-element of measurement be expanded to evaluation to better incorporate multiple perspectives (McCormack et al. 2002).

The construct analysis of facilitation clarified that the focus was about enabling others, not about directing others. However, the construct analysis found the facilitator role was difficult to distinguish from other change agent roles. Facilitation roles and skills were described as a continuum, so that, depending on the purpose of facilitation, to enable others facilitators would need to be flexible to take on either a task-focused role or move toward more holistic processes (Harvey et al. 2002).

Notwithstanding the refinements during the construct analysis, the PARIHS conceptual framework was critically appraised by Helfrich et al. (2010) and definitions for the constructs and sub-elements and how constructs and sub-elements interrelate was found to be lack clarity. The review also noted the need for a more explicit definition of 'successful implementation'. Subsequently, successful implementation within PARIHS was defined as:

an orchestrated (active, planned) effort to make evidence-based changes by organisations, teams, and individuals that result in sustained improvements to care, patient outcomes, and service delivery, which are driven by and embedded in organisational strategy (Rycroft-Malone et al. 2013, p. 16).

The following sections expand upon each of the PARIHS core constructs of evidence, context and facilitation.

2.3.1 Relevant Evidence

The PARIHS concept of evidence includes the nature of evidence, the strength of the evidence and recognises different sources of evidence. Rycroft-Malone et al. (2004a) outlined four sources of knowledge that can contribute evidence for evidence-based practice: research, clinical experience, patient experience, and information from the local context.

Research evidence, the information from interpreting data derived from systematic scientific enquiry is one source of information for evidence-based practice. The overwhelming amount of research evidence requires individuals to have capabilities to sieve and sort this evidence, or, alternatively, have access to people, or access to evidence-based information, to appraise the evidence. PARIHS acknowledges that health professionals also draw down upon their clinical experience as source of tacit knowledge. Likewise, patient experiences are also a source of information that may be available to practitioners, informally or through formal channels of patient feedback, complaints, coroner's cases etc.

Rycroft-Malone et al. (2004a) qualified that acceptance of any evidence as a basis for implementation should meet the criteria that: the source is credible, whether that is a clinician or researcher; that research is subject to critical appraisal factors such as research quality; and acknowledge that people with a distinct perspective, such as clinicians and clients, may choose to value the evidence differently. The assessment of whether evidence is a good 'fit' for the context interfaces closely with the element of facilitation. Facilitation can create the enabling conditions and guide the adaptation of evidence to fit a context.

It is not surprising that the recommendation for a broader range of evidence emerged from the discipline of nursing, as both public health and nursing were early challengers of the privileging of research evidence over other types of evidence (Nairn 2012; Petticrew & Roberts 2003). Considering a broad range of sources to develop evidence is supported by empirical research that found health services were encouraged to use surveys of patients' attitudes and experiences, and economic evaluations in addition to published literature as sources of evidence (Greenhalgh et al. 2009).

2.3.2 Elaborating on Context

The Alberta Context Tool (ACT), demonstrated that clinical practice environments strong in context elements are associated with a greater use of research (Cummings et al. 2010). McCormack et al. (2002) described the sub-elements of context in clinical practice settings, as the culture (at individual, team, and organisational level), the leadership, and a commitment to evaluation. However, McCormack et al. (2002) concluded that the term 'context' itself does not adequately convey the extent of the complexity of the concept. Others concur, finding a lack of consensus about how context should be interpreted, either as a physical environment or setting that is a backdrop to the intervention, or an active component in the implementation process (Carlfjord et al. 2010; Nilsen 2015). Nevertheless, it is generally agreed that contextual features have a significant influence on implementation success or failure (Rycroft-Malone et al. 2011).

In the PARIHS conceptual framework the element of context is defined as the 'environment or setting in which people receive health care services' (McCormack et al. 2002, p. 96). Through the sub-elements of culture, leadership and evaluation, context focuses on the, the dynamic interactions between people, and between people and the organisation, that occur in the setting of implementation. Yet, despite McCormack et al. (2002) delineating the complexity of factors in the practice arena from the interaction of the organisational structures and systems, there have been criticisms as to the lack of differentiation between the outer context (the wider organisational and health sector systems influences such as policy, structural and political environment) and the inner layer of context (the local setting for implementation) (Helfrich et al. 2010).

The sub-elements of culture, leadership and evaluation are relevant to the breadth of context. However, McCormack (2002) argues that within any context there may be multiple cultures with distinct ideas about how things happen that need to be understood. Culture, informed by an anthropological perspective, is further described as the way things happen, ways of doing and values and beliefs. An influential work in the concept analysis is that of Peter Senge, which brought a focus on the characteristics of learning organisations and the relationships between managers and workers to the understanding of context (McCormack et al. 2002). Further studies have identified additional factors important in predicting receptiveness or non-receptiveness to change, that relate to the PARIHS sub-element of culture. Firstly,

organisational climate (the way things are perceived), secondly, supportive organisational culture (the way things are done), thirdly, the organisational readiness and finally the concept of absorptive capacity (Carlford et al. 2010; Greenhalgh et al. 2004). Evidence suggests that a supportive organisational climate combined with an explicit implementation strategy are predictive of a positive implementation outcome, and, conversely, implicit implementation strategies are harder to implement in a poor organisational climate (Carlford et al. 2010). The concept of absorptive capacity has garnered increased interest in the health care literature as an explanation for why health professionals, although exposed to evidence, resist, or do not respond to the evidence as expected (Oborn 2013).

Leadership style, as a context sub-element, is shaped partly by the organisational culture and partly by individuals. The PARIHS contextual framework contests that a leadership style that is more facilitative and has humanistic values will support implementation, as opposed to inappropriate or poor leadership. Poor leadership is a recognised barrier to successful implementation of interventions. The contextual sub-elements of organisational culture, climate, leadership and learning are acknowledged as contributing to the variability of success of implementation at different settings (Kitson et al. 2008; McCormack et al. 2002).

2.3.3 Enabling Facilitation

The concept analysis of facilitation by Harvey (2002) concluded that when framed as an enabling process using group dynamics facilitation could be distinguished from other change agent roles such as opinion leaders but there was a lack of conceptual clarity. A study by Dogherty et al. (2012) validated facilitation as both a role and a process and found that facilitation roles were shared across individuals and the facilitation process was regarded as a team effort focused on 'how' to change practice rather than an individual one. A further finding of the Dogherty et al. (2012) study was that local facilitators engaged in different activities than external facilitators, building capacity through education and providing evaluative information than external facilitators who were recognised as experts who had credibility to the project.

2.3.4 Utility of the PARIHS Conceptual Framework

The PARIHS conceptual framework has been widely applied and employed in various ways including as a mapping, organising, structural and evaluative framework (Helfrich et al. 2010). PARIHS proposes that successful implementation arises out of the dynamic interplay of the

core concepts of evidence, context, and facilitation, with variability in implementation accounted for by the strength or volume of sub-elements. Significantly, the PARIHS conceptual framework has been verified to have utility due to its simplicity, flexibility, and accessibility in Indigenous Primary Health Care (Ellis et al. 2005; McCalman et al. 2014; McKillop, Crisp & Walsh 2012).

Despite the widespread recognition that PARIHS conceptual framework has broad utility as an implementation framework, several limitations have also been identified. During the construct validation phase the authors acknowledged the constructs of context and facilitation required ongoing development with empirical studies (McCormack et al. 2002). Helfrich et al. (2010) undertook a critical synthesis of the PARIHS conceptual framework and concluded that the lack of description of how sub-elements interact or relate vis a vis other constructs or sub-elements is a further weakness of the framework. Nevertheless, for the purposes of this PhD study, the PARIHS conceptual framework was a judicious choice, with utility as both an organising framework as well as a mid-range theory from which to underpin the realist evaluation methodology. This is in line with the call for developing and using theory-informed approaches (Rycroft-Malone 2007).

2.4 Implementation of Interventions in Indigenous Primary Health Care

Implementing interventions in the Indigenous primary health care settings is challenging. When NT stakeholders were consulted on how to strengthen the implementation of research in primary health care in 2002, agencies were keen to prioritise the designing of health interventions that work, to develop a greater understanding of how to strengthen implementation and provide opportunities to develop the capacity of Aboriginal health workers and managers (Grundy & Johnston 2003). At that time, lack of researcher understanding of the nuances of the practice setting, characterised by a constant high workload generated by complex clients, under-resourcing, low workforce morale due to the impression of under-achievement, poor performance and lack of practitioner skills were identified as barriers to implementing interventions (Grundy & Johnston 2003). Grundy and Johnston (2003) recommended collaboration with researchers and skill development as enabling strategies to strengthen the links with researchers and to move toward research on local priorities. However, the reality for Indigenous primary health care organisations is that

they are politically and financially pressured to implement interventions driven by incentivised national priority agendas while at the same time trying to respond to the local 'micro-politics' of the organisation or location. This section appraises the literature relevant to the thesis, considers the information they contribute about implementation from the perspective of the PARIHS conceptual framework. Importantly this section begins the process of identifying preliminary mechanism and context found to impact on implementation of interventions in Indigenous primary health care.

2.4.1 Search Strategy

An integrative search strategy was used to identify papers that evaluated the implementation of interventions or programs within or partially within Indigenous primary health care services, located in either urban or remote areas, where primary health care health professionals played a part in the implementation and were published between 2000-2014. The electronic search engines of SCOPUS, Summon and Google Scholar were searched for papers using the primary search terms of 'knowledge translation', 'implement*', 'intervention', 'evaluate', 'primary health care', 'Indigenous' and Aborigin*. Twenty-One papers were identified for inclusion in a pragmatic literature review and are summarised in Table 2.1 *Literature Review of Implementing Interventions in Australian Indigenous primary health care 2000-2004*. They represented implementation in multiple sites and single sites, within and partially within the Indigenous primary health care centres located in either urban or remote areas. The papers focus on the implementation of research evidence into practice or implementing an intervention to measure effectiveness, others are implementation of programs.

2.4.2 Characteristics of Implementation

The selected papers have used a wide variety of study designs including multisite evaluations of interventions, effectiveness intervention trials, evaluations of single site interventions, evaluation of policy implementation, randomised control trials, program evaluations and realist evaluations. The characteristics of implementation that can be evident in the 21 papers are organised under the PARIHS Conceptual Framework constructs of evidence, context, and facilitation. Five of the papers selected are written about one research program, but at different phases, and using different research enquiries. This sample also includes papers relating to research programs that are a case study for this study.

Evidence: The areas targeted for innovation and intervention are broad but reflect the 'problematised' areas of Indigenous health: chronic disease management, alcohol use at problematic levels, smoking cessation, sexually transmitted infections, asthma, family functioning, parenting support, rheumatic heart disease and health literacy.

Interventions include new funding models, health system changes with the introduction of new clinical guidelines or electronic health information systems, introduction of case management models, health promotion tools, quality improvement, Aboriginal-led counselling, implementation of health policy, alongside studies that focus on improved compliance to existing treatment protocols.

Notably, not all aspects of the interventions are described. Three different patterns emerged on reporting outcomes. Those that reported effectiveness of the intervention, such as health outcomes achieved, not the success or otherwise of the implementation strategies (Baillie et al. 2004; Marley et al. 2014; Spurling et al. 2013; Su & Skov 2008) Those that provided a brief mention of implementation as 'weak' (Lovett et al. 2014). However, the paper by Gardner et al. (2010) provided extensive analysis of the implementation and intervention uptake of the CQI intervention.

All papers report that Indigenous people were consulted as part of the design process, either through consultation with Indigenous representatives or participatory action research in design of the interventions. Several studies report the need to be flexible and taking the time to adapt and tailor interventions to the circumstances of each location and address the obstacles to practice (Marley et al. 2014; Ralph et al. 2013). If the expert adapting the intervention lacked an understanding of the health professionals role in primary health care it became a barrier to implementing specialised interventions (Allan 2010). The clinical experiences and values of health professionals also made an impact on uptake, with medical and nursing staff favouring the clinical components of a complex interventions rather than preventative care aspects of the intervention (Lloyd et al. 2009; Su & Skov 2008).

Negative patient experiences and health professionals anticipating non-compliance in response to referral for follow up appointments were reported as barriers to uptake in the evaluation of the national implementation of the Indigenous Chronic Disease Package (Baillie et al. 2014).

Context: Studies reported far more context factors that were considered barriers to uptake or constrained implementation than enabling factors. A synthesis of the reported contextual constraining factors builds a picture of Indigenous primary health care as a context where a heavy burden of disease drives clinical demand. This high burden of disease means a heavy workload and long working hours for health care professionals (Gardner et al. 2010). The high level of skill required to manage the complex illnesses is considered to contribute to the high levels of workplace stress felt by nurses working in remote primary health care centres (Lenthall et al. 2009). Workload related challenges such as 'no time' and 'competing priorities' were reported as factors that constrain implementation (Campbell et al. 2014).

Weak practitioner capability, knowledge and skills in evidence-based practice were also reported as a factor related to the relatively inexperienced locum workforce (Bailie et al. 2014). A level of dissonance between the different health professionals in multidisciplinary, and cross-cultural in a workplace dominated by individual clinical encounters can lead to role confusion and poor coordination in an environment of multiple competing agendas (Lloyd et al. 2009).

The most common reported characteristic of the Indigenous primary health care context was an interrupted workforce supply. This was attributed to high staff turnover, discontinuity of staff, staffing loss and recruitment difficulties (Spurling et al. 2013). Workforce was reported as critical factor in an organisation's capacity to mobilise resources to support implementation by negotiating workloads, establishing role clarity, sustaining leadership and prioritising resources (Gardner et al. 2010). A change appears to have occurred in the nature of workforce issues: the earlier publications focus on the inadequate levels of staffing, under-resourcing, inadequate levels of support and need for role clarification (Grundy & Johnston 2003) with the more recent papers workforce highlighting turnover as a significant factor (Lovett et al. 2014; Marley et al. 2014). In one organisation the workforce turnover was complete between one training visit and a follow up visit (Lovett et al. 2014). Workforce instability was described as a 'fragile' element in the context, linked to the lack of intervention sustainability with clients waiting to see if the visitor can 'last the distance' before engaging (Allan 2010).

Leadership was described as an enabling factor for the support of population health approaches (Allan 2010; Schierhout et al. 2013). Local level commitment of health centre managers were found to be dependent upon the commitment at a regional level (Dowden 2006). Organisational level resistance and difficulty maintaining organisational commitment

and sticking to priorities was reported for an innovation implementing an Aboriginal led smoking cessation intervention (Campbell et al. 2014). For interventions that required community engagement, engagement was contingent upon community leadership (Campbell et al. 2014; Robinson et al. 2012). Primary health care organisations are tasked with a broad mandate, which can lead to confusion between service providers. Program rivalry was reported in alcohol and tobacco interventions (Allan 2010; Campbell et al. 2014). Gardner et al (2010) found that the organisational pressure to make an impact could be experienced as a sense of burden that resulted in inertia.

Several studies emphasised the need for cultural competence as a key component in the engagement and sustainability processes (Nagel et al. 2009; Robinson et al. 2012). Others reported Indigenous workers having insufficient power and training to influence the implementation of interventions (Campbell et al. 2014; Lloyd et al. 2009). The relative lack of power of Aboriginal and Torres Strait Islander Health Practitioners was thought to be reinforced by the external political context of the Northern Territory intervention when the power of Aboriginal people was eroded (Robinson et al. 2012). Tailoring interventions and intervention processes to take into account the differing cultural frameworks, understanding of health and well-being, health literacy and language are ways mentioned of paying attention to the cultural fit of the intervention logic (Nagel et al. 2009).

In the multisite studies, researchers reported large differences in clinical performance and, or intervention uptake across the different locations (Ralph et al. 2013; Schierhout et al. 2013). Variation in the delivery of services has been attributed to characteristics at an organisational level, including governance arrangements and leadership commitment, management style, value given to clinical data, communication systems, and, the characteristics of the workforce, including the competencies of individuals, priorities and interest, role clarity and orientation to a public health approach (Bailie et al. 2004; Schierhout et al. 2013).

Facilitation: Of the 21 research papers included in this review, 16 reported an element of facilitation, either through a dedicated training program for staff, facilitated audit and feedback cycles (5) or regular regional support and visiting advisory expertise. The studies reporting audit and feedback cycles were papers related to a CQI program. All used external facilitators. In the studies reporting training of local staff to build local capacity, those who delivered the training were external to the setting of implementation. The CQI program studies

had research hub coordinators who could facilitate support at both local and organisational level. Schierhout et al. (2013) found that people operating at the organisational level were particularly important for supporting CQI implementation when capacity was limited at the local level. Another evaluation of the CQI program found that organisations with vision and strong regional approach, supportive clinical leadership and local level support were more likely to be successful in implementing changes (Gardner et al. 2011).

The paper by Su and Skov (2008) note the importance of a local program coordinator who had a role of motivating and engaging the community to seek sexual health treatment. The local coordinator was credited with keeping the program going successfully increasing testing and participation through a period of significant health service disruption with the dissolution of a community health board and loss of health staff.

In addition to the mode of facilitation several studies emphasised the characteristics of the facilitator. Campbell et al. (2014) found that the external project officer in a fly-in/fly-out supporting role was a barrier and recommended that the support person should reside in the location for the entire implementation process, to ensure a greater local organisational commitment. An alternative strategy to the fly in/fly out approach was to employ Aboriginal researchers to increase the sense of ownership and embracing the concept of relatedness resulting in interventions where 'we got something we can relate to without big words and having strangers from out of town' (McCalman 2013, p. 5). Marley et al. (2014) also found that using Aboriginal researchers fitted with the principles of local ownership and control but implementation was constrained by their absence due to illness, cultural obligations and jealousy.

Several studies expected health professionals to acquire additional skills such as brief intervention and counselling to manage the need for alcohol and mental health services (Allan 2010; Campbell et al. 2014; Lloyd et al. 2009; Lovett et al. 2014; Marley et al. 2014). However, training to build local level capacity was not always successful with descriptions of weak participation, lack of ongoing training, insufficient training, and uncertainty on how to use the brief intervention following training (Baillie et al. 2004; Campbell et al. 2014; Dowden 2006).

2.4.3 Identifying Preliminary Mechanisms

The reason for this review of literature was to understand the context for implementation and to look for preliminary mechanisms influencing implementation. In terms of the realist concept of 'mechanism', only the study by Schierhout et al. (2013) using realist methodology had analysed data to create realist propositions. Schierhout et al. (2013) attribute variation in a multisite CQI study to three mechanisms: the *collective valuing of clinical data for improvement, the collective efficacy or shared belief in CQI effectiveness, and the organisational change toward a population health approach*. These mechanisms were generated by researchers and CQI facilitators working with primary health care teams not health care professionals. The collective valuing of clinical data was enabled by strong central management of CQI and staff capacity to use the data; collective change efficacy was more likely with organisational infrastructure, population health orientation enabled by strong community linkages and relatedness to patients (Schierhout et al. 2013). From other studies further potential mechanisms were identified: McCalman (2013) found that *embracing relatedness* and fostering *a sense of ownership* in contexts that had organisational strength and supported Aboriginal empowerment and *sense of control*; Allan (2010) identified *trust* was required before the locals would engage in a new program.

2.5 Summary

Overall, KT draws on several theoretical traditions, diffusion research, organisational theory, knowledge management and research evaluation resulting in many different terminologies and ways to frame KT. Ideas coalesce around the logic that successful evidence-based outcomes require effective interventions, and effective implementation of the interventions in a supportive context. The envisioned benefits of an intervention cannot be realised until it is successfully implemented. Implementation research has shifted the focus from interventions, the intervention characteristics, and intervention strategies to a focus on the implementation processes.

The evidence base for KT, implementation and evaluation of interventions in Australian Indigenous Primary Health Care settings is small. The interventions included in this review overlap with those included in a systematic review of transfer and implementation in Australian Indigenous health services by McCalman et al. (2012). However, the small evidence base makes

a compelling case for further work. Another feature of Indigenous intervention implementation literature is the paucity of theory-driven evaluations. This was also noted by McCalman et al. (2012) who reasoned that the paucity of theory development reflects a lack of capacity or authority to document what happens in this setting.

The literature describes several reasons for undertaking intervention research such as to introduce new clinical and preventive services, information systems, and CQI audit and feedback. The most common KT strategy employed was to provide training to local level staff and facilitate change through intermittent support of an external expert. Indigenous primary health care context specific impediments to implementation success cluster around workforce discontinuities, workforce capabilities, high client burden of disease, leadership commitment and resourcing, distrust, or resistance of health professionals to expand roles away from clinical management to preventive activities and resistance of clients to engage. Enabling strategies included undertaking participatory action research to contextualise interventions, designing for Indigenous cultural fit (such as storytelling and Indigenous languages) empowerment, relatedness and tailoring interventions to overcome local obstacles (McCalman 2013; Ralph et al. 2013; Robinson et al. 2012).

At this point in time, the literature of KT in Indigenous primary health care settings remains inadequate to bring clarity to what KT strategies work, for whom and under what circumstances. Preliminary mechanisms identified by this literature review include collective valuing of clinical data for improvement, the 'collective efficacy or shared belief in CQI effectiveness', 'embracing relatedness' and the 'organisational change toward a population health approach', a 'sense of ownership', and, 'trust'. However, the voice of health professionals working at the coalface is not reflected in the literature. Hence, the journey of understanding the impact of local contextual circumstances, or which mechanisms are likely triggers, for which categories of health professionals, and, are therefore likely to be influencing implementation outcomes within health services has only just begun. This PhD study is designed to continue that journey, using a realist evaluation approach, and therefore should be judged as to what extent this is achieved.

Table 2.1 : Studies Included in Literature Review of Implementing Interventions in Indigenous Primary Health Care 2000-2014

Publication	Type of Study	Intervention	Implementation Strategies	Context Factors	Facilitation	Outcomes
Allan (2010)	Evaluation of program Multisite	Collaborative drug and alcohol treatment service within ACCHSs using PHC workers	1:1 and group counselling; group education and specialist clinical review Engagement of PHC workers in drug and alcohol and mental health interventions	Large geographical area; high staff turnover; locals wait to see if visitor can 'last the distance' before engaging; Lack of trust for new programs; competing demands of other programs; perceptions of AOD programs as separate. Confusion between service providers; lack of understanding of the primary health care worker role and responsibilities is the most Significant barrier to implementing specialist interventions	External Education program for PHC workers	Implementation of drug and alcohol service
Bailie et al. (2014)	Evaluation of program uptake-multisite	Indigenous Chronic Disease Package delivery and billing - multisite	Incentivised Medicare program	Staffing turnover; locum staff; fluctuating staff; weak multidisciplinary skills; lack of capability; lack of leadership commitment; lack of transport; reluctance to	No awareness raising of Medicare item number by GP peak bodies	Variation of uptake of health assessment, particularly follow-up in different sites

Publication	Type of Study	Intervention	Implementation Strategies	Context Factors	Facilitation	Outcomes
				<p>refer as belief patient would not attend;</p> <p>Weak expectation on patient; clients resisted referral as found health professional 'pushy'; clinical information systems lack of capability to do recall and reminders</p>		
Bailie et al. (2004)	Evaluation of Research Intervention-multisite (NT)	Improve care coordination of chronic diseases in two remote regions of the NT	Establishment of health boards – transfer of planning and purchasing of health services to health boards; dissemination of clinical guidelines for diabetes management; electronic registers, recall and reminder system; staff training; audit and feedback; Training provided for electronic systems;	<p>Heavy burden of chronic disease, geographic isolation; Discontinuities in staffing;</p> <p>Lack of ongoing training and support for care coordination;</p> <p>Lack of capacity to monitor services activity;</p> <p>Lack of work practice support; reported reluctance of patients to acceptance assessment services during an ad hoc presentation</p>	External facilitation of audit and feedback to health centre clinicians and managers	Improvement in service delivery levels in year 1 which then declined in year 2 and 3; Increase in hypoglycaemic and angiotensin's; Improvement in HbA1c not blood pressure

Publication	Type of Study	Intervention	Implementation Strategies	Context Factors	Facilitation	Outcomes
Campbell et al. (2014)	Program evaluation	Community-based tobacco control program in Indigenous communities	School-based education; Tobacco brief intervention training for health workers; Assistance in developing smoke-free policies; Event support program (sponsorship); Support group; Monitoring compliance with tobacco legislation Interventions delivered by community-based organisations	Only used some elements of brief intervention model; local health workers not available to deliver support program, Low recognition of program by health workers; Suggested important to have someone residing in the community to support implementation, more time and engagement community leaders.	External support Education	Modest effect on self-reported tobacco use in intervention communities; Health workers spoke positively about the training, but at follow-up most did not report using the brief Intervention strategies with clients as intended; Weak implementation fidelity
Crengle et al. (2014)	Protocol of Effectiveness Intervention Trial- single arm pre-post-test design	CVD Medication Literacy Intervention	Education sessions delivered by local health professionals with booklet and tablet to assist	Three countries, adapted for local Indigenous language and images; Indigenous involvement across all roles and throughout the entire project	Intervention delivered by Indigenous people employed by health services	Outcomes sought are patient knowledge about CVD medications; change in health literacy skills and practices

Publication	Type of Study	Intervention	Implementation Strategies	Context Factors	Facilitation	Outcomes
DiGiacomo et al. (2010)	Evaluation	Health assessment (Adult Health Checks) in urban ACCHOs	Two- day screening; team of practitioners; culturally sensitive framework; interdisciplinary teamwork model	Private spaces for facilitators; Health stations set up for the research; transport provided for clients;	Expert collaborators onsite to assist on the day of the assessments;	Demonstrated feasibility and acceptability of mass screening with IPHC
Lloyd et al. (2009)	Evaluation of policy implementation (NT)	Preventable Chronic Disease policy (PCDS) through remote programs focused on prevention, early detection and better management	Strategic direction of health services; introduction of specialist chronic disease nurses; recall registers established Training in chronic disease management	Values of the medical and nurses favoured the clinical component of better management of chronic disease; Dissonance between medical, nurses and AHWs; AHWs not sufficient power and training, limited influence decision-making priorities	Strategy dissemination to sites	The research revealed that PCDS evolved as it was implemented;
d'Abbs et al. (2013)	Evaluation of program implementation (NT)	Multidisciplinary, self-management rehabilitation care plans and case management for Indigenous clients with alcohol Three streams of care: client assessment by GP,	Recruitment of project staff; development of referral pathways;	Difficult to recruit staff with required experience to manage the project or with qualifications that made them eligible to claim Medicare rebates; Intervention funded as a research project for 12 months leading to tension	Not mentioned	Trial demonstrated feasibility of implementation; referrals exceeded capacity of program; GP reluctance to prescribe pharmacotherapy

Publication	Type of Study	Intervention	Implementation Strategies	Context Factors	Facilitation	Outcomes
		8 weeks of psychological therapy by psychologist or social worker and social and cultural support by Aboriginal Liaison Officer.		between research design and local adaption. Confusion of roles; some staff ineligible to claim Medicare rebates and required sign off by GPs; support of senior management; consent process constrained data for evaluation		for Indigenous clients;
Gardner et al. (2010)	Intervention Research: Case Study of CQI in first year of implementation - multisite	Chronic Disease Management uptake by organisation using CQI methodologies of annual audit and feedback cycles using web-based analysis tools (70 health services)	Hub coordinators facilitated organisational engagement and participation in CQI audit and feedback; Champions within organisations	Constant staff turnover- not diminish motivation slowed things and was disruptive; lack of apparent change, poor staff morale; long working hours; The higher the need to change the capacity to introduce was the lowest.; project management skills available; Larger clinics had more human and other resources to assist implementation; alignment of organisational objectives supportive of CQI; quality	External facilitators for audit and feedback active approach to influencing key stakeholders;	Variation in organisational wide support for CQI approach; Mixed success in audit uptake and diffusion into services during 1 st cycle – not always predictable; Uptake influenced by power of professionals; PHC organisations had different levels of capacity to mobilize resources to support implementation;

Publication	Type of Study	Intervention	Implementation Strategies	Context Factors	Facilitation	Outcomes
				<p>of leadership; network connections;</p> <p>Difficult to influence clinic managers and GPs as considered overworked; expert opinion influenced senior managers</p> <p>Nurses and health workers considered to engage in process; staff critical for consistency in different sites;</p>		leadership and management critical to successful uptake;
Lovett et al. (2014)	Intervention Research	Case Management Model for clients who drink alcohol at problematic levels in one location	Training and capacity building using a care plan, alcohol screening and brief intervention	Change in workforce and researchers; not all staff supported the intervention, time consuming to do the training; weak participation in the training	External consultants provided training in case management and brief intervention	Protracted development and implementation; weak continuity
Marley et al. (2014)	Randomised control Trial	Smoking cessation counselling by Aboriginal Researchers for the intervention group in the RCT	Funded smoking cessation positions Tobacco Action workers and coordinators; Brief interventions and 1:1 counselling;	<p>Difficulties of managing project in remote locations; significant staff absences, staff shortages and high workforce turnover of project staff;</p> <p>Difficult to fit work of an RCT in PHC clinic;</p>	External project manager providing day to day guidance to local Aboriginal	Smoking at 6 and 12 months after intervention: results Quit rate in intervention group double that of control group; poor recruitment

Publication	Type of Study	Intervention	Implementation Strategies	Context Factors	Facilitation	Outcomes
				Resistance to change; poor maintenance of organisational commitment; Geographic distance added to costs of study; Need to adapt interventions to local settings;	Researchers Training provided to support Aboriginal Researchers;	with insufficient numbers in RCT; Greater efficacy in health centre with high ownership and local community control; and implementation
McCalman (2013)	Intervention research	Family Wellbeing Program – training pathways multisite	Transfer of program on demand by embracing relatedness and fostering a sense of ownership over implementation process	Organisational strengthening supported Aboriginal empowerment and sense of control	Education Training program, nationally accredited pathway to employment or further training	Not sustained at majority of sites but model of relatedness evaluated positively
Nagel et al. (2009)	Randomised Control Trial	Brief Intervention Motivational Care Planning and Educational Resources	Treatment sessions with clinician and Indigenous researchers, family included; multimedia	Remote Aboriginal communities	Indigenous Researcher; multimedia storytelling approach	Significant changes in health outcome well-being measures after intervention

Publication	Type of Study	Intervention	Implementation Strategies	Context Factors	Facilitation	Outcomes
Ralph et al. (2013)	Intervention Research-multisite (NT)	Rheumatic Heart Disease 4 weekly penicillin/ ARF/RHD register	CQI strategy over 3 years; PAR to identify barriers to injections	Challenging clinical environment; high rates of ARF/RHD;	External Audit results facilitated back to health centre	Wide difference in quality of RHD care between health centres; Improvement in delivery of care items in the CQI process; Proportion of people receiving >80% of scheduled drugs did not change
Robinson et al. (2012)	Program Evaluation (NT)	Parenting programme for 4-6-year-old children with behavioural difficulties in Indigenous and non-Indigenous communities	Contextualised engagement; parenting management training; parent-child interaction therapy; Aboriginal adaptation of songs and storytelling;	Public politics of the 'emergency intervention' and problematising of Aboriginal parenting; stigmatisation; community leadership and support; cultural fit where Aboriginal boys are expected to be highly independent;	Mix of local/ external education Local Group leaders trained in leading workshops	Differential effect across urban, remote and Indigenous and non-Indigenous children; Failure to engage in program on urban Aboriginal areas; High levels of attrition out of the program

Publication	Type of Study	Intervention	Implementation Strategies	Context Factors	Facilitation	Outcomes
Rowley (2000)	Program evaluation	Community-directed program for prevention of obesity, diabetes and cardiovascular disease	Supportive community policies; community control of interventions; High-risk group nutrition education sessions, physical activity groups, dietary changes; wider community messages about diet and physical activity	Not mentioned	Local/ external education Diabetes nurse educator assisted with program design then local diabetes workers appointed, feedback of results provided by researchers;	Sustainable improvements in dietary intake and level of physical activity; sense of control and high motivation to sustain program.
Si et al. (2007)	Evaluation of health system intervention	CQI systems intervention	2 CQI cycles using a system assessment tool and clinical records	Emphasis on chronic disease management not preventative services for well adults; poor response to identified strategies; poor delivery of preventative care.	External Feedback workshops facilitated; research team provided support through email and site visits	Variation in the improvement of uptake of preventative services; some, none and less; development of local language concepts, revision of team roles and use of interpreter and development of reminder systems

Publication	Type of Study	Intervention	Implementation Strategies	Context Factors	Facilitation	Outcomes
Schierhout et al. (2013)	Realist Evaluation	Wide-scale CQI intervention in Indigenous PHC (Audit and Best practice for Chronic Disease Project)	Clinical Audit Feedback	Collective valuing of clinical data is enabled by centralised management or devolved CQI with staff capacity to use data; little valuing of data with poor management; Collective change efficacy more likely when there is organisational infrastructure, less with competitiveness and unsupportive organisational culture; population health orientation enabled by stable outreach staff and with leadership.	External Facilitated audit and feedback	Variation in the improved delivery of recommended care
Spurling et al. (2013)	Process Evaluation	Shift from paper-based to computerised health information system for health checks in addition to PHC information system	Computerised HC software – no further information provided	Urban IPHC; high staff turnover in child health nurses; lack of space for child HCs; length of form	No information	Demonstrated feasibility, positive staff satisfaction and provided data for research purposes; uptake less for child health checks

Publication	Type of Study	Intervention	Implementation Strategies	Context Factors	Facilitation	Outcomes
Su and Skov (2008)	Effectiveness study of program implementation	Comprehensive Sexual program in Indigenous PHC 2002-2005	Dedicated program coordinator; training of local community members; focus on opportunistic testing; Introduce STI screening for youth; screening database introduced; active condom distribution; strong support by clinical specialists; regular feedback to clinical staff.	During period of evaluation health board dissolved, community control reduced, loss of health staff and general program disruption. However, Program coordinator continued and ensured continuity of this program.	Local Program coordinator employed with role to motivate and engage local community and clinic staff; Education role based locally for training of staff and education of community members	Increased number of STI tests. Notification rate of main STIs decreased; Increased awareness and participation with constant interaction with PHC staff
Valery et al. (2010)	Randomised control trial results	Randomised additional culturally tailored education intervention (x3) for children with Asthma done by Indigenous Health Care Workers	Training of IHWs Working alongside paediatric respiratory specialist Education to children and carers from IHWs	IHWs in Torres delivered education to families- community awareness of asthma education	IHWs provided with training	No difference in unplanned visits for Asthma. Intervention group carers had improved knowledge, increased use of Asthma Action Plan and children missed less school

Chapter 3: Designing a Realist Evaluation

3.1 Introduction

This chapter describes the design elements of a single realist research cycle for a situation for which realist evaluation is, in principle, ideally suited: deepening the understanding of implementation in health services. Specifically, the chapter describes in what manner the research design responds to the research question of *how, for whom and under what circumstances does new knowledge get implemented in Indigenous primary health care?*

The first part of this chapter advances the case for taking a theory driven approach to evaluation research that was introduced in Chapter 1 and presents the advantages of choosing a realist evaluation methodology to explore the research question. The research design follows the logic of a realist research cycle and is set out as an eight-step sequence. Central to the research design are the methodological steps taken to gain an understanding of implementation from the perspective of both theory and praxis, namely, the program theories of researchers within a research organisation and the practice experiences of health professionals working in the Indigenous primary health care context. The chapter details the sampling strategies for selecting research program cases and Indigenous primary health care locations. The chapter concludes with a discussion of how the sampling limitations and opportunities of the research process and the realist qualitative methods support or threaten the descriptive, interpretive, and theoretical validity of the study.

3.2 Justifying a Theory Driven Approach

Theory driven approaches to evaluation are seen as having explanatory powers to see into the 'black box', that is, the 'space between the input and the expected output of a program' (Stame 2004). These seek to overcome the causal assumption that measurable differences in program outputs are attributable entirely to program inputs. Instead, by using a theory driven approach, the focus shifts to exploring how and why change happens given the program inputs in the context of implementation. In theory-driven evaluations, program theories are explicit and the context in which change is to take place is critically important. Thus, theory driven evaluation approaches offer the potential for going beyond describing the relationship between program

inputs and outputs and offer insight at the theoretical level about 'how' change happens within a particular organisational context.

Two theory-driven evaluation approaches are theories of change and realist evaluation. Theory-driven approaches are increasingly being chosen for public health and health services research and evaluation (Blamey & Mackenzie 2007). One distinctive attribute of a theory-driven approach is the importance placed on the context in attributing causality within the program theory. Context is recognised as a factor that can enhance or constrain change. Thus, understanding the impact of context on the proposed intervention for change is fundamental to understanding if replication in future settings is plausible. The common characteristics of the two approaches can result in the terms being used interchangeably, however, Blamey and Mackenzie (2007) point out that theories of change and realist evaluation have different ways of conceptualising change and how that is presented in program theories. The theories of change approach to evaluation focuses on hypothesising how program activities lead to anticipated outcomes, known as program or implementation theories. Marchal, Dedzo and Kegels (2010b, p. 194) describe the theories of change approach to evaluation as seeking 'to establish the links between intervention, context and outcomes through development and testing of logic models'. The development and testing of logic models consists of considerable stakeholder involvement and collaboration and the resulting program theories have utility for planning and monitoring at the meso and macro program levels. In contrast, a realist approach seeks to make explicit the underlying causal mechanisms that lead to successful implementation of interventions (Kazi 2003). Realist evaluation core proposition is that change results from the triggering of generalisable mechanisms (drawn from substantive discipline theories) that respond to interventions (within certain contexts) that lead to anticipated outcomes. A further distinction between the two theory-driven evaluation approaches is made by Marchal et al. (2012) who note that although the terminology of program theory is used in all types of theory driven evaluation, only realist evaluation seeks to use program theory to refine theory at the more abstract level of mid-range theory.

The realists' goal in undertaking research is to develop useful knowledge. In their seminal work on realist evaluation, Pawson and Tilley (1997, p. 55), claim that the key feature of realism is 'its stress on the mechanics of explanation'. Reaching an explanation involves a technique of deepening, specifying and focusing on the contexts, mechanisms and outcomes patterns

through which a 'family of answers' will emerge (Pawson and Tilley, 1997:152). Thus, realist evaluation emphasises the process of how program theories bring about change. For realists, interventions are embedded in the real world and the social reality of individuals. Mechanisms operate at the level of the individual. An individual's response to the intervention will be influenced by their characteristics, organisational position, and ability to understand the program reasoning or utilise the resources offered by an intervention. The main proposition of a realist approach is that a successful change (outcome) depends on the ideas and opportunities (mechanisms) introduced into the appropriate social and cultural conditions (context). Thus, realist evaluation, presents program or implementation theories as context-mechanism-outcome (CMO) configurations. Realists use these CMO configurations to express propositions and abstract mid-range theory (Pawson & Tilley 1997).

At the philosophical level realism takes a discrete position on causality from that of the other dominant meta-theories of positivism and constructivism. All realists hold that the world in which we live and interact is real, and that that world exists independently from us. For a realist social systems are open, that elements of social systems interact with each other, and that programs are embedded within the systems (Pawson & Tilley 2004). This contrasts with both a constructivist and a positivist view. Constructivists posit that people interact with the world to construct change; they accept that there are multiple realities each shaped by language and culture. Positivists believe the world is a closed system and do not seek to account for social constructs. Positivists understand change by hypothesising and observing variables and then account for the patterns, or regularities in the data, by analysing variance. Hence, causality for a positivist is predictable from observing these regularities or patterns of association, for example a randomised control trial is the archetypical research design which seeks to establish causality at the level of effectiveness of the intervention, controls for variability in context, and rejects the idea of unobservable mechanisms.

Realists begin from the position that it is not possible to control variables within the real world, but that it is possible to look for semi-predictable patterns, (known as demi-regularities) that can be abstracted to build mid-range theory. From a realist perspective causation is explanatory, with the concept of 'mechanism' central to that explanation: realists don't predict they explain and those explanations are contingent upon context (Pawson & Tilley 2004). Realists are concerned with understanding change – they ask, 'What is it about the program

that generates change, what change was intended or what was unintended'? It is assumed that interventions will only work in some respects, in particular circumstances, over particular durations, if implemented in particular ways (Pawson & Manzano-Santaella 2012).

3.2.1 Realist Evaluation

In the last decade the number of research publications describing realist evaluations of health service interventions has grown markedly, for example, Byng, Norman and Redfern (2005) Greenhalgh et al. (2009), Marchal, Dedzo and Kegels (2010a), Rycroft-Malone et al. (2010), Rycroft-Malone et al. (2011) and Schierhout et al. (2013). Many of these are realist evaluations of KT interventions in health care settings (Salter & Kothari 2014).

The realist perspective used in this study is consistent with realist evaluation first set out by Ray Pawson and Nick Tilley in their 1997 book *Realistic Evaluation* (Pawson & Tilley 1997). The realist evaluation approach is recognised for its explanatory focus, and the underlying question of 'what works, for whom, how and in what circumstances'?

The realist evaluation research cycle starts with theory and ends with theory. Pawson and Tilley (1997) set out the primary assumptions of realist evaluation: that interventions are an attempt to create change; that a successful change (outcome) will occur if the ideas and opportunities (collectively known as mechanisms), are introduced into the appropriate social and cultural conditions (context).

Mechanisms encompass reasoning (choice making) and or a change to the resource capacity. Mechanisms are generated at one or all system levels - individual, organisational or political. Realists anticipate diverse and alternative generative mechanisms and seek to apply a linked sequence involving the identification of mechanisms, the identification of people and situations and the identification of patterns that lead to multiple outcomes. This capability to explore generative mechanisms at the micro (individual, group), meso (organisational) and macro (society) level is seen as a strength of the approach (Marchal et al. 2012). It is also reasoned that the acknowledgment of multiple generative mechanisms in open systems make it more likely to be able to deal with complexity (Blamey & Mackenzie 2007).

The eclectic philosophical underpinnings of realist evaluation were expanded upon in Pawson's 2013 book the *Science of Evaluation: A Realist Manifesto*.

Pawson (2013, pp. 3-12) outlines the seven 'pillars of wisdom', and makes explicit the influential works drawn from different realist schools of thought, that underpin the principles of realist evaluation:

- Bhaskar's concept of an underlying 'generative mechanism' that influences causal regularities;
- Archer's argument that people make choices conditional on their situation;
- Elster's explanation that program mechanisms may or may not produce a particular outcome – the outcome being dependent on context;
- Merton's reminder that lessons learned from programs can be cumulative and build theory;
- Popper's logic that theory makes sense of observable regularities and theory refinement will be continuous in a self-transforming world;
- Campbell's advice to practice hypothesis led data collection and value the reasoning underlying the propositional inferences drawn from that data; and
- Rossi's iron law of evaluation, that programs work only if implemented in a certain way, with the right people under certain circumstances.

Programs or interventions are considered 'theories incarnate', meaning that the implicit or explicit theory of the program or intervention is the active ingredient generating change (Pawson & Tilley 2004; Westhorp et al. 2011). The aim of theory-driven evaluation is to generalise from the CMO patterns to theoretical propositions in order to build on prior theory. Thus, an explicit ambition of realist evaluation is to improve mid-range theory (Pawson 2013).

Pawson (2013) clusters the key characteristics of program complexity under the acronym VICTORE (Volitions, Implementation, Contexts, Time, Outcomes, Rivalry and Emergence). Volition refers to the nature of actors – they make choices, choices are made by people all along the chain of implementation, with context being an integral component influencing reasoning. Choices occur within a temporal context of competing political philosophies influencing policy, rival programs blurring outcome attribution, and in dynamic organisations all of which affect individuals.

The dynamic nature of the real world requires multiple decisions to be made to design and implement an intervention. Behind every intervention lies a set of assumptions, or theories about how the intervention is expected to obtain outcomes. Making explicit the set of assumptions of how an intervention is meant to work in the CMO configuration allows this beginning program theory to be tested and further developed.

The generative mechanisms, according to realist logic, describe the causal power of reasoning and resources introduced by the intervention that can trigger change. Searching for explanatory mechanisms is the cornerstone of the realist approach. Mechanisms can be identified by asking 'How did people reason, given the resources of the intervention? Mechanisms are seen as causal forces or having causal powers – ' they cause things to happen, something realists have termed, generative causation' (Wong et al. 2013, p. 5). In this study:

mechanisms are the agents of change...they describe how the resources embedded in a program influence the reasoning and ultimately the behaviour of program subjects'. (Pawson 2013, p. 13)

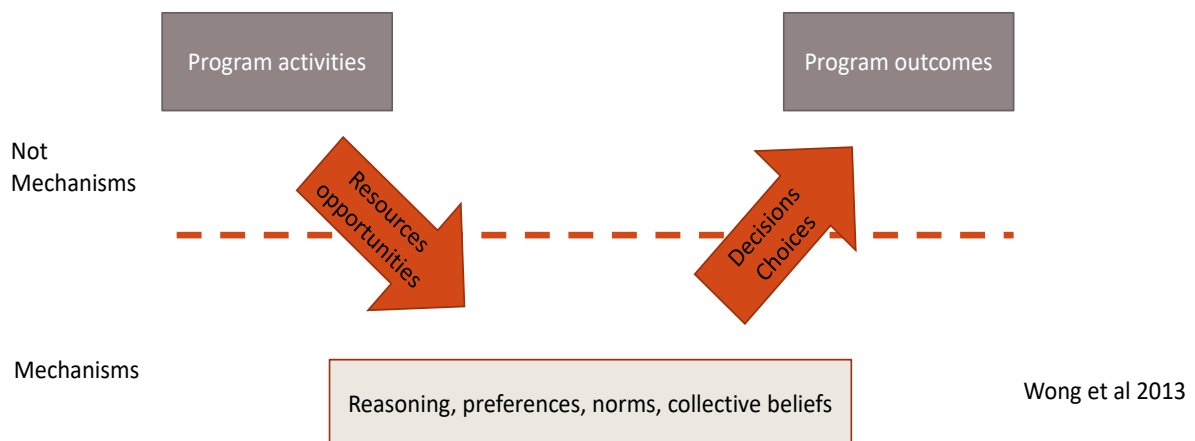
The divergent views on the nature of 'mechanism' remains problematic in the way that the realist approach is applied (Marchal et al. 2012). However, most realists agree that mechanisms are sensitive to change and only become activated in the presence of reasoning and capacity (resources), and that mechanisms are contingent upon context and individual actors. Alternatively, mechanisms have been described as underlying processes, or structures and considered to be hidden. Mechanisms may operate at many stages of the implementation chain, or different mechanisms may operate at different stages of the implementation chain.

Context is central to realist evaluation alongside the 'mechanisms' and 'outcomes' of an intervention (Pawson 2013). Context in a realist approach describes social or cultural conditions that affect implementation of an intervention (in this study, for example, the health professional culture, the organisational support structures, the financing of programs, the characteristics of health service clients, of those who work in geographically isolated Indigenous primary health care services). Context can be identified by asking 'What conditions are needed to trigger mechanisms to generate an outcome? Realists researchers need to establish 'how a particular context acts on a specific program – how it modifies the effectiveness of an intervention' (Wong et al. 2013, p. 9). Context always matters as mechanisms are triggered only in certain contexts (Tilley 2000). The difficulty is discerning

which aspect of context can be linked causally to the change (the outcome) (Astbury & Leeuw 2010).

Outcomes can be understood as anticipated or non-anticipated changes/ behaviours produced or attributed to an intervention program. A realist perspective does not attribute outcomes to the intervention and goes beyond considering that outcomes are influenced by context factors. Realists understand outcomes as generated by the interaction between the context and the reasoning and behaviours - 'the mechanisms'. Interpretation of outcomes is contested. Different outcomes can be found in response to the same intervention in different contexts, or in the same place at a different time. The relationship between the intervention program activities, the context (resources), the reasoning and choices people make, is depicted in Figure 3.1 reproduced from Wong et al. (2013).

Figure 3.1 Relationship Between Resources, Mechanisms, Choice and Outcomes



Unsurprisingly, the philosophical foundations of realist evaluation have been subject to critique (Porter 2015; Porter & O'Halloran 2012). So to have the processes of realist evaluation been critiqued. Porter (2015) outlined the ambiguities, the inconsistencies and the contradictions between the different versions of the key elements of realist evaluation, particularly around the notion of 'mechanisms' and the confusion between whether a phenomenon is a 'mechanism' or 'context'. Or whether a mechanism is a mechanism or a program activity (Astbury & Leeuw 2010). Porter (2015) contends that the ongoing confusion of structure and agency would be resolved by distinguishing human agency from social

mechanisms and suggests that the revised realist evaluation equation should read: contextual mechanisms + program mechanisms + agency = outcome. In addition to the unresolved methodological issues, working with program or implementation theories has been noted to be difficult, with the theories difficult to uncover if not made explicit, and difficult for a naïve researcher to reproduce (ICEBeRG 2006).

In summary, this section has reasoned that a theory-driven evaluation approach is appropriate to explore causality at the deeper explanatory level – that of the interaction between the causal mechanisms and the context in which the outcomes occurs. The starting point for this study was understanding change and why implementing interventions was difficult with variable outcomes being common in the Indigenous primary health care context. Of the two common theory-driven evaluation approaches, realist evaluation and theory of change, realist evaluation offers the 'best fit' for building explanatory understanding with a focus on the context of implementation rather than focusing on the characteristics of the intervention, as is the tendency of a theory of change approach (Rogers 2014).

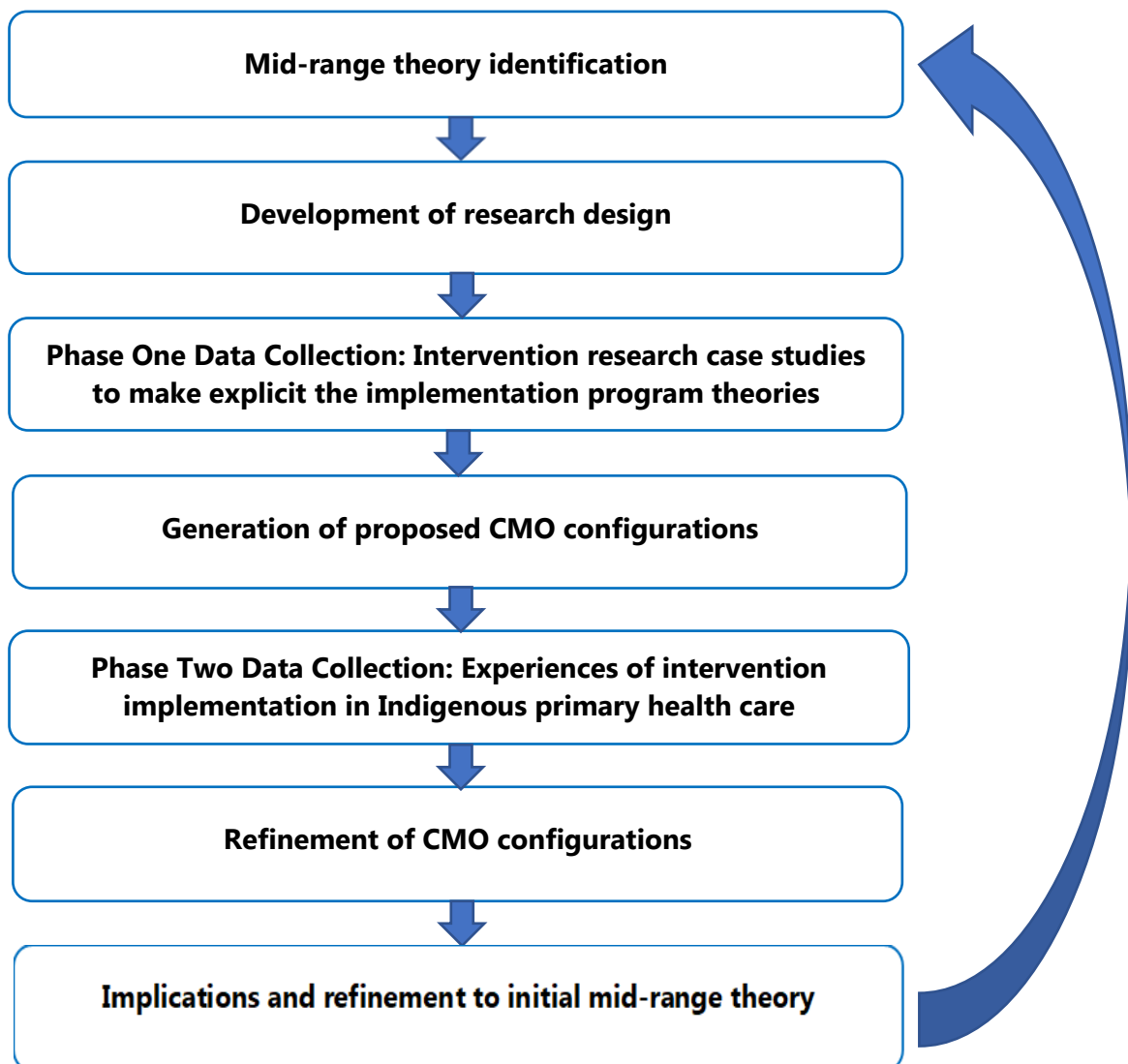
3.2.2 Creating an Evaluation Design

Realist evaluation as set out by Pawson and Tilley (1997) is regarded as design-neutral. The authors did not specify research designs for a realist approach, instead, they argued that realist evaluation studies should follow the standard research cycle - where the theories under exploration are framed as propositions (about how mechanisms are triggered in contexts), then tested by observation and enquiry, considered for generalisation, after which refinements are made to the initial theory. The research design steps for this study follow the principles described by Pawson and Tilley (1997), and were informed by the realist evaluation designs applied by Van Belle et al. (2010), Rycroft-Malone et al. (2011), and Goicolea et al. (2013). The presentation of the realist research cycle in Figure 3.2 was adapted from Salter and Kothari (2014).

The research design cycle sequence set out in Figure 3.2 follows these steps:

1. Identification of potential mid-range theories was undertaken by a literature review and synthesis of the KT in health services, implementation theories, models and frameworks and intervention research in Indigenous primary health care. Focusing the study on the process of implementation in a particular context led to the identification of a leading implementation science mid-range theory, the PARIHS conceptual framework by Kitson et al. (2008) outlined in Chapter 2; Research question and propositions were developed;

Figure 3.2 Sequencing of the Realist Evaluation Research Process



2. Development of the realist research design, the choice to use a qualitative methodology to elicit program theories and gain the perspective of health professionals, development of data collection tools, establishing ethical clearance and engaging with potential Phase One and Phase Two participants;
3. The data collection for the step of making explicit implementation program theories used to guide intervention implementation done by employing a multiple case study approach. This step involved selection of intervention research case studies, collection of data from multiple data sources and identification of the main implementation program theories operating at distinct levels of the health system. Case selection was guided by a theory-driven perspective, as described by Yin (2014), with each case selected for its contribution to potential for program theory building rather than sampling to achieve representativeness;
4. Generating the implementation program theories that operate at the primary health care level into realist propositions, in the form of proposed (CMO) configurations;
5. Data collection of health professionals' (health professionals, health service managers and implementation support people such as CQI facilitators) experiences of implementing interventions in Indigenous primary health care centres;
6. Refinement of the proposed CMO configurations to reflect the real-world implementation contexts by analysis of the health professionals' interviews looking for congruency between how researchers planned for change to happen (embedded in the proposed CMO configurations) with the experiences of health professionals working in Indigenous primary health care;
7. Interpretation of the meaning of the refined CMO configurations for researchers and implementers working within the Indigenous primary health care context. Refinement of the PARIHS conceptual framework from the new understanding of the influence of evidence, context and facilitation and the interplay between these factors in an Indigenous primary health care context.

Methodologically, a qualitative research approach was chosen as an appropriate way to explore the process of implementation as the initial literature review revealed little evidence about KT in the context of interest (Liamputtong 2009). The use of qualitative research

approaches are well established across a number of disciplines as the method of choice for studying the processes of change (Miles & Huberman 1994). However, using a qualitative approach from a realist perspective is a road less trodden. Maxwell (2012) a qualitative researcher, following in the realist footsteps of Miles and Huberman (1994), argues, that a realist perspective is a useful alternative to the constructivist philosophical position that dominates qualitative research or the positivist position of quantitative research. The value of approaching qualitative research from a realist perspective lies within the different interpretation of the real world made possible by adopting a realist understanding of culture, diversity and causation (Maxwell 2012). Culture as a phenomenon is considered real, symbolic and collective, but not necessarily shared by all individuals. Diversity is an important aspect of both social and cultural phenomena and causality. A realist approach 'treats both actors' perspectives and their situations as real phenomena causally interacting with one another' (Maxwell 2012, p. 21). Moreover, a number of studies that have made strong contributions to KT theory development have used a realist qualitative approach (Gagliardi et al. 2011; McCormack et al. 2013; Rycroft-Malone et al. 2012).

The two qualitative data collections served different purposes in the research cycle. The phase one data collection was organised as a multiple case studies of intervention research programs and included interviews with the researchers who planned the implementation of the intervention with the aim of making explicit or reconstructing the implementation program theories. The interviews were supplemented with grey and published literature to re-construct implementation program theories. The design choice to sample multiple case studies from one research organisation provided a singular organisational frame for KT and implementation program theories. Case selection criteria was based on the potential to contribute to implementation program theory building and include diverse research designs and KT strategies. Long-term relationships facilitated access to researchers.

The Phase Two data collection included interviews with health professionals working in three Indigenous primary health care locations capture how they perceived interventions/ changes were implemented. The goal was to achieve a deep exploration of implementation processes and contextual factors in Indigenous primary health care. This study did not seek to establish the effectiveness of interventions, as the theoretical basis of how and why implementation happens and in what circumstances was the primary research goal. Only one of five health

service organisations approached agreed to participate in the study. The health service organisation chose which of the Indigenous primary health care centres that were implementing the case study interventions could be accessed to interview health professionals.

The research sequence is presented diagrammatically as flowing from one step to the next, in practice, the research sequence was an iterative process of navigating back and forward, reflection and theory checking, particularly between steps 3, 4 and 5. Table 3.1. shows the research sequence that was planned, the actual steps and the rationale for change.

Table 3 1: Adaptions to the Planned Research Sequence

Planned Steps	Actual steps	Rationale for Adaptation
1. KT Mid-range theory identification	Identification of PARIHS conceptual framework	Literature review led to the focus on implementation
2. Development of a researchable question and study design; ethical approval	Research designed using a realist research cycle. Purposeful sampling to include Indigenous health professionals	Ethics committee request that an Indigenous response was included as important workforce in IPHC;
3. Phase One data collected from researchers to build explicit implementation program theories	Identified multiple research case studies; Phase One data collection; check construct relevance to PARIHS; Analysis of program theories;	Interview data triangulated with other data sources for case descriptions and to generate program theories;
4. Generation of proposed CMO configurations from implementation program theories	Mechanisms derived from general theories and consensus of supervisors; occurred concurrently with Phase Two data collection;	Insufficient data to identify generative mechanisms directly from program theories;
5. Phase Two Data collection with health professionals	In-depth interviews with staff at IPHC locations; Participant observation at each IPHC Interviews adapted for group interview of Aboriginal Health Practitioners at L2	Negotiation of access to IPHC prolonged; proposed CMO configurations not fully developed; Aboriginal Health Practitioners requested to be interviewed as a group at L2
6. Phase Two data analysis for congruence with proposed CMO configurations	Phase Two data analysis for congruence of CMO configurations by reviewing evidence first by location then cross-location	Analysis done to look at impact of differences in context - workforce stability and leadership factors
7. Refinement of CMO configurations	Refinement of CMO configurations to for congruence with health professionals' experiences;	Further testing of the CMO propositions
8. Implications of findings for mid-range KT theory	Developed typology of mechanisms; implications for PARIHS framework and made recommendations for researchers and health organisations;	Insufficient time and limited access to IPHC locations to test refined mechanisms Focus on the increasing level of abstraction through typology of mechanisms

The realist research processes of developing proposed CMO configurations from implementation program theories and looking for congruence between the proposed underlying generative mechanism and the experiences of health professionals was progressed by the iterative process of navigating back and forward, reflection and theory checking.

3.3 Making Explicit the Implementation Program Theories

A multiple case study approach provided the analytical framework for unpacking the implementation logic and making explicit the implementation program theories for the three research programs. The case study approach defined by Yin (2014) is oriented toward a realist perspective as:

an empirical enquiry that investigates the contemporary phenomenon in depth and within its real-world context, especially when the boundaries between phenomenon, and context may not be clearly evident' (Yin (2014, p. 16).

The purpose for applying a case study approach within the research design was to illustrate implementation in a real-world context and to facilitate the process of identifying the program implementation theories from which to develop the realist propositions (the CMO configurations). The study design logic of including multiple cases studies was to ensure the inclusion of a range of research designs and KT strategies from the perspective of one organisational framework. The 'unit of analysis' for the 'case' was set at the level of an intervention research program. The application of case study in this study has been guided by the approach of Yin (2014) where a 'case' does not represent a 'sample' research program, rather, each case was included because of their potential to provide theoretical perspectives on implementing interventions. Applying a case study approach within a realist research cycle has implications for case selection. The selection of both the research organisation and research programs within the organisation were on the basis of their ability to provide meaningful data (Emmel 2013). A case study approach enabled discrete descriptions of the intervention, implementation chains and identification of outcomes and contextual conditions at various levels of the health care system.

3.3.1 Case Selection

Research programs that were approached to be part of the study were selected from an 'information-rich' organisational environment where intervention research projects were

focused on making change to improve Indigenous primary health care and KT had a high strategic importance (Liamputtong 2009). Suitability for case study inclusion was based upon the following criteria of a) research program developed by researcher employed by the research organisation; b) the research program implemented interventions in an Indigenous primary health care context; c) identifiable implementation strategies; d) consent of the chief investigator; e) facilitated implementation processes; f) implementation involved health professionals; and, g) multiple implementation sites in the Northern Territory.

Of the six possible 'cases' identified by the criteria, three consented to be included in this study. Those that declined gave reasons of timing with researchers collecting data, not yet at the implementation stage, and poor availability schedule of the researchers involved.

The inclusion of multiple cases added to the complexity of data collection and analysis. However, the multiple cases had the added benefit of diverse characteristics (see Table 3.2) of different interventions, study designs and KT strategies. Thus, the inclusion of multiple cases led to a diversity of implementation program theories. The multiple cases also extended the information on contextual factors thought to constrain or enable implementation and how that impacts upon program theories. The replication logic of multiple cases implementing interventions into Indigenous primary health care increased the likelihood of exemplifying important contextual elements (Miles & Huberman 1994).

Table 3.2: Characteristics of Research Program Case Studies

Case	Intervention type	KT Strategies	Facilitated processes	Implementation sites
Case 1	Continuous Quality Improvement for PHC core programs	Audit and feedback; education sessions for staff	Facilitated feedback sessions	Numerous national sites; All NT IPHC were implementing CQI program
Case 2	Clinical Trial of new drug regime	Flipcharts; talking story boards	1:1 education for clients and staff	Limited NT IPHC sites
Case 3	Clinical assessment tools Motivational Interviewing for mental health	Tailored Multimedia; visual	Education for clinicians Aboriginal capacity development	Centralised training available to all NT IPHC staff

3.3.2 Phase One Data Collection

The data sources collected for Phase One are set out in Table 3.3. The primary data sources included a set of in-depth interviews with researcher team members, document analysis of research documents, publications and unpublished theses generated by each case. Qualitative interviewing is the most common model of data collection in realist evaluations (Manzano 2016). Secondary data collected at the level of the research organisation included: strategic plans, conferences, colloquium and seminar presentations and participant observation of organisational meetings. This information contributed to understanding the organisational influences on the development of the research program, beliefs, and understandings around what and how KT happens. It also enabled an exploration of whether the research program ideas on implementation converged at organisational level. The aim was to build a rich description of the case study intervention, KT strategies and the implementation chain from which to understand the interview narratives and be able to synthesise the implementation program theories.

Table 3.3: Phase One Data Source and Rationale

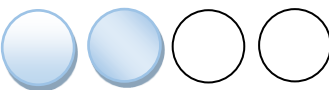
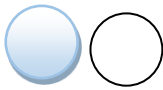



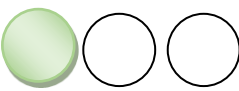
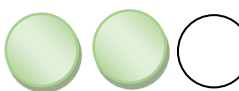
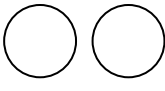
Data Source	Rationale
Interviews	Explanations of reasoning on how implementation is meant to happen, how it did happen and how KT strategies were used to adapt to context, what outcomes were sought; key data for realist analysis for implementation program theories
Research documents	Research design; intended KT strategies; intended outcomes
Published papers and theses	Case study descriptions of interventions, KT strategies, outcomes attributed to the intervention research
Organisational strategic documents	Strategic context and organisational understanding of KT; importance of KT
Conferences, colloquiums, seminars	Strategic context and organisational understanding of KT; importance of KT
Participant observation of meetings and training sessions	Case study descriptions of interventions, KT strategies, outcomes attributed to the intervention research; responsiveness of research program to adapt or change strategies

The aim of the Phase One data collection was to make explicit the reasoning and the underlying ‘theories’ that influenced the planning and implementation strategies for each

intervention research program. Therefore, a purposive sampling strategy was used to identify the case studies and a those chosen for interview were the chief investigators and researchers who were most likely to have designed the intervention and had oversight of implementation decisions. Choosing which cases and who to interview were based on the rationale of ability to contribute meaningful information from which to build implementation program theories. The decision of whom to target was also informed from a position of knowledge of the programs as an 'insider' in the research organisation and long-term exposure to the real world of Indigenous primary health care centres.

The protocol designed for data collection was to first seek the approval of the chief investigator for the research program to be a case study, then to interview the senior chief investigator, who subsequently identified research team members involved in designing and responding to day to day implementation issues. In turn, research team members also suggested others who had been involved in the planning and undertaking of the implementation. Figure 3.3 shows the research team structure for the case studies in 2012. The roles of people who consented to be interviewed are shown in colour. The blank circles represent research team members who were not interviewed. The roles are shown for this research program and designated as chief investigators, research managers and research assistants.

Figure 3.3 Researchers Interviewed by Case Study

Research Team	Case Study 1	Case Study 2	Case Study 3
Chief Investigators			
Research Managers			
Research Assistants			

Each research team member was emailed to seek their willingness to participate in an interview, and to nominate a time and location for the interview. One hour was allocated for each interview. The interviews were recorded and then transcribed by the researcher.

Case Study 1 included interviews with the senior chief investigator, a further chief investigator, a workforce educator, and the manager of the knowledge transfer entity. The chief investigators had been involved in the conception, design and implementation of all three phases of the research program. The second chief investigator and workforce educator had program development roles in a participating health service organisation. The remaining two researchers had been involved in second and third iteration of the research program, one from the research implementation arm and one from an organisational implementation aspect.

For Case Study 2, four research team members were interviewed, the chief investigator, the research manager, and two research nurses. Two of the four interviewees had worked on the research program since commencement. At the time of the interviews the program of work was in its sixth year. All interviewees had been involved in supporting the implementation of the intervention by travelling intermittently to Indigenous primary health care centres in Aboriginal communities.

Case Study 3 involved only a single participant, the chief investigator. This research program had commenced at the same time as the other two Cases Studies and at the time of data collection was seeking further funding. The characteristics of the nine researchers interviewed by gender, profession, and years of experience in Indigenous primary health care are set out in Table 3.4.

Table 3 4: Characteristics of Researchers by Case Study

Case Study	Number	Gender	Profession	Years IPHC
Case Study 1	4	M=1 F=3	Doctor=2 Nurse =2	>20 >20
Case Study 2	4	F=4	Doctor= 1 Nurse=3	>20 >10
Case Study 3	1	F= 1	Doctor=1	>20
Total	9	M=1 F=8	Doctor=4 Nurse =5	

In summary, four chief investigators, two research managers and three research assistants drawn from three research programs provided lengthy and detailed interviews. For Case Study 1 and 2 the choice not to interview additional researchers were made for both pragmatic and

theoretical reasons. Case Study 1 additional team members were difficult to access as located in another state, had been involved in the program for a shorter period and were focusing on providing CQI training for organisations rather than working at the health centre level. For both Case Study 2 and 3, the additional team members were unavailable due to residing overseas, resignation or on extended leave.

The purpose for the Phase One interviews was to make explicit the implementation program theory. Importantly, the data contributed by those who had designed the interventions, triangulated with the additional data sources provided a rich and deep source of information from which to describe the interventions and develop the implementation program theories.

3.3.3 Applying Realist Principles to Interviewing Researchers

The aim of the Phase One interviews was to uncover the researchers' implementation program theory and understand how that influenced the steps they took to implement the intervention. When the researcher's implementation program theory is the purpose for the interview Pawson and Tilley (1997) recommend adopting a particular style of interviewing to assist interviewees in talking about their underlying theories of change. Advocates of the methodology suggest the interviewer should include explanatory passages and actively 'teach' the participant about the concept under investigation, as well as adding their own perceptions to check concepts and refine ideas (Byng, Norman & Redfern 2005; Pawson & Tilley 1997).

In this study, advice was sought, prior to and during the data collection, from a researcher experienced in using realist evaluation methodology, (who later became a member of the supervision panel), on how to ask questions so that the participant was more likely to be explicit about their ideas or theory of how change happens. The interviews were semi-structured, and the questions were adapted for relevance to the interviewee and aimed to build on ideas put forward by other interviewees. The interview style was intended to take the form of a shared dialogue, insider-to-insider building layers of information about the research, implementing the intervention in the Indigenous primary health care context and what happened. In reality, as a novice realist researcher, this interview style was more challenging to maintain with some people than with others. The Phase One interviewing schedule was designed to illicit both descriptive stories and program theories. The descriptive questions

took the form of *'How did the implementation/ knowledge translation aspect of the research program work, for whom, what worked best and what didn't?'* The theoretical exploration built upon this with questions of *'Why?'*, and *'What would they have done differently? What were you thinking at the time would work?'*, *'Are there places where this seemed to work – why do you think it did?'* and *'There are lots of different ideas how did this all fit together for you?'* Attention was given to exploring the implementation program aspects of the intervention, the contextualisation of KT tools and how the implementation processes had responded to the Indigenous primary health care context and the diversity encountered in the practice settings. To illicit how context was considered, researchers were asked *'What is it about Indigenous primary health care organisations that seem to matter most in the ability of organisations to implement change?'* KT tools were a feature of the implementation process in all three case studies. Researchers were asked *'What KT tools did you develop?'* *'How did you shape/design and continue to adapt messages for the contexts?'* and *'How did you introduce/share the tools with health professionals?'* In accordance with the request of the ethics Aboriginal sub-committee the question *'What part did Aboriginal people or the Aboriginal community play in implementing the intervention?'* was included.

The recorded Phase One interviews were transcribed verbatim. A preliminary analysis was done against the core elements of the conceptual framework: evidence, context and facilitation. This process of deductive coding was designed to ascertain the construct relevance/ feasibility of the PARIHS conceptual framework to this study. The interviews were subsequently re-analysed and re-coded using a realist perspective to make explicit how the implementation was happening, contextual factors that supported and constrained and the intended outcomes at each health system level.

This aim of this step in the study was to elicit the implementation program theories to identify the explicit or tacit assumptions of the researchers on how they expect the intervention to happen. The primary source of data for this step was qualitative with in-depth interviews with researchers. Triangulating the interview data with published and unpublished materials related to the case study provided additional information. The choice to interview knowledgeable researchers who provided detailed information meant that there was no need to re-interview the same participants to consolidate the program theories.

3.4 Generating CMO Configurations

What makes realist design distinctive is its emphasis on 'content rather than form' (Pawson & Tilley 1997, p. 84). A key explanatory element of realist evaluation is the uncovering of the generative mechanism in relation to the implementation program theories and making them explicit in the realist form of a proposition, the CMO configurations. In this study, the proposed CMO configurations were constructed by further synthesis of the implementation program theories with general social science theories. The analysis of KT within case studies generated information at various levels of the health system. To respond to the research question and research objectives the scope for generating the proposed CMO configurations was narrowed to focus on only the health centre level. A realist assumption would be that either the same or different generative mechanisms were likely to be operating at other levels of the health system, but those were not explored in this study.

The CMO configuration is the tool realists used to analyse data. The CMO configurations take the explanations given by researchers to a more abstract level by introducing the theoretical concept of a mechanism. The synthesis of CMO configurations was based upon the principles of realist evaluation set out by Pawson and Tilley (1997) and a process set out by Westhorp (2012). The first step in this analysis is to identify both positive and negative outcomes that have been generated or attributed to the research intervention/ program (inductive coding). Once perceived outcomes or changes are identified, the process is to look for descriptions of reasoning or resources (indicating possible generative mechanisms) and associated characteristics of the context. Identification of Outcomes, Mechanisms and Context in the interview transcripts was assisted by applying the descriptors in the following table which is based on a presentation by Dr Gill Westhorp (2012)- see Table 3.5.

Nvivo files were used to structure electronic storage of interview data and initial analysis of program theory. The plan was to be able to use Nvivo as a tool for CMO configuration analysis, but the architecture of this software was found to be less useful for linking the triads of context, mechanism and outcome.

Table 3.5: Descriptors for Recognising Context, Mechanisms and Outcomes

Outcomes	Mention of results/outcomes Change that is intended/ not intended by intervention Changes attributed to a program
Mechanisms	Resources = material, financial social, that are new to the participant or enabled/ not previously available Reasoning= attitudes, values, beliefs, choice to respond differently Need to contribute to outcome Operate at different levels – look for different theories at different levels
Context	Context matters and may be described in what or how it affects mechanisms Influences reasoning (who responds and how) and resources Participants’ descriptions of factors that affected their decision-making Factors which influence who responds and who does not
Interactions	Patterns of claims by sub-groups Relationship to substantive and program theory Linguistic joiners or referring back

The information from researchers was sufficient to analyse implementation program theories but insufficient to predict the generative mechanisms of the proposed CMO configurations. The synthesis of generative mechanism in the CMO configurations required further information to be drawn from general theoretical principles. Realist evaluation literature of how the core strategies of the case studies such as ‘change agents’ and ‘audit and feedback’ had been theorised to work in other studies were also consulted. Extensive discussion with the study supervisors led to agreement on the predicted mechanisms that were the best fit with the data and implementation program theory. As a result, a single set of proposed CMO configurations was synthesised.

The realist research design was to refine the proposed CMO configurations by checking for alternative mechanisms, contextual patterns and unintended outcomes from stakeholders who have different experiences and perspectives of the same phenomena (Manzano 2016). The Phase Two data collection gathered this evidence.

3.5 Collecting the Implementation Experiences of Health Professionals

This phase of the research was designed to gather the experiences of implementing change in Indigenous primary health care from health professionals who work in the health facilities. The aim of this phase was to understand from a knowledge-user perspective what influences the success (or not) of implementation. The data collection for Phase Two included interviews with a purposive sample of resident and visiting 'health professionals' and non-participant observation of Indigenous primary health care centres. The term 'health professional' is inclusive of people who are employed as primary health care managers, Remote Area Nurses (RANs), Aboriginal and Torres Strait Islander Health Practitioners (ATSIHPs), Medical Practitioners and various allied health professionals.

3.5.1 Phase Two Data Collection

The Phase Two data collection at the three sites included a broad locational assessment, analysis of local demographic characteristics and staffing profiles, documentation of the historical context of health care at the location, in-depth and (when requested) group interviews with health professionals (practitioners and managers), and non-participant observations of the health facilities. The interviews required extensive negotiation to obtain permission to access the locations - first with the health organisations, and then with individual health centre managers. Scheduling of visits was timed to either avoid or coincide with other visiting health professionals, the availability of accommodation and the required presence of the health centre manager. The Phase Two data collection strategy is summarised in Table 3.6.

Table 3.6: Phase Two Data Source and Rationale

P2 Data Sources	Rationale
Non-participant observation at Indigenous primary health care clinical locations	Rapid assessment of context, including resources, culture, leadership and client interface with health facility
In-depth interviews with resident and visiting support health professionals to Indigenous primary health care locations	Understand what influences implementation how it happens, and how KT strategies were used to adapt to context, what outcomes were seen

3.5.2 Selection of Primary Health Care Sites

The health organisation selected the primary health care sites for Phase Two of the study. Implementation sites for the case studies were identified during the analysis of research documentation. All Indigenous primary health care centres run by the health organisation were implementing Case Study 1, the CQI intervention. Case Study 2 had multiple implementation sites where eligible children could participate in the clinical trial, including those selected by the health organisation, Case Study 3 dissemination strategy was indirect with health professionals from all sites selected able to access training and tools at regional level.

Five organisations (covering 14 possible locations) met the inclusion criterion of having actively implemented an intervention for least two of the research projects in the two years prior to the scheduled timeframe for data collection. The organisations included one government and four non-government organisations. Three non-government organisations were formally approached to participate in the study, with letters sent to their respective boards of management. Two non-government organisations declined to participate, stating that they had a lack of capacity to host and manage researchers in the health centres. Nevertheless, they were interested in the outcomes of the study. The third non-government organisation was excluded as the costs of accessing its very remote locations exceeded the resources available. A fourth non-government organisation was also formally approached. However, no response was received to the letter to the board, and telephone follow up was unsuccessful due to organisational change, new leadership and transition to a new management structure.

The government organisation requested a comprehensive formal written application be submitted to the remote health quality manager. This was prepared, organisational consent was given for participation in the study. The branch manager nominated three Indigenous primary health care centres located in remote Northern Territory Aboriginal communities. The government organisation consented to a de-identified rapid situational assessment of the organisational context, a brief period of non-participant observation, and in-depth interviews with health professionals who provided individual consent. The organisational process to negotiate access to the primary health care centres was through a pathway of regional to area managers and then to local health centre manager. Seeking access to speak to health professionals at the primary health care centre was determined through a two-step process. The first involved emailing the project information letter to the area manager with information

on the organisational approval. Once approved, engagement could then commence with the local manager of the health facilities. In addition to the challenges presented by negotiating an acceptable timeframe to visit the location, the health professional consenting and the clinical load allowing time for the interview there are the requirements of accessing an Aboriginal community, availability of accommodation and transport.

In line with realist evaluation principles, the plan was to purposefully sample from a mix of professional backgrounds and roles, including frontline care and visiting support workers. People working in the health facility at the time of the field work were required to consent individually to be interviewed. The plan was to interview front-line health professionals at each location to develop an understanding of different perspectives and the variations between locations was achieved, however sampling was constrained by the reality of who was available to be interviewed and depth of the interview varied within and between locations (Manzano 2016). Adjustments were made to who was interviewed as low stakeholder awareness of the interventions among short-term workers at L2 resulted in targeting interviewees who had experienced either an audit or feedback session at L3. At L2 the Aboriginal and Torres Strait Islander Health Practitioners asked that they be interviewed as a group.

3.5.3 Applying Realist Principles to Interviewing Health Professionals

The Phase Two interviews concentrated on identifying the health professionals' perspectives about how implementation happens, how outcomes are perceived, and what influences change in the Indigenous primary health care context. As the synthesis of the proposed CMO configurations was incomplete when the opportunity to interview health care professionals occurred, health professionals, were not presented with the CMO configurations as a completed sequence.

As in Phase One, assistance was provided on how to ask realist questions to elicit the interviewees' story of implementation processes and experiences, and how to prompt to refine ideas. The questions sought to obtain information about the processes of implementation activities, the proposed contextual factors, possible reasoning processes and outcomes without promoting confirmation bias. In this way evidence found in Phase One was the starting point for seeking evidence from health professionals about the relevance and further refinement.

The interview took the format of introductory questions to elicit a story of if, and how the health professional had experienced the implementation of the case study interventions, for example, *'When you think about your experiences implementing change in this workplace what do you recall? Talk me through how you think it was all meant to work?'* These were followed by questions about context *'What are the things about this place that affect how you can change practice?'* Possible important context elements from Phase One data and the PARIHS framework were proposed, for example *'How does leadership affect the process of implementation?'* Similarly, proposed resourcing or facilitation factors were put forward. Intended or unintended outcomes were sought by asking *'What has changed since the (CQI) program has commenced?'* This style of realist interviewing aims is also known as 'assisted sense making'. The interviews were iterative where possible by interviewing to clarify comments provided by others both at the site and from previous sites as well as uncover negative examples.

The narratives were prepared for content analysis by systematically reducing the volume of raw data and extracting descriptive content and the units of interview narrative that included a possible 'context', 'mechanistic' or 'outcome' explanation using Nvivo software.

3.6 Refining CMO Configurations

The methodology for organising, analysing, and using collected data to refine implementation program theories is neither well described, nor standardised in the realist evaluation literature. The analysis of the proposed CMO configurations generated from the researcher perspective against what health professionals said, involved searching for congruence (or not) with the proposed CMO configurations. Congruence reflects the degree of agreement between the researchers' envisioned implementation and the health professionals' account of what happened in the practice context. From this analysis, the implementation program theory CMO configuration is either supported, rejected, or refined. Comparative analysis between locations was undertaken for each of the proposed CMO configurations.

3.7 Managing Research Validity

Validity for realists is not thought of as a property of the research design or methodology but inferred from how well the understandings drawn from the data describe the phenomena relative to context.

Maxwell (2012) described a realist approach to validity as:

pertain(ing) to the accounts or conclusions reached by using a particular method in a particular context for a particular purpose, not to the method itself (Maxwell 2012, p. 130; 2017)

The validity typology for realist qualitative studies presented by Maxwell (2012) provides a framework for considering validity. The typology includes descriptive validity, interpretive validity, theoretical validity, and generalisability. The first three of these relate directly to how accurately the data is presented (descriptive validity), how well the participants meaning of the phenomena is captured (interpretive validity) and how well the concepts theorised are supported by the data in the context of the phenomena (theoretical validity).

As this study relied entirely upon qualitative methods, validity was dependent upon how credibly the qualitative data was collected, presented, and the connection between the data and the analytic steps of re-constructing program theory, CMO configuration development and checking for congruence from the perspective of health professionals. The dual identity of researcher and a health professional familiar with the remote practice setting, provided a level of credibility and interest for health professionals to engage with the research.

Steps taken to address descriptive validity were the selection of cases studies as exemplars of KT and intervention implementation, including the perspective of the primary researchers who designed the case studies, interviewing to illicit rich descriptive data and program theory, recording of interviews, transcribing, and presenting the data verbatim. A high degree of familiarity with the research organisation and health service organisation facilitated access to both researchers and field sites. However, high workforce turnover in Indigenous primary health care presented a threat to descriptive validity for the Phase Two data collection. This was managed by excluding new arrivals that had no prior experience of working in the context and had no exposure to any intervention activities.

By collecting data from health professionals on the same phenomena, KT and implementation were able to be considered from different perspectives, thus increasing interpretive validity. In the Phase Two interviews, sequences or implementation or contextual factors mentioned in prior interviews were checked for importance or relevance in subsequent interviews for interpretive validity. To further address interpretive validity, data was presented contextualised within case studies (for Phase One) and contextualised from the perspective of location (in

Phase Two). The inclusion of Indigenous perspectives in the data collection was both a risk to interpretive validity (of misrepresenting meaning) and strength of the study (adding additional perspectives).

Generalisability refers to:

the extent to which one can extend the account given of a particular situation or population to other persons, times, or settings than those directly studied (Maxwell 2012, p. 141).

The question of generalisability of this study arises due to disproportion between the widely implemented case studies (nationally for Case Study 1) and the purposeful sample for the Phase Two data collection included only three locations. Generalisability can be viewed from an internal perspective, meaning to what extent the findings are relevant for others *within* the setting or organisation that were not directly observed, or from an *external* perspective, meaning whether findings are generalisable to other settings or organisations (Maxwell 2012). The claim for internal generalisability to remote Indigenous primary health care centres run by the same health service is supported by the organisation-wide factors (overarching policy support, organisational structures, shared clinical systems, same personnel supporting the implementation, workforce development) and the broad and long-term experience of the researcher of this organisational setting. However, claim for external generalisation cannot be supported in the same way. Instead, external generalisation is argued through the concept of 'analytical generalisation', where the findings expand theoretical propositions (Yin 2014). This occurs in two ways, firstly by advancing the understanding of the key elements of the PARIHS conceptual framework, evidence, facilitation, and context from an Indigenous primary health care perspective and secondly by exploring the concept of generative mechanisms within the theoretical framework.

Mechanisms are not exclusive to a setting and given the right context could lead to similar outcomes. A realist assumption is that under similar conditions, with interventions implemented in a similar way, it is likely that the mechanism would trigger similar outcomes. Thus, a CMO configuration has 'portability' or 'transferability' (Punton, Vogel & Lloyd 2016). However, when conditions differ, further testing of how people respond to the resources or ideas introduced by the intervention need to happen to test the CMO configuration. This would lead to further refinement of the CMO configuration and applicability to the new

context. Conversely, an intervention is also likely to trigger different mechanisms in a different context that lead to different outcomes.

An additional concept for judging the quality of this realist qualitative study is reflexivity. This means acknowledging the researcher's perspective and biases during the data collection and interpretation process as well as the influence of a philosophical perspective on the choice of actual research practices (Miles & Huberman 1994). The notion of the position of the researcher in a realist paradigm has been called 'value-aware' (Sobh & Perry 2006). That the actions occur within social and historical contexts, 'deeply influences how they are interpreted by both insiders and the researcher as the outsider' (Miles & Huberman 1994, p. 10).

In considering reflexivity, the research was conducted with both 'insider' and 'outsider' perspectives - as an employee of the research organisation and as a colleague of those who were observed and interviewed. The insider perspective in research draws the criticism of a lack of objectivity in relation to the data collected, and role confusion for participants because of the duality of employment and research roles (Brannick & Coghlan 2007). In this study, the 'insider' position provided sufficient positional power to negotiate the study without producing role confusion. Undoubtedly, the main advantage of an insider approach was the enhanced access to individuals such as chief investigators. As a research organisation, the secondary role of 'higher degree research student' was well understood, and in general the learning of research skills was well supported. In contrast, the Phase Two data collection at remote health facilities was conducted as an 'outsider'. This presented challenges of access to Aboriginal communities, to health facilities and to health professionals. However, being generally familiar with remote Aboriginal communities and primary health care facilities, as well as having the dual identity of researcher and a health professional, provided a level of credibility and interest in engaging with the research.

Overall, this section has argued that validity should be approached from a realist perspective. The steps taken to address descriptive validity, interpretive validity, and theoretical validity have been described. This realist perspective focuses on the credibility of the interpretation and the conclusions drawn from the study (Maxwell 2012). This study claims both internal generalisability to other remote primary health care centres from the same organisation and analytical generalisability through the PARIHS conceptual framework and generative mechanisms.

3.8 Conducting Ethical Research

This chapter has outlined a research design which is underpinned by the research philosophy of realism. There are two realist principles that shaped the research practice of this study, the first is that context is inextricably linked to mechanism and outcome in the CMO configuration, and secondly, that stakeholders have their own ideas about program implementation. These principles compel a researcher using a realist approach to engage and involve stakeholders who are part of program implementation in the evaluation. Stakeholders have tacit knowledge of how the intervention triggers responses and have first-hand experience of the context and outcomes. The key stakeholder for this research is the Indigenous primary health care workforce which includes Aboriginal and Torres Strait Islander people. This had significant implications for the design and how that was implemented by a non-Indigenous researcher.

This study acknowledged and respected the NHMRC *Road Map 11* guidelines for ethical conduct in Indigenous health research. Researching any topic that will have potential impact upon or involves Aboriginal and Torres Strait Islander people requires the researcher to not only respond to the ethical guidelines but also align research practice with the values of reciprocity, respect, equity, responsibility, survival and protection and spirit and integrity.

Reciprocity – The potential benefits of this study are an increase the likelihood of successful implementation of changes and improve health care. It was important to find out what matters for the Aboriginal and Torres Strait Islander workforce as they have relational accountability to Aboriginal communities who will directly benefit from improvements to implementation practices.

Respect – Phase Two of this research design required a relationship of trust and cooperation with participating Indigenous primary health care organisations. The organisational governance structure had the right to agree or decline to participate in the study. Permission was obtained from the organisation and consent from each individual participant prior to any data collection. The individual and collective contribution of Indigenous people is acknowledged in the way the data has been presented.

Equality -The knowledge and wisdom of Aboriginal and Torres Strait Islander people in the health workforce a valuable resource. In practice, this meant enabling Indigenous views and voices in the research.

Responsibility - Data collection timeframes were designed to fit in with organisational timeframes. The planning of visits to the Indigenous primary health care centres aimed to minimise burden and ensure clarity about participating in the project. This involved the logistic reality of conducting research in Indigenous primary health care centres in Aboriginal communities located on Aboriginal land. The researcher was able to draw upon prior experiences and independent resources to overcome the access barriers of transport and accommodation to reduce burden on the Indigenous primary health care centres.

Survival and Protection – The researcher enquired about past experiences of respondents and communities with research, respected their views and acknowledged the potential for reluctance to engage with academic researchers. This was spoken about prior to seeking consent and that involvement with this research was voluntary. The researcher had credibility through a long-term connection to the Aboriginal and Torres Strait Islander Health Practitioner workforce, had training and experience in the practice of cultural safety and respectful engagement which assisted in building trust with the Indigenous respondents.

Spirit and Integrity – Culture is a fundamental part of the contextual dimension and the experiences of the Aboriginal and Torres Strait Islander health workforce and community are valued and respected, particularly as collectively they have the more experience of implementing programs and of interacting with researchers than other health professionals.

Research procedures that were adopted for this study included: a) ethical review by an Aboriginal and Torres Strait Islander ethics sub-committee; b) seeking engagement formally with the board and respecting the Aboriginal Community Controlled Health Organisations right to say no to participate in the research; c) respecting cultural protocol and formally seeking permission to be on Aboriginal Land for the Phase Two data collections; d) negotiating and adapting the interview process to ensure cultural safety; e) identifying the Aboriginal voice and perspective in data analysis and presentation; f) and concept checking with Aboriginal researchers familiar with the context of Indigenous primary health care centres.

3.9 Summary

Realist evaluation is increasingly being used for health services research to evaluate interventions. Underpinned by the philosophy of realism it has the attributes of working at a theoretical level of abstraction expressed in the CMO configurations. CMO configurations are

considered generalisable and portable with similar intervention and similar contexts but require a process of refinement (Punton, Vogel & Lloyd 2016). This chapter has outlined a study design based on the realist research cycle. This sequenced begins by establishing a mid-range theoretical framework (PARIHS), then identifies implementation program theories that researchers are using to implement interventions in Indigenous primary health care settings. The implementation program theories along with generative mechanisms drawn from general theories of change are synthesised into proposed CMO configurations. Refinement of the CMO configurations was through a process of checking the CMO configuration for congruence with the experiences of health professionals working in Indigenous primary health care.

The study gained ethical approval for the realist design, including from an Aboriginal sub-committee. The selection of case studies for generating the implementation program theories was purposeful. Selected research programs were actively engaged in KT activities. The Phase Two data collection locations were nominated by the health service that agreed to participate in the study, health professionals working at the site (both resident and non-resident) were individually consented to participate in the study. Phase Two data collection focused on how change happened and specific context issues that impact upon those changes being successful or not. The qualitative data is reported at the individual level (coded) as it is assumed that interventions will be experienced differently by different people, different roles and within different contextual conditions.

The resultant findings from a realist evaluation aim to make explicit the health professionals reasoning and response to an intervention, within the context of Indigenous primary health care. Findings will inform the PARIHS conceptual framework.

Chapter 4: Reasoning of Researchers

4.1 Introduction

This realist evaluation employed a case study approach to explore the researcher's logic and reasoning in designing the intervention implementation, and to retrospectively generate implementation program theories. In this chapter, each case study is introduced with a rich description of the research program, including the nature of the interventions, the knowledge strategies employed, the implementation chain and the researcher reported constraining and enabling factors, and intended implementation outcomes. An analysis of the researcher interview narratives follows this, to make explicit the underlying implementation program theories for the primary health care centre level. These implementation program theories are then assembled as realist propositions in CMO configurations. For each implementation program theory, a CMO configuration is proposed.

The case studies represent different research approaches to intervention research. Each of the research designs are known for being responsive to context: a quality improvement study, a clinical trial with focus on effectiveness and implementation, and a study developed through participatory action and tested by clinical trial design (Peters et al. 2013). For this thesis, the research programs were re-titled to reflect the intervention design, and differentiate this study as implementation research, not an evaluation of the health intervention. Case Study 1, 'Changing Practice through Quality Improvement' is a complex continuous quality improvement program with multiple strategies, funded through sequential large grants, and involving multiple sites spread nationally, with multiple team members and stakeholders. Case Study 2, the 'Effective Clinical Management of Childhood Lung Diseases' describes a clinical trial of a new medication regime for the childhood lung disease bronchiectasis, with implementation fidelity reliant on implementers maintaining an increase in the frequency of follow-up visits. Case Study 3, 'Integrating Indigenous Mental Health Care', sought to increase the use of culturally-tailored motivational interviewing and brief psychotherapy intervention through integrating Indigenous concepts into clinical tools that had been developed through participatory action and facilitated transfer.

4.2 Case Study 1: Changing Practice through Quality Improvement

4.2.1 Overview of Research Program

At the time the interviews took place, the research program for Case Study 1 had been operating for more than a decade to implement quality improvement cycles in Indigenous primary health care centres. The research program can be described in three phases which align to funding agreements and correspond to the trial of concept, refinement of tools and scaling up of the program to other Indigenous primary health care services. The research program has subsequently progressed into a fourth phase; however, this phase has been excluded as it occurred after data collection for this study. During the three phases examined in this study, the research program had evolved from one hub with 12 participating Indigenous primary health care centres in the NT in the first phase (2002-2007), to five hubs coordinating CQI activity in 69 Indigenous primary health care centres across four states, in the second phase (2006-2009). The third phase involved 165 Indigenous primary health care services nationally and a stand-alone knowledge transfer and training entity (2010-2014).

The first research phase: CQI tool development and adaptation (2002-2007)

The initial research phase aimed to 'investigate the nature, use and impact of organisational systems (and activities) in and around remote Health Centres in relation to the prevention, early detection and management of chronic disease, and introduce a quality improvement process' (Baillie et al. 2007a p 5). Research objectives included working with primary health care service providers to identify the critical success factors and barriers affecting the implementation of systems interventions. The research program was conceived and designed following the development of the first chronic disease strategy by the NT Government, and this agency became a significant partner in the NT research collaboration alongside the Cooperative Research Centre for Aboriginal Health (CRAH), which included two Aboriginal community controlled health services as partners. This first phase of the quality improvement research program was funded in 2001, from the Australian Health Ministers Advisory Committee's States and Commonwealth Research Issues Forum (SCRIF).

Twelve community health centres across the Top End of the NT consented to participate as implementation sites in the study through a formal participation agreement. The study was

designed to have annual cycles of a CQI sequence of audit, feedback, planning and implementing system changes. This sequence became the cornerstone of research program activity in this and subsequent phases. An action research approach was used in the development of the audit tools, the system assessment interventions and action plans, with these activities being led by research team members.

The second research phase: scaling up CQI and investigating factors of uptake and sustainability (2006-2009)

The second phase was based on the same CQI sequence of activities and extended both the support and footprint of Indigenous primary health care centres involved. The research aim shifted from evaluating the impact of CQI to examining the factors that influenced uptake and sustainability of CQI using the diffusion of innovation framework (Bailie et al. 2010). The research focus remained on assessing the impact of CQI approaches on the prevention and management of chronic illness and health outcomes. It was funded by the Cooperative Research Centre for Aboriginal Health (CRCAH).

The published study protocol (Bailie et al. 2008) outlines the implementation strategy for an expected participation of 40-50 health services; predicted uptake was exceeded with 69 centres participating by the end of this phase. The participation agreement allowed each health service to tailor the approach to their circumstances. Significantly, the program offered direct facilitated training and support for the implementation of the CQI audit tools and capacity building for organisations to incorporate evidence into practice, primarily through the employment of a hub coordinator to support areas (Bailie et al. 2008). The expectations were that a health service would provide a staff member to be trained and supported by the research team to undertake clinical audits and upload the results onto an online database. The research team provided tools, data analysis, feedback of results and facilitation support to plan and set goals for improvement. Overall, the interventions were 'designed to be as compatible as possible with health centre routines at the local level (Schierhout et al. 2010). The notion of sharing the knowledge and 'know how' between participating health service staff and experts was designed to be facilitated through a series of 'improvement collaboratives' such as those that had been used in the USA and UK (Bailie et al. 2008).

The third research phase: understanding variation (2010-2014)

The third phase ran from 2010-2014. The research focus shifted to investigating variation between health centres and between regions, exploring clinical performance and disseminating effective strategies for improvement. The research collaboration expanded to include Menzies School of Health Research, University of Queensland, University of South Australia, Curtin University, University of Melbourne, government health departments in the NT, SA, WA and Queensland, and Aboriginal Community Controlled Health Organisations in NT, SA, Western NSW and QLD. The research grant funding was from the NHMRC and Lowitja Institute. One21Seventy, a non-profit fee-for-service training and support entity, operated from 2010 to 2016 as part of the National Centre for Quality Improvement in Indigenous Primary Health Care.

The interventions: Across all phases, interventions were based on a quality improvement cycle which included clinical audit, health systems assessment, web-based analyses, feedback and participatory action planning. Clinical audit was conducted on a sample of clinical records against specifically developed audit tools. The number of audit tools increased to include chronic diseases (with a focus on diabetes), child health, health promotion, mental health, youth health, and rheumatic heart disease. Services selected the audit tools used in the clinical audit. In the initial phase, the research team performed all the auditing, facilitated the system assessments, assisted with interpreting the data from the web-based analysis, provided feedback and helped with identifying gaps and suggestions for future improvements. During Phase Two of the research program, the regional CQI hub coordinators provided the training for audits with the support of the research team. During the third phase, some health services funded the CQI facilitator role as an internal position while One21Seventy continued to be used by other services.

The implementation chain: Implementation began with a negotiated contractual agreement between the research organisation and the health service that managed local health centres. In Phase one, participation agreements were negotiated at the local health centre level. In subsequent phases, the contractual agreement was established at the level of the health service, rather than the local level. In Phases one and two, all organisations were involved in the CQI cycles and used a standard set of intervention tools. In the third phase, participating organisations were able to negotiate their level of autonomy in undertaking the audit and

facilitating the feedback and systems assessment, depending upon internal organisational capacity. Some participating organisations had the capacity to run the auditing and feedback cycles; other organisations purchased services for clinical audit, workforce training and technical support. Regardless of how the auditing and feedback is managed, the implementation chain is both lengthy and complex as it passed from the research ideas, through the development of the audit tools, to the administration of the audit tools, captured by the fields in the electronic database and presented for interpretation at the local and organisational level - all prior to action planning and resource allocation. Consistent with the research program philosophy of strengthening health systems by spreading ideas of how to bring about change, the implementation ideas from the CQI research program were shared as learnings through annual conferences and meetings of participating organisations. This use of networks to share ideas, and strengthen the use evidence by linking research production to implementation has been described as a Partnership Learning Model (Bailie et al. 2013).

The intervention outcomes: The CQI research program achieved strong national level traction in the Indigenous primary health care sector with a rapid spread across most states and territories in Australia during the three research phases spanning 2002-2014. The NT, QLD and SA jurisdictions had the strongest uptake of the program (Wise et al. 2013). Published outcomes for the CQI intervention include an increase in care delivery measured against best practice guidelines, improvements in health care systems measured by the Systems Assessment Tool, improved delivery of diabetes care services and improvements in intermediate health outcomes indicators measured by increased testing of HbA1c and monitoring of blood pressure (Bailie et al. 2007b; Matthews et al. 2014; Schierhout et al. 2016; Si et al. 2010; Wise et al. 2013). Yet outcomes were mixed for different Indigenous primary health care locations, different types of client services and the pattern of intermediate health outcome measures for clients. Variation was attributed to both health centre factors and client factors (Bailie et al. 2007b). Matthews et al. (2014) found that duration of CQI participation was a significant factor in understanding the variable adherence to best practice guidelines for Type 2 diabetes services: improved service delivery was associated, irrespective of health centre location, for Indigenous primary health care centres who had implemented the CQI intervention for longer. The greater the degree of locational remoteness the less impact the duration of CQI participation had on the improvement in service delivery. For type 2 diabetes

care, health centre factors such as who delivers the care and the type of care were found to explain 20-52% of the variation in the patterns of improvement found between health centres (Schierhout et al. 2016). Key supportive factors for CQI improvements have been identified by the CQI research team as a clear CQI orientation of health centre management, CQI skills, strong regional supports, a population health orientation and strong community linkages (Gardner et al. 2011; Schierhout et al. 2013).

The research program has built a strong repository of local level and aggregated data from which to identify year on year performance information and also to identify any aspects of standard care that had not been implemented effectively (Bailie et al. 2007b). Interviewing research team members added a deeper understanding from which to interpret the broad program outcomes. The interview narratives yielded not one story of implementation but reflected what was happening at different layers in different states and organisations, with the dialogue focusing on those strategies which stood out as being successful. Again, cognisant of interviewee recall toward positive outcomes, it should be noted that unanticipated outcomes were not mentioned by any of the researchers during the interviews.

The CQI research program was designed as a health systems improvement intervention. Researchers spoke of Indigenous primary health care as being multifaceted, layered across the health system from national policy, state-based policies, differing organisational structures of different sizes and density, differing governance arrangements and communication channels within organisations. One interviewee spoke about the drivers for implementation being situated at all levels of the health system:

...it is complex, like social determinants, all layers of different drivers (P1.6)

The drivers of uptake of the intervention were recognised as differing between states. For example, in Queensland it involved litigation and scope of practice, while in SA the driver was seen as the Aboriginal community-controlled sector working in partnership with the government health services. Researchers were in agreement that although CQI was considered important by government organisations and Indigenous primary health care organisations, organisations at the local level still made the choice about whether to participate or not.

Structural differences between the states shaped the different patterns of information dissemination. The information flow in the NT was described as 'cascading', disseminating

downwards easily, contrasting with the 'disconnect' between policy and the regional health boards in NSW. Limited information flow was considered a barrier to implementation, reducing the ability 'to have conversations with people who can influence things on the ground' (P1.6).

According to the researchers, at the time of the interviews (2011-2013), the NT Indigenous primary health care services were considered to be leading the other states in CQI processes (P1.6). The scale-up of the NT CQI intervention was described as 'close to being embedded in practice' (P1.9). Reasons given for implementation success in the NT included, a geographically spread, but small and scalable primary health care sector (P1.9); a longer exposure to using CQI – resulting in more people understanding it; good clinical systems being in place - such as, universal guidelines; and a primary health care workforce provided with opportunities to be educated in CQI processes and good leadership (P1.7).

One researcher linked intervention leadership to the leadership provided by clinicians: 'clinicians get it and see themselves as part of the team and bring the team on board' (P1.7). Another considered that where there was workforce stability, nurses could provide leadership (P1.9). Clinical roles were seen consistently as providing the leadership for change. In this respect, the NT was lucky to have leaders who 'are very aware of medical issues and clinical practice issues that need to improve' (P1.9).

Yet leadership was only part of the story in the NT, where change starts when at 'an organisational level, either at local or higher-level organisation, (someone) makes a decision that we are going to move into the CQI area' (P1.7). Key to the successful implementation were managers who 'make time', and 'make the space in a busy clinic schedule for this stuff to happen...do what is required to make it happen...discover they have already got staff who have been doing it somewhere else and they can make use of them...or they start looking for new staff' (P1.7).

Additional resources were critical to increase the pace at which organisations shifted into improving clinical performance. One researcher explained this as:

...a lot of the services had more funding and they were able to really take the ideas and move ahead much faster in certain areas (P1.8).

An example of increased resourcing was the enhancement of the workforce by increasing the number of overall nursing positions in specific roles including chronic disease nurses and

chronic disease nurse educators. However, one respondent believed the primary health care workforce could not be strengthened further without additional resources (P1.9).

It was also recognised that improvement outcomes seen in the program may be difficult to sustain as organisational environments change, 'things go up and down in these organisations and the key people move on ... each service has its own challenges' (1.7). According to one researcher, all organisations participating in this research program were likely to be faced with the challenge of how to make and support system level changes within a set of common contextual issues: high workforce turnover, infrastructure limitations and highly complex patient loads. Faced with high turnover, the recommendation was to 'say this is the outcome you want and strengthen the systems' (P1.9). With stability at the clinical level, the nurse manager was expected to take on the leadership of improvement (P1.9). One researcher noted that in some places workforce stability hindered change because they 'needed to wait for people who are laggards in the system to move on and achieve intergenerational change' (P1.7).

One researcher's advice on how to bring about implementation success, given the organisational challenges commonly found in Indigenous primary health care, was to:

...look at the big picture don't zoom in too close and get caught up in local problems, one of the big risks working in the remote community is that everything is so complicated, so overwhelming, that people just give up, instead of asking how do you put systems in place ...despite these things (P1.7)?

A key step in a realist evaluation is to hypothesise the explanatory program theories known as CMO configurations. In this study, this was done in two steps, firstly capturing the researcher's explanatory logic and reasoning used to guide the implementation strategies and translate into anticipated outcomes, and secondly taking these implementation program theories to the next level of abstraction by generating the underlying mechanisms and constructing CMO configurations.

Explicit theoretical influences on this research program, extracted from interviewing researchers, program documents and publications, are the Diffusion of Innovation Theory of Greenhalgh et al. (2004), Continuous Quality Improvement theory and the Chronic Care Model developed by the McColl Centre for Health Care Innovation as the theoretical framework (Gardner et al. 2010; Si et al. 2008). The individual interviews unearthed several implementation

program theories which reflected how the researchers understand implementation. The three implementation program theories for Case Study 1 are consistent with the explicit theories and models mentioned above. These are: 1) working through influence, 2) empowered by data, and, 3) CQI thinking. In the following sub-sections, key components of the three implementation program theories are described including the context enabling and constraining factors, according to levels of the health system.

4.2.2 Working through Influence

Case Study 1 had several influential people supportive of the intervention across all levels of the health systems. Researchers acknowledged the advantages of having pre-existing networks across a state, and within government and the community controlled sector, as an enabling factor (P1.7, P1.8). Bringing about system changes and finding strategic support for the intervention was achieved by 'working through influence'. This way of making things happen was described as:

...working through influence rather than authority, in this sort of system makes a big difference (P1.7)

Researchers readily identified leaders in health service organisations who had a passion for implementation and changing health outcomes, and who could build collaborative partnerships with researchers. These leaders acted as change agents and a conduit for information, and were described as *outstanding, credible, down to earth, big picture* and *having clinical know how* (P1.7). Working through influence was considered more likely to succeed when influential people could access decision making networks, such as policy think tanks, and provide input into the political agenda. Organisational support, and where that support came from, varied over time. A key person 'moving on' within organisations was a reason for that variability. However, in some organisations the loss of an influential person did not always have a negative effect: 'individuals can be influential, but some can block, even if not influencing others' (P1.7).

The researchers said organisations were reflecting on organisational factors that contribute to the variability at various locations. The lines of influence were more likely to work when the health organisations strategic agenda supported CQI. Resources were then allocated to

actively support the intervention activities. For example, in 2009, the NT successfully presented the case to the Australian Government for a new funding stream for Indigenous primary health care resulting in an injection of \$2.2 million to strengthen CQI activities. This then funded the employment of area CQI facilitators (nursing positions) (P1.8). These CQI facilitators then took on the responsibility for generating audit reports, rather than the research program. The CQI facilitators also acted as influential change agents at the local level and were recognised for being good at 'opening eyes about what the audits can do for them and the community' (P1.9). Having sufficient nursing positions to provide care was also an enabling factor:

...what did make it work, was more nursing positions to actually care coordinate (P1.9.),

The structure of the health organisation was critical for information flow. One researcher proposed that organisational structures supporting information flow to people on the ground could influence and provide information about success and, in turn, motivate implementers at the local health centre level. Well-connected organisations, notably smaller organisations, were thought to have some advantages over larger less connected organisations with more robust information flow.

Policy support for the research program and the systems that supported a CQI approach was reported as occurring at different levels in different organisations. For one researcher, the policy opportunities are 'always constrained by your own level of understanding of how the health system works and knowledge of what was happening elsewhere' (P1.7). Thus, a good understanding of the literature, knowledge of what is happening internationally, sound networks and relationships between research team members, were considered to provide a conduit to strategic policy opportunities (P1.7).

Successful utilisation of the research program findings to change health delivery was mentioned in all the interviews conducted for this case study. One research team member with a policy leadership role in a health organisation reflected that co-researching meant being able to facilitate change in a way that researchers frequently could not do. Having access to the research findings meant they could be examined for positive outcomes and or implementation gaps. Implementation gaps could then be addressed immediately as they became apparent:

...look at how we develop the system to address that gap' with 'a network of resources in place to do that, and I am able to draw on other resources if we needed further work to be done (P1.8).

This demonstrates a level of responsiveness from organisational level to address implementation gaps at health centre level. It is an example of those in influential roles looking for new opportunities; their judgement being trusted, and their capacity to attract followers under certain conditions:

...it is the whole concept of the ones that lead at the front end always looking for new things and will lead change and the mass will follow if there is enough evidence and enough pressure (P1.7)

Influence was less likely to have impact in situations where: leaders had little access to the policy agenda at state or national levels; the organisational structure hindered information flow; the program outcomes were not consistent with the strategic agenda; the organisation had high workforce mobility among leaders; or clinicians were too overwhelmed by the clinical load and complex morbidity to respond.

Table 4.1: Implementation Program Theory: Working through Influence

Level	How it is operating	Context Enabling	Context Constraining	Outcomes anticipated
Policy level State and AG	Influential people supportive Allocation of resources	Access to decision making networks, policy think tanks Input into policy agenda	Limited access/ need to participate or follow the policy agenda	program initiatives program funding
Organisational level Program leadership	Leaders who have passion for improvement Leaders who build collaborative partnership with researchers Pre-existing networks Trust and respect	CQI in the strategic agenda Influence allocation of resources Small connected organisational structures Links to researchers	Disconnect with strategic agenda Structural layers hinder information flow Workforce mobility Less connected systems	Strategic support for CQI
Health Centre level	People motivated to follow strategic direction Receiving information and support Pre-existing networks Looking for change agents	Information flow that can influence on the ground Leadership Capacity/ resources to respond to requests for support	Clinicians overwhelmed by complex morbidity Workforce instability	Using research findings to change practice Changes embedded into practice

The implementation program theory ‘Working through Influence’, (see Table 4.1) involved champions, opinion leaders, those in program leadership roles and implementers who actively sought to influence others to support the intervention through professional and organisational networks. These people were attending and presenting at annual conferences, and in education and training programs. Gardner et al. (2010), in her account of Case Study 1, described the use of different change agents across multiple system levels, including the use of experts to engage senior managers, program managers with pre-existing networks and

status in Indigenous communities, and a senior medical champion influencing through peer-based medical networks.

What has been described by researchers in this case study is consistent with McCormack et al. (2013) whose realist review of change agency strategies identified important characteristics for change agents to have influence. These included embeddedness within the organisation, and clear responsibility and accountability of the role. McCormack et al. (2013) suggested the mechanism for change agents to be influential leaders involved a combination of respect for their expertise, being a role model with a positive attitude, and showing leadership.

This concept was described in the interviews as trusting the judgement of those in influential roles. Hence, '*trusting to follow*' is hypothesised as the mechanism that relates to this intervention component of 'working through influence'. In other words, the use of influential leaders and managers is predicted to engender a response from stakeholders that would support the implementation of the intervention.

The following CMO configuration assumes that change agents will be operating at organisational level with structures that support information flow and influence at both policy levels and health centre level. It proposes that change agents at organisational level will trigger the mechanism 'trusting to follow' for health professionals employed at the health centre level.

CMO1: If there are change agents in leadership roles, with a good knowledge of what needs to change and adequate resources (context) then people at health centre level will be influenced to trust and follow (mechanism), leading to strategic support for CQI to change Indigenous primary health care practices (outcome).

4.2.3 Potential to be Empowered by Data

The capturing of local level data and returning it to individual health centres was believed to be empowering for people at the local health centre level (P1.6). Prior to participation in the program, local health centres were described as 'overwhelmed with needs and client interactions and given very little measurement of how they were doing' (P1.6). Following implementation of the research program interventions, people working at the health centre level had information on 'where their efforts were going, how to fine tune their efforts, and

how better to use the resources that they had' (P1.6). The impact on health professionals in health centres participating in a CQI program was described as giving:

...a sense of empowerment...knowledge would drive the change...take ownership...and to want to engage and make a difference in teams (P1.6).

As this intervention involved annual audits across many health centres it generated a considerable volume of data. The processes of data management within the research project involved returning the clinical audit data to the organisation and local health centre. Organisations could then choose how to use the data and each organisation could adapt it to their own situation. There were some concerns voiced about how organisations chose to interpret and use the data, with researchers acknowledging that the data could be for purposes other than CQI improvement:

...once in implementation land you have to let go of that intent...PHC can do with the data how they wish (P1.7).

An example of an organisation choosing to interpret the data from a quality assurance perspective, rather than a CQI approach was described as:

...they use (data) for performance reporting and performance management rather than quality improvement ... it is (then) about managing individual doctor or Aboriginal Health Worker performance not looking at system problems (P1.7).

Formal epidemiological analysis of the data and published academic papers was considered as enhancing the credibility of CQI, as it was useful for dealings with funders and as a way of enhancing accountability in the delivery of services (P1.8). It was reported that the evidence was used constantly to show change and impact in terms of health outcomes (P1.8). Engagement in the research program provided data to support other policy processes such as resource allocation:

...data that had been generated through ABCD was a major factor in convincing the NT Aboriginal Health Forum to invest 2.2 million in a CQI structure (P1.8).

The example was given of the data generated from CQI being presented to senior executives and to senior management teams to highlight areas of improvement and gaps. This then enabled a quick response by the health organisation with recommendations made about how to address gaps and implement their chronic disease strategy (P1.8). However, the research

program was only 'one strand' of a systems approach to implementing more effective chronic disease management in the health organisation. Organisations were observed to have varying levels of capability to resolve the tension between the different sources of data generated by the reporting on similar indicators. These tensions were thought to be better understood at executive levels (strategic decision-making points) rather than at mid-level management. The capability to understand the data was a pre-requisite for being empowered by the data. Alternatively, people felt overloaded by the different data sources leading to a confused focus and a tendency to look for only the positive features in the data, rather than seeking ways of doing better and areas for improvement - in other words, missing the improvement intent of CQI processes (P1.7).

One of the researchers suggested that a critical decision point for organisations was who had control over that data. Those organisations who made the decision to move into CQI were comfortable with the level of control they had over the data and its management by the research organisation. However, some organisations were not comfortable with the research organisation managing their data, even under negotiated protocols and processes (P1.7). Tensions arose when service organisations believed their service level data would be used primarily for managerial purposes - such as, funding control - or locally sensitive issues would be exposed to their funders. The tension over information control was thought to be increased for organisations with a governance ideology wherein the control of all information was vested in the Aboriginal board (P1.7).

Digesting and acting on the information was reported as being sometimes confronting for organisations. The organisations were 'caught between a new thing and all the implications and philosophy of it and what that means for their own system' (P1.7). This was challenging in a context involving other drivers of policy beyond evidence, or where there were concerns or distrust about who controlled and managed the data, or where organisations had competing information sets or data overload. If the health centre workforce had limited ability to interpret and understand what the data meant in their context, or if people doubted that the health care would make a difference to health outcomes, then local evidence was unlikely to empower people to change. The researchers emphasised that the provision of local level data could empower staff to make appropriate changes.

Table 4.2 Program Theory: Potential for Empowerment by Data

Level	How it is operating	Context Enabling	Context Constraining	Outcomes Anticipated
Policy level State and AG	<p>People able to participate in policy dialogue using local data</p> <p>Respected/ trusted champion using local level data</p> <p>Reports and published papers</p>	<p>Strength of evidence-based policy approaches</p> <p>Political importance of program outcomes</p> <p>Indigenous specific data</p>	<p>Other drivers of the policy cycles</p> <p>Competing programs</p>	<p>Availability of local level data for evaluation</p> <p>Investment in dedicated CQI processes</p>
Organisational level Program leadership	<p>Systems in place to identify gaps and strengths of programs (Information and monitoring)</p> <p>Academic papers based on local evidence</p> <p>Sense of empowerment</p> <p>Engagement in CQI research</p>	<p>Focus on health outcomes</p> <p>Data driven program planning</p> <p>Accountability frameworks</p> <p>Systems improvement</p> <p>Programmatic thinking</p> <p>Comfortable with level of control</p>	<p>Angst/ distrust over data control and management</p> <p>Competing information sets</p> <p>Middle managers crisis mode non-programmatic narrow thinking</p> <p>Quality assurance philosophy</p> <p>Data overload</p>	<p>Organisational monitoring of local level data</p> <p>Resourcing speeds up change</p> <p>Evidence of impact</p> <p>Internal organisational support</p> <p>Highlights gaps</p>
Health Centre level	<p>Empowering staff to act on data</p> <p>Collection of more uniform local data</p> <p>Access to local data</p> <p>Facilitated feedback</p>	<p>Systems adequate to collect data</p> <p>Facilitated interpretation of data</p> <p>Local action planned to address gaps in practice</p> <p>Comfortable with level of control of data</p> <p>Staff who have had a positive experience of CQI</p>	<p>Limited understanding of data</p> <p>Doubt that changes will change health outcomes</p> <p>Population/ program thinking absent in undergraduate education</p> <p>Overwhelmed by clients</p> <p>Confusion with data developed for other purposes/ data overload</p>	<p>Return of local level data will empower staff to make changes</p> <p>Increased accountability</p> <p>Resourcing for gaps</p>

The 'empowered by data' implementation program theory is underpinned by the belief that local data provide trustworthy and relevant evidence, focused on measuring the impact of the care provided by the local health team. An earlier paper on the research program described the facilitated feedback of local data as a process of sense-making, enabling local teams to develop a shared understanding and interpretation of what was measured (Gardner et al. 2010). A study undertaken by the Case Study 1 research team, including hub-coordinators, identified certain attitudes of staff that were associated with health centre variations. This led to the proposition that the 'collective or shared valuing of clinical data' was a plausible mechanism in the program theory of change (Schierhout et al. 2013, p. 6). Gardner et al. (2011) noted the varied effects that could be observed when health professionals were provided with data in this research program and suggested that organisations with clear internal vision, and purpose and services for data analysis, experienced more successful implementation.

The implementation program theory focuses on the audit and feedback process performed by external facilitators. Important factors in the audit and feedback process were for the health centres to have rapid access and complete visibility of audit results, the degree to which the local team can recognise a direct relationship between results and their efforts, and the perceived degree of their control over results and involvement in planning for change. Factors such as feelings of meaningfulness, sense of achievement, seeing their efforts reflected in improvements, and, control over information that impacts on work environment, were likely to be important motivating factors.

The underlying assumption of this strategy is that when people are presented with local data they will see both gaps and strengths, and that this understanding will motivate them to act toward improvement. This type of collective behaviour change where members of an organisation feel committed to change, and are confident in their abilities has been described by Weiner (2009). Hence, '***believing they can make a difference***' is the predicted mechanism for the implementation program theory of 'the potential to be empowered by data'.

The following CMO configuration is proposed:

CMO2: If there is visibility, control and interpretation of local level data and shared valuing and (context) then primary health care professionals will believe they can make a difference (mechanism), leading to employees empowered to make changes to Indigenous primary health care processes (outcome).

4.2.4 CQI Thinking

Driving change through the implementation program theory 'CQI thinking' in the workforce operated at a policy, organisational and health centre level. Key components of the CQI thinking theory were encouraging the acceptance of an organisational culture of improvement and working through a modified CQI plan-do-study-act cycle which begins with assessment, followed by feedback, action planning and implementation. Researchers emphasised CQI thinking as the step beyond being exposed to the CQI data:

...a continuous process, where you are looking at information, how you are delivering your care, looking at what it is you're trying to achieve, and continuously trying to make changes to improve what you are doing (p 1.8).

The decision by a health organisation to participate in the CQI research program, adopt CQI cycles and apply systems thinking by looking at system elements, was made at an organisational level, rather than at health centre level. Researchers believed that CQI thinking was more likely to be promoted in a health organisation when there was an acceptance that CQI would lead to improvement at the broader system level.

Regional support systems were described as useful for smaller health services, where low numbers of people working at the health centre level inhibited the capacity to make changes. Regional support system components were listed as a CQI facilitator, a chronic disease coordinator, a visiting doctor all working on a team philosophy and providing support to the health centre teams. The reasoning for a team approach was that:

...it is a major crisis when 50% of your team is lost ... but if you have a regional support system the health centres are buttressed against the crisis (P1.7).

CQI thinking was associated with organisations that had regional support structures for CQI program activity, and where there was the availability of CQI training, facilitation and support for data interpretation. If CQI data was used in reporting frameworks, this further reinforced a culture of CQI. Researchers suggested that CQI thinking was more likely to be present in organisations that could achieve the skill mix needed to interpret clinical performance data in the core workforce. It was noted that some organisations were using the alternative strategy of purposefully recruiting people who had the requisite skills and prior experience of a CQI

approach. Significantly, people with a prior positive experience of CQI were considered to be well placed to implement the interventions.

CQI thinking was associated with local managers who made time for CQI to happen and encouraged a team approach at the health centre level. Medical Practitioners were singled out as a workforce who did not always understand that they were part of a system or part of a whole team. Medical Practitioners were described as having a perception that they were the most important person in the system and that therefore they should lead change. This was most noticeable when Medical Practitioners were expected to contribute as a team member to the system assessment:

...putting them in a team where everyone else's perspective is as important as their own is out of their comfort zone (P1.7).

Shifts in perception regarding the role of the Medical Practitioner were described as a requirement for implementing system level changes; in other words, shifting to a population health approach, as opposed to individual clinical decision-making (P1.7). The existing focus on individuals rather than a population health approach was linked to deficits in the undergraduate education of health professionals, which emphasised teaching people to work with 'an individual patient for an individual problem at an individual point in time as an individual practitioner'(P1.8).

The ability to use information generated through CQI to identify strengths and gaps in primary health care programs and plan improvement was thought to work best with senior management who 'recognise the importance of having a focus on health outcomes' (P1.8).

At a middle management level, problems were identified in relation to individuals who 'get consumed with a whole lot of things and undermine initiatives about improving quality of care ... not like they are doing that deliberately, often just narrow thinking, rigid thinking and not recognising the impact of what they are saying yes or no to' (P1.8). Views differed on how best to use CQI thinking to design and implement action plans, for example, whether to build the skills of staff to understand the data or whether to provide facilitation support with an external person coming in to support the team (P1.7). Both strategies had been pursued in the NT.

Overall, researchers thought that CQI thinking was less likely to be operating as a motivator in contexts where improvement thinking was limited to structural approaches to improvement

(such as, accreditation), where there were competing philosophies (such as, managerialism), and where there was an individual practitioner approach rather than a team approach to change. Low workforce capacity and a lack of prior experience of CQI were also noted as constraints:

...it doesn't matter how much you work with these groups about the whole philosophy behind CQI and how it is constructed, there is a risk that there will be some people in the system that take a managerial and authoritarian sort of approach to these things and take the information and use it in other ways (P1.7).

Table 4.3: Implementation Program Theory: CQI Thinking

Level	How it is operating	Context Enabling	Context Constraining	Outcomes anticipated
Policy level State and AG	Philosophy of improvement	System approach to improvement	Improvement thinking limited to accreditation	
Organisational level Program leadership	Understanding of CQI principles Makes a decision to move into CQI programs Look at all of system elements	regional support structures Can achieve skill mix in workforce/ shift staff profile CQI data used in reporting framework Good systems	Competing philosophies ie individual performance improvement thinking/managerialism	Structured change in CQI audit areas
Health Centre level	Team approach Engaged workforce who understand CQI improvement principles	Clinicians as part of team Prior experience of CQI approach in IPHC/Local capacity and skills or access to regional support structures Acceptance of CQI Manager making time /Professional development	Individual practitioner approach Capacity low No prior experience of CQI	Engaged workforce who accept CQI as guide to change

CQI was explicitly incorporated into the research study design using the CQI elements of a planned cyclical approach along with a philosophy of seeking change to improve. CQI is a derivative of organisational theories of quality management with continually adapting plans for change based upon prior experience, and commonly using Plan-Do-Study-Act (PDSA) cycles (Grol et al. 2007). In this research program, Participatory Action Research was used to test and modify the classic PDSA cycles in Indigenous primary health care settings, resulting in a cyclical focus of improvement that began with assessment, followed by outcome focused planning. The CQI clinical audits, system assessment processes, feedback and goal setting sessions were designed to be conducted at the local health centre level to encourage local ownership and meet local needs.

Significantly, Gardner et al. (2011) noted that a key lesson learned in the first phase of implementing this research project was that organisations who were able to develop a clear internal vision and purpose for using the CQI tools and processes were more likely to experience success. It is logical to propose, therefore, that CQI was providing a framework for this process of visioning and direction setting. Therefore, a '*sense of direction*' is proposed as the mechanism or reasoning that is likely to be generated when local health centre employees demonstrate CQI thinking and use CQI processes for change. The following CMO configuration is proposed:

CMO3: If there is local CQI capability, access to regional support systems, availability of CQI training, and a management system that applies a CQI reporting framework to focus on health outcomes (context) then primary health care teams will have a sense of direction (mechanism) leading to an engaged workforce who accept CQI as a basis for change (outcome).

4.3 Case Study 2: Effective Clinical management of Childhood Lung Disease

4.3.1 Overview of Research Program

Case Study 2 research program focuses on the clinical management of childhood lung disease, including Bronchiectasis unrelated to cystic fibrosis. Bronchiectasis of this origin is rarely seen in non-Indigenous Australian children but is a significant medical issue for Indigenous children and is associated with very high rates of childhood pneumonia and other acute respiratory infections (Valery et al. 2012). The Bronchiectasis Interventional Study was designed as a randomised double-blind placebo controlled trial comparing a weekly treatment with the antibiotic Azithromycin, with a placebo. The researchers hypothesised that long-term Azithromycin treatment would reduce the frequency of exacerbations, reduce the length of hospitalisations, improve growth, and decrease school absenteeism. They also wanted to discover the impact of long-term Azithromycin use on adverse events and antibiotic resistance (Valery et al. 2012). Part of the rationale for the study was that some Medical Practitioners had already adopted a treatment regime of weekly Azithromycin for routine management of bronchiectasis in Indigenous children. (P1.5).

The Bronchiectasis Interventional Study followed on from a Bronchiectasis Observational Study. The Bronchiectasis Observational Study was a prospective cohort study designed to define the natural history of chronic moist cough and bronchiectasis, and identify the risk factors associated with the progression from early disease to bronchiectasis. The study began enrolling participants in 2004 and closed enrolment in 2009, so that children were followed up for between 1 and 5 years. The BOS study involved the regular clinical observation of Indigenous children between 6 months to 8 years diagnosed with chronic lung disease or established Bronchiectasis. Those confirmed with definitive bronchiectasis were eligible to participate in the subsequent study, the Bronchiectasis Interventional Study (BIS).

The clinical trial was conducted by an international research collaboration who recruited Indigenous children in Australia (n=97), New Zealand (n=42) and Alaska (n=41) into the study. The research was guided by a CONSORT statement and procedures providing uniformity in each of the countries, and was funded the funded by the National Health and Medical Research Council.

Case Study 2 was part of a larger research program in lung health and was in its sixth year at the time the interviews were conducted. It was stopped early due to concerns of macrolide resistance, although the results were blinded until the analysis had been completed.

The intervention: The intervention was randomly assigned and required a weekly administration of azithromycin or placebo for children enrolled in the trial for a 12 to 24-month intervention, and who were followed up by the research team for six months after the study. Intervention fidelity and feasibility were high priorities in the design. Researchers were confident of implementation relevance and feasibility in a remote Indigenous community setting. Implementation was carried out by local primary health care professionals. The researchers' logic in relation to implementation was expressed as:

...I only do studies that I think are important, that people will use – if they are relevant and important, they can be implemented (P1.5).

The study had a long design phase. During the protocol planning phase, consultation occurred with respected frontline clinicians who had worked in Indigenous contexts since the mid to late 1980s, as well as with an Aboriginal advisory group who commented on feasibility issues (P1.5). The general protocol was available for local health centres and communities to consider. At this stage, no one working in the Australian primary health care level commented on the protocol – comments were mostly focused around medical management. It was well understood that the children and carers are a highly mobile population, so the frequency of dosage considered 'doable' was a weekly dose. Children known to be particularly highly mobile were not enrolled in the study. The researchers designed the intervention to be:

... feasible not just for the study but also feasible after the study, there is no point in doing something if not totally feasible (P1.5).

The medication regime was outside of routine clinical guidelines for the setting (the CARPA manual) and was not part of standard care plans for children with lung disease. Nevertheless, some services had already adopted the medication regime for routine use and therefore did not want their service to participate in the clinical trial because:

... they don't want azithromycin to be found ineffective they probably thought that some children would not get the treatment and be worse off ... you never know what the underlying issue is about not participating (P1.5).

Local health centre primary health care professionals were required to implement the intervention by undertaking a brief clinical assessment and administering the medication to the child with a consenting carer present. Giving a known medication to a child with a chronic health issue was considered by researchers to constitute a routine request for health centre staff (P1.3). The local health centre primary care professionals recorded the administration and this information was sent to or collected by the research team. The expectation was that:

...the families come in each week for a medication, which is delivered and administered by the health staff so that it is something that happens irrespective of us being out there (P1.3).

Health services that were given the option of participating in the trial included locations where a research team member also provided clinical services and others where this was not the case.

The implementation chain: The initial identification of a child with a clinically definitive diagnosis of bronchiectasis, usually confirmed by computerized tomography (CT), was undertaken by paediatricians who provide specialist services in an acute setting as well as in their capacity of visiting specialist service to specific remote Aboriginal communities in the NT and South Australia. Regardless of location, this group of children were all managed by paediatricians so that the 'paediatrician is there from the beginning' (P1.5). In designing the study, the researchers consulted to obtain paediatricians' participation in designing the protocol, as they would be diagnosing, identifying potential participants for the study and referring children and families into the study (P1.5). Enrolment, exclusion criteria, the medication dose and length of time, and conditions under which the trial would be closed were set out in the clinical trial protocols.

Once diagnosed, and identified as meeting the clinical trial criteria, recruitment of participants into the study involved a lengthy family meeting using pictorial flipbooks to explain the disease. The child was then followed from the acute health service sector into the Indigenous primary health care sector for the implementation phase of the clinical trial. The primary health care staff were informed (initially by fax, then later by electronic mail) that the child was commencing on the clinical trial. Medication (either placebo or azithromycin) was then sent to the health centre. Primary health care health professionals were responsible for the weekly administration of medication. In the NT primary health care settings, the AHWs and RANs were able to administer this medication under their scope of practice after it had been ordered by

the specialist paediatrician. Once the medication was administered, the health professionals were required to document it in the client record system. The protocol required the child to be clinically examined four times a year; twice by the research nurses and twice by a paediatrician. On the screening visit a research nurse accompanied the paediatrician to the remote communities. The research nurses were well known to the communities in Central Australia but not in the Top End. The chief investigator was also a member of the clinical paediatric visiting service to Aboriginal communities.

This implementation chain relied upon the parents or carer to bring the child to the health centre to adhere to the weekly administration of the medication and intermittent clinical follow-ups. The health-seeking behaviour of the parents or carer was likely to be affected by the sociodemographic profile of the children in the study. Children in the study were described as having a higher level of household crowding, more likely to have been born prematurely, be living in poverty with a lack of running water and exposure to indoor air pollutants, and levels of maternal education were poorer than other children in the local Indigenous population (Singleton et al. 2014).

Intervention fidelity varied across the sites with 63% adherence to the study medication regime in the Australian cohort, considerably lower than the 92% medication adherence of the New Zealand cohort. During implementation of the intervention in the Australian sites it was found that cooperation varied between and within primary health care teams. Researchers reported that the Indigenous primary health care sector was chaotic, and described visiting health centres as having:

... a very fluid environment, particularly in the last couple of years, burn out - you can cut air with a knife (P1.1).

Shortly after the intervention implementation period commenced, the Australian Government, with no warning or consultation with the health services, rapidly launched a policy initiative known as 'The Intervention', officially titled the *Northern Territory Emergency Response*. It was singled out, by all members of the research team, as making a 'big change' to the primary health care sector, and heralded the beginning of a short-term workforce with people on month long contracts. All research team members reported the high mobility of the workforce, and the increasing number of people visiting, as major factors contributing to the effort

required to support implementation and ultimately impacting on its success. The descriptions used were extreme and negative:

...the last couple of years the turnover has been horrendous (P1.3);

...the NT at the moment is in a real transition – the last five years were pretty rough ... a long time ago, in the early days, they (the old bush nurses) had hardly anyone coming in and out, not like these days when you’ve got 20 million people coming in the door (P1.1);

...the clinic is overrun, they’re burnt out, overburdened and they have visitors coming out of their ears left right and centre, they are struggling to keep on top (P1.1).

Encouraging and supporting the primary health care staff to assist with implementation was considered to ‘take a lot of energy’ for the research team members due to their brevity of experience, and unfamiliarity with the scope of practice in the remote setting:

...we have a lot more junior people coming out ... from down south and from New Zealand... you’ve got high turnover of staff, no continuity of care, these nurses are in for a short time and don’t know the communities (unless they are frequent community people) so that is challenging in itself (P1.1).

What they described was a distinctly different nursing workforce than that with which the researchers had been interacting in the previous decade: a workforce that was less experienced in the Indigenous primary health care setting, unfamiliar with the Aboriginal communities, not understanding the context of families in the communities, and, perceived by researchers as working only for the higher financial incentives associated with the program (P1.1). The ‘Intervention’ policy initiative was a factor that significantly heightened the challenge of program sustainability where sustainability was considered ‘always really difficult’ (P1.1). Then:

.... we lost a lot of the Indigenous workforce on community....no continuity, people coming in and out, new managers all the time, and not understanding the context of families and where they sit in the community (P1.1).

During the implementation period, many Aboriginal and Torres Strait Islander Health Practitioners withdrew from the workforce and those who remained conveyed the sentiment that:

...Yeh, another lot of new sisters who don’t know what is going on” nurses come and go, managers come and go – Aboriginal Health Workers don’t! (P1.1).

The plan had been for weekly medication to be administered by any of the local health professionals, depending on who was available (P1.3). The willingness of health professionals to administer the medication varied - with 'nurses have no problems giving it' but 'not every nurse, not every community' (P1.5). The researchers believed that the remote health centres had been quite supportive of the study during the initial stages as it was a known antibiotic: 'azithromycin is out there, and everyone knows about it and don't have a problem giving it' (P1.3). However, the researchers reported that the willingness of local nursing staff to implement the intervention was mixed, and noted that short-term nurses in particular, saw the giving of this medication to children as a research workload, not one for the primary health care team:

...they don't want to do any more than what they think is their immediate clinical work ...lately, it is my feeling that they just don't care because it's research not clinical practice. We have had one nurse who said, 'it's not my job'... 'we don't have time, its research, it's not clinical practice, so I'm not doing it' (P1.3).

An early study finding was that the chronic wet cough associated with bronchiectasis was regarded as normal, 'everyone coughs like that'. This then led to the research team deciding to develop resources, flipcharts and talking posters in Aboriginal languages designed to raise awareness that a chronic wet cough is not normal, and to highlight the impact of smoking and hygiene on lung health (P1:1). The resources developed were then used to talk to parents to increase their understanding of bronchiectasis as part of gaining consent for their child to participate in the clinical trial. The project had not been planned to include resource development but successfully sought additional external funding to develop these resources (P1:1).

The clinical trial demonstrated a reduction in exacerbations of pulmonary problems for those children with bronchiectasis who had taken the azithromycin. However, the clinical trial was stopped earlier than planned as those children treated with azithromycin were found to have a high level of azithromycin-resistant bacteria in nasal swabs, the clinical consequences of which are uncertain (Singleton et al. 2014).

Through analysis of researchers' narratives, two program theories of implementation were generated for Case Study 2: the first focuses on strategies used to establish respectful

relationships and the second on tailoring strategies to bridge gaps in the implementation context.

4.3.2 Respectful Relationships

Researchers described respectful relationships built on clinical credibility, sound clinical motives and trust. This program was in its sixth year when the interviews were conducted so some relationships were long standing, and others were emerging. Some relationships with both people and place pre-dated the research. The researchers sought support for the study and its implementation components primarily from other clinicians who could see a perceived benefit for the target population and health professionals in the Aboriginal communities where the children in the clinical trial were located.

The implementation of the bronchiectasis clinical trial intervention was dependent on cooperation at the local clinic level (P1.4). One researcher felt that the study intervention had been successfully implemented and had become part of practice 'in the areas that are visited regularly by paediatricians' (P1.3). In these locations, relationships had been built overtime as the paediatricians visited the same Aboriginal communities. Implementation was then seen as being tied to clinical practice, part of the clinical service, 'research is just tagged along' (P1.3). In these situations, health professionals at the local health centre were perceived to have a relationship with the study itself, not just the researchers. One researcher reported that when the relationship was strong, implementation happened irrespective of the research team travelling to the location. The local health professionals knew the children on the study and whether there was adherence to the weekly medication schedule (P1.3).

Relationships had been built over time, particularly with two of the researchers. One described how they used goodwill and supportive activities to build relationships with local health centre health professionals by 'making someone a coffee, by bringing morning tea out, looking after someone's mental health and wellbeing...helping out in the baby room...even driving for the clinic and picking up patients' (P1.1).

Relationships built between local health staff and those researchers who also offered a clinical service was considered to be substantially stronger than with other researchers (P1.5). This was described as able to see 'who the genuine ones are' (P1.5). The relationship between research

and practice was summed up by one interviewee: 'good clinical practice is always enhanced by good research or the other way around – the two go together' (P1.5).

However, relationships built on clinical respect and supportive interactions were described as more difficult to develop when there was high workforce turnover and health professionals were new to working in the primary health care setting. In situations where the researcher was unknown, the researcher was more likely to be regarded as an outsider and not part of the team providing clinical care. Other factors reported to make relationships more difficult to build and maintain were the increasing number of non-Indigenous health professionals working at a location, with shorter lengths of employment, fewer or no Aboriginal and Torres Strait Islander Health Practitioners working who are community members and with longstanding employment, and the increase in visiting professionals to a location. The example was given that in a visit by a researcher to a health centre in a small community there was more likelihood of building a relationship as they 'have got more time to do those kinds of things' because they 'have less of a client base to be following up' (P1.3).

However, size of population was not the only determining factor as variation was found in places of the same size. Two places of the same population size, and similar workforce numbers were described where in one clinic they were 'quite supportive' and in the other 'they were too busy' with managing the routine workload (P1.3). Other factors that differed between settings included the ability to manage the routine workload of screening and protective health care, such as immunisations. In places where the health professionals could not keep up with the routine care '... the kids (in the clinical trial) are missed because they have so much else to do' (P1.3).

A further factor impacting on the success of implementation involved health professionals perceived by researchers as not caring or making no effort to support the intervention, thus:

...you can have a brilliant system, but a nurse who doesn't care, won't make it work- versus a nurse who cares in a poor system (P1.5).

Research team members had the most opportunity to build respectful relationships with Aboriginal families participating in the study. Key factors influencing the relationship between researchers and families were the length of time (up to eleven years in some places), knowing the children from birth, knowing the family from the time they were recruited into the study,

and the trust that had developed during that time (P1.5). This was evidenced by one of the research team being given an affectionate nickname of the 'Chi Chi' doctor.

...some families I have seen the kids since they were 6 months of age, the families trust you and it is sad to say goodbye, it wasn't a research project in the end, for me it was a conversation (P1.1).

Table 4.4: Implementation Program Theory: Respectful Relationships

Organisational level	How it is operating	Context Enabling	Context Constraining	Outcomes anticipated
Program leadership	Collegial relationship of respect for clinical and research contribution	Support from specialists and GPs Length of research program	Already adopted practice = no benefit to be gained for target population	Referral pathways to the study Dissemination of findings into clinical guidelines for managing lung disease
Health Centre level	Goodwill/ Fitting in/ minimal demands on resources Clinical credibility Researchers as a source of knowledge Using a nurse known to the community to liaise with health centre and families	Stable workforce Research team known and respected Length of the research program frequency of visits by research team health professionals who care	Mobile workforce Burnout/Not managing workload Unfamiliar with research program or IPHC setting Low or no Aboriginal HPs Attitude of 'research not clinical practice'	Relationships enhanced between research and clinical practice Involvement of health professionals in the implementation aspects of research
Families/ Aboriginal community	Relationship building Understanding social and cultural priorities Clinical service offered by researcher	Relationship between research team and family Same team visiting the same places Length of the study	High mobility	Respectful Relationship between research team and family

The proposed mechanism that is likely to be generated when local health centre employees have long term relationships with respected clinical researchers is a sense of *'feeling valued'*. This expressed in the following CMO configuration:

CMO4: If there is sufficient workforce stability, a manageable workload and respected clinical researchers who build long-term relationships through supportive activities (context) health professionals will feel valued (mechanism) leading to involvement of health professionals in implementing interventions into clinical practice (outcome).

4.3.4 Tailoring Implementation

The implementation of the clinical trial intervention was designed to be integrated into the routine referral and clinical practice system. The intervention involved the administration of a drug already familiar to the practice environment. Most NT health centres had recall systems, either electronic or paper based, that could assist with the weekly recall of the child for medication administration. However, despite the consideration given in the design phase to feasibility of implementation in the remote Aboriginal community context, researchers described how the team were required to modify the planned implementation process to overcome local issues.

One of the well described factors affecting implementation involved competing demands on the clinical team; another related to the requirement for the family to take the child each week to the local health centre. The researchers felt that once the child was presented at the clinic the medication would be administered, 'if they got them to the clinic– the clinic was more than happy, but if the clinic has sent a driver, they wouldn't go looking for the family'(P1.3). The practice in some health centres was to employ a driver to notify everyone in person that a recall for clinical service was due that day, which then meant it was up to the families to be motivated or free to attend the health centre. To facilitate attendance, the research team employed people living in that community (P1.3). The role of the local person was not to dispense medication, but each week they were responsible for finding the family and taking them to the health centre. As one of the researchers noted: 'our two ladies will go to 10 different houses to find the kid' (P1.3).

The research team had many requests for the resources on pneumonia and bronchiectasis from people working in the NT. The resources were considered to have had a positive impact and worked well for educating both families and health professionals although once distributed, resources seem to go into a 'black hole', being unused or missing (P1.1). During the interviews, researchers described how they had continued to design support resources to augment the intervention depending on what was needed in each context. This flexibility of approach was empathetic to the health-seeking behaviour of Aboriginal families and cognisant of the varied health centre contexts for nurses and Aboriginal health workers.

Table 4.5: Implementation Program Theory: Tailoring Implementation

Organisational level	How it is operating	Context Enabling	Context Constraining	Outcomes anticipated
Program leadership	Clinical trial protocol developed with referring clinicians and Aboriginal advisory group	Visiting paediatrician program GP referring child to paediatrician	Bronchiectasis undiagnosed – does not enter trial	Prevalence of chronic lung diseases in Aboriginal children
Health Centre level	Integrated into clinical practice Responsive to local situation Visiting support by research assistants	Recognition that chronic cough was abnormal Strong recall systems/ drivers in place/ IT capability Strong relationship with families Workforce engaged	Ineffective recall systems Large population size Overwhelmed by routine workload Lack of continuity Burn out Inexperienced staff	Intervention integrated into clinical practice Improved engagement in treatment adherence
Families/ Aboriginal community	Culturally appropriate resource material production	Receptive families, familiar with research team Recognition of respiratory symptoms as abnormal	Poor engagement with families Chronic wet cough seen as normal (Cultural invisibility of symptoms) Family mobility	Awareness that a chronic wet cough is abnormal

No explicit theoretical influence was articulated or found in the documentation analysis. However, the implementation program theory described fits closely with what is commonly defined as a 'tailored intervention approach' (hence the title). Typically this is applied prospectively to identify and adapt to barriers and enablers in the clinical context (Baker et al. 2010). The clinical trial was tailored to align with existing clinical practice with the aim that the intervention would become embedded into every day clinical systems. The proposed mechanism likely to trigger when interventions are tailored to fit into clinical practice systems is '*seeing a use for it*'. The following CMO configuration is proposed:

CMO5: If the intervention is integrated into the clinical practice systems and there is recognition of illness by clinicians and families, (context) then health professionals will see a use for it (mechanism) leading to increased engagement in implementing the intervention (outcome).

4.4 Case study 3: Integrating Indigenous Mental Health Care

4.4.1 Overview of the Research Program

Case Study 3 focuses on improving the effectiveness of mental health care for Indigenous people through developing tools to support motivational care planning interventions in order to prevent mental health relapse. The Indigenous mental health care research program was described as a 'suite of projects', beginning in 2003. Individual projects were not necessarily discrete as they added to the development of the intervention (Nagel T et al. 2009). The researcher described the sequencing of projects as beginning with a year of general consultation with health providers in mental health services, followed by another year of consultation in remote communities. A central goal of the research program during the earlier years 2003-2006, was to improve mental health literacy in the remote Aboriginal community setting, known as the story telling project, which led to the initial development of 'two-way' culturally appropriate resources (Nagel & Thompson 2007). A relapse prevention trial followed this in 2006-2008.

Consultation and training of health professionals in the use of the resources and motivational care planning techniques was a central component throughout, with the team funded for national training that commenced in 2007. The research was built on a series of small grants, which inhibited the continuity of researchers and research activities. At the time of the interviews for this study, Indigenous workers were at the end of their contracts and declined to be interviewed; therefore, the implementation program theory has been synthesised from interviewing the lead researcher only.

The intervention. Motivational care planning was identified as a strategy to improve Indigenous mental health relapse prevention following a study 'looking at the journey of people from a remote community into hospital, out of hospital to primary care' (P1.2). It was also identified during this early stage that people working in primary health care had few resources to assist with mental health care. At the outset 'we had an idea that the need was a care plan or a care planning intervention' (P1.2). The rationale was:

... these are the ones we want to see early, we want to see them before they relapse, and we know if we do these things beforehand -that is care planning (P1.2).

Consultation took the form of asking both health professionals working in primary health care and Aboriginal families about early intervention relapse prevention strategies that 'would help people to identify their own early warning signs of relapse' (P1.2). The intent was to design brief interventions for primary care health professionals and those with mental health issues and their families. The health systems focus was '... really strongly on service providers and edging on consumers' (P1.2). It was informed by asking 'How can we talk to people about mental illness and what do they want us to talk about' (P1.2)? Hence the focus was on designing an intervention for Indigenous mental health care that had both 'Indigenous components and research translation components' (P1.2).

The implementation chair. Implementation began with the development of the tools and then evolved into educating primary health care professionals about how to use them tools. The research used action research design principles, thus early engagement with service providers was one of the strategies adopted. Service providers in Indigenous primary health were interviewed to find out what the mental health challenges were and to understand the clinical need for relapse prevention strategies. The process was described as:

...we had a lot of clinicians involved...there are not that many mental health practitioners working in primary care, only a handful of people, but they had shown interest (P1.2).

A lack of resources was one of the main issues reported when the researchers carried out the initial consultation with primary health care practitioners and families. The researcher spoke about how '... we had people saying what tools have you got, if you have tools we want them' (P1.2). Strategies included:

...a broad series of ways that we reached out to our key stakeholders and engaged with their views about what we were developing (P1.2).

The response was to develop a set of plain English pictorial tools that could be used to engage clients and identify with an Aboriginal 'voice', including areas of individual strength and support. The tools were in high demand, particularly from those working in the chronic disease area. The research team held back the distribution of the tools in a number of control sites. Outside of the control trial areas, the tools and training on how to use them were continually evolving and responding to demand. The research team embedded the tools in a training program on motivational care planning. The resources were expanded to include a suite of multimedia videos on how to use the tools, a DVD, and online education modules.

The design of the KT strategies of this program was described as rather 'higgledy-piggledy', with 'a certain accidental component' (P1.2). The researcher identified certain organisations that stood out, for example, those that wanted to participate and knew about the interventions - one right from the beginning, and another because they were interested and very willing to engage in research.

The strategies of employing Aboriginal people and obtaining the support of an Aboriginal elder had enabled the researcher (in the first phase) to connect with community-based people. They were able to capture the stories and images subsequently used to develop the intervention tools. The extensive training and advocacy for the approach that was then undertaken by the researcher and the Aboriginal people employed led to the broad engagement of health professionals. Aboriginal educators were supported to develop training skills through accredited training pathways, building their credibility in the process, and evaluations were positive toward Aboriginal people undertaking research and doing the training. Case Study 3 had a commitment to Aboriginal empowerment and employment in the

research team, which in practice meant having flexible work practices and providing mentoring.

Collaboration was one of the strategies identified as being useful to engage with health services. Within the government organisation, the researcher identified an early adopter, a champion of research who provided many opportunities to be part of the preventable chronic disease strategy.

Initially, the research program aimed to develop evidence based motivational care planning tools and educating primary health care professionals on how to use them. The research aim evolved, while implementing the program, from one of engaging the Indigenous and non-Indigenous stakeholder groups to understanding the need for the intervention, and to one of sharing and communicating how to use the intervention tools with different audiences.

The intervention outcomes: The resources of educational tools, brief intervention, and motivational care planning were found to be effective in the randomised control trial (Nagel et al. 2009). Several motivational care planning tools were developed and widely distributed to health services.

In the three years preceding the interviews, the research team had trained over 600 health care professionals in brief intervention and motivational interviewing, across Australia. The team trained wherever they were invited to train, leading to numerous interactions with health-related organisations across Australia. Funding to run the research program was through a series of small grants, hence the suite of small studies. The researcher felt that if they had been funded for a larger study there would have been more impact, but the funding was for research, not translation activities (P1.2).

The outcomes were described as a mixed pattern of engagement across the sector. Good relationships were more likely to lead to a commitment to engage with the research. Attempts to influence policy and strategy level were challenging due to difficulties obtaining time with policy people and framing the key points in messages that were policy relevant (P1.2), resulting in:

...some absolute dead ends at Director level ... contrasting with inpatient champions (who) we continue to work with mostly unfunded ... relationships help, local relationships with those not in policy, some commitment to research engagement with the inpatient unit so that still flourishes (P1.2).

The researcher reflected that, conversely, they had not engaged much with decision makers and policy makers, as there was little time or energy to invest in the effort required -

...we were so busy engaging with Aboriginal people and service providers it is not surprising we couldn't spread ourselves so thinly to be engaging on the rest of the spectrum. Additionally, the research did not explicitly seek to engage mental health consumers as there was an Indigenous Reference Group of people based in Aboriginal communities who were seen to be representative of consumers. They represent consumers, that is the best we have ... there isn't that consumer movement in the Northern Territory and we are far away from what is required to do that (P1.2).

The researcher believed that the lack of impact on routine care in government organisations was linked to a lack of policy support in mental health. The brief interventions were not embedded in a government policy that recommended the approach. This contrasted with other research programs where there had been engagement with policy makers. Attempts to engage with policy makers resulted in mental health being added into the chronic disease strategy. However, despite this achievement, frustration was expressed that they 'didn't manage to get any reference to the research evidence in the strategy' (P1.2). Tension also existed around the fact that although the government sector offered opportunities to provide training for the primary health care workforce in using the intervention relapse tools, they failed to fund the training, or to facilitate easy access to the tools in clinical information systems.

Overall, the researcher's assessment was that the research had made an impact with families and through the employment of Aboriginal people in the research program. These individuals had engaged community based people in discussions around mental health care and assisted with the development of meaningful metaphors and images. Significantly, the research program was reported to have had greater uptake within Aboriginal community controlled organisations. The researcher attributed this to the fact that these organisations were 'so interested and so flexible' and that they connected with the research team as they had 'Aboriginal empowerment and more Aboriginal workers than government' (P1.2).

The response from Aboriginal community controlled organisations was contrasted with that from government health centres who were described as 'struggling to engage with new approaches' and with a 'big lack of communication' (P1.2). The researcher told the story of how the research team lobbied and worked to embed resources in the information system.

Although successful, the research team were not informed and the resources were not used. The researcher's account suggested that this was because the government organisation is '... a huge organisation and doesn't have the ability to follow through on the fine detail' (P1.2). The lack of policy support was a hurdle for increasing the spread of implementation in the government organisations.

The researcher also identified a lack of traction in the specialist mental health inpatient sector as they were struggling with the evidence from this research. The researcher reasoned that from the beginning the outcomes were promoted as relevant for non-specialists providing mental health care. This was explained as: 'specialists haven't realised that they need to convert their language to mental health for the colleagues and families' (P1.2).

Several contextual elements were reported to have impacted on implementation in primary health care, including the lack of integration of mental health treatment into primary care, the reluctance of health professionals to take on mental health treatment, underpinned by limited capacity and resources, and limited confidence and skills. The researcher also identified as influencing outcomes, the ongoing stigma associated with mental illness and the sensitive nature of mental health research. The research elements of consultation and training people in the intervention took place in remote communities that were also experiencing multiple suicides and a lack of mental health service infrastructure. These two factors disrupted planned activities.

4.4.2 Telling the story

The research program used multimedia strategies to support the implementation of the motivational care planning intervention – a strategy that constituted a new element to clinical practice. It was also innovative to incorporate Indigenous art, metaphor and storytelling into a clinical intervention. The researcher spoke of the fundamental aspect of acknowledgement of the cultural preferences of Aboriginal people. Aboriginal people were consulted about the ideas, on how to use language, and how to facilitate the messages through storytelling, meaningful metaphors and meaningful images -

Aboriginal people told us constantly, 'tell a story', 'use metaphors', 'use pictures'.

Telling the story in a culturally appropriate way began with the development of a set of visual tools (Nagel & Thompson 2007). These were combined with a mix of contemporary

multimedia platforms that included animated characters, resulting in a range of presentations for different audiences. This process was guided by listening to the advice from Aboriginal elders, but also relied on opportunism, for example, access to the animation technology and attracting additional small amounts of funding.

The researcher described how from the early stages of the research an approach to implementation began to take shape around the elements of Indigenous art and storytelling:

...we had an Aboriginal Mental Health Worker who designed an Aboriginal dot painting from his area, up in our office, he painted the story of the study - the story of non-Indigenous ideas joined with Indigenous people going out to remote health centres and you see this blending, this is year 1 this is year 2. Then we got advice because we have (a traditional owner) that this (Art) is talking to the desert people. Hang on, what about the salt water people? (P1.5)

An opportunity to engage with animation technology as it was being developed was described by the researcher as a key success factor in promoting the study. The animated characters were purchased along with clothing for the avatars and the characters were then used throughout in the research resources:

...we had animated characters and we took them out and we brought a big screen and, in those days, (6 years) ago you couldn't find a whiteboard in remote health centres (P1.5).

Critical to what was being said, and how, was who could tell the story with credibility. Credibility was an important factor influencing engagement with the two major stakeholders, namely health professionals and community based Aboriginal people. Credibility in this context was seen by the researcher as being strongly associated with 'who you are and what you are talking about is an important part of the communication'.

Underpinning the strategy for Aboriginal employment and empowerment during the research was the reasoning that:

...having Aboriginal people on the team and having a traditional owner is important as it concerns our credibility...we had an Indigenous reference group from the beginning, who also helped us to reach out into the community... for the 4 years we had an Indigenous reference group, people came and went (P1.5).

The research program successfully sought funding for Aboriginal positions, one male and one female. This meant there were Aboriginal members of the research team over the four years (P1.5). Engagement was the response to this strategy:

...we sent an Aboriginal man and an Aboriginal woman...the absolute delight that they were received, and the comments were 'that it is so great to see Aboriginal people doing Aboriginal research' it has clearly opened many doors (P1.5).

Table 4.6: Implementation Program Theory: Telling the Story

Organisational level	How it is operating	Context Enabling	Context Constraining	Outcomes anticipated
Program leadership	Offering to provide tools and training Conference presentations Meetings with Policy makers Using multimedia approach	Flexible organisations Systems that could incorporate new tools Opportunities to access new technologies	Inflexibility of organisations Lack of knowing that tools were available Lack of time Lack of funding	Policy interest in the evidence for using Motivational interviewing Support uptake of the tools
Health Centre level	Stakeholder engagement strategy Aboriginal people delivering education Aboriginal elder involvement Culturally appropriate resources and clinical tools Credibility of people and evidence	Organisations with flexibility in policy and clinical systems High employment of Aboriginal people PHC responsive to the client and family demand for better relapse prevention Tools available in clinical systems Training provided for staff to use intervention	PHC not engaged in mental health care Tools not available in clinical systems Lack of policy support Low employment of AHWs No support for staff training in use of the tools	Increases resources/ tools for mental health care practitioners Support of change in clinical practice Better communication with clients and families Effective engagement of clients
Families/ Aboriginal community	Aboriginal elder involvement Metaphors and images	Credibility of who is telling the story Offered care planning intervention	High level of Suicides/ sensitivity Stigma of mental health	Effective brief interventions and care planning for relapse prevention

Further funding was attracted to train the remote workforce in using the tools. However, the researcher recognised that the approach to sharing the learning was missing an important group as people working in policy and program areas were more likely to seek training than the target audience of the mental health and primary care workforce. The training strategy was revised to one where they went to train when they were invited in by an organisation.

The research team amassed a huge library of images, animations, videos and pictorial resources and found that they could provide interesting presentations and that in turn, generated further invitations for training, requests for resources and conference presentations.

Overall, what stood out from the researcher perspective was...‘what we were learning was how you communicate with audiences’ (P1.5). It then follows, that to enable health professionals to successfully implement therapeutic brief interventions that require engagement with Aboriginal clients and families, being able to work alongside Aboriginal people and being trained to use tools that tell a story through appropriate images and metaphors, are more likely to trigger the mechanism of *‘connecting and relating’*.

The following CMO configuration is proposed:

CMO6: If organisations employ Aboriginal people in the health workforce and health professionals are trained to use tools that have culturally meaningful language and images, (context) then health professionals will connect and relate to Aboriginal clients and families (mechanism) leading to effective engagement in the implementation of the intervention (outcome).

4.5 Summary

Three case studies were outlined in this chapter. Each case tells the story of the implementation of research-based interventions from the perspective of research team members, supplemented by an analysis of research documents. The purpose for presenting multiple case studies rather than a singular case study was to better represent the diversity of interventions using varied implementation strategies. The implementation processes in these case studies

were driven by explicit and implicit program theories informed by general social science theories and experiential knowledge.

The case studies are all long-term research programs, active for close to a decade at the time the interviews were conducted. The research programs were using different strategies and different ways of thinking about facilitating the implementation of interventions in the Indigenous primary health care sector. Collectively, the case studies represent a range of common health service interventions, namely, quality improvement of health systems, trialling new medication regimes, and training in brief interventions. Fundamentally, the case studies take different, but not mutually exclusive, approaches to implementation: a CQI/ change agent approach, a tailored approach, and an integrating culture approach. The CQI research implementation program theories of *Working through Influence*, *Empowerment by Data*, and *CQI Thinking*, were explicitly influenced by the general theories of Diffusion of Innovations (including the role of change agents and opinion leaders), CQI and Systems Thinking.

The CQI research program is built around facilitating change through CQI cycles and capacity building at organisational and primary health care level. It has KT strategies with high facilitation components including dedicated facilitators, opinion leaders and collaborative approaches (McCormack et al. 2013). In the later phase of this research program, as it was scaling-up for national implementation, a knowledge transfer entity was developed to interact and provide CQI facilitation and training for Indigenous health organisations.

The implementation program theories of Case Study 1 target the organisational context of change by using champions, organisational training, embedding change into systems and performance frameworks. In contrast, the implementation program theories synthesised in Case Studies 2 and 3 are theories operating at the level of social interaction in the context of care, and include communication through tailored messages, paying specific attention to the status and credibility of the messenger, the characteristics of the message, and the normalisation process (Grol et al. 2013). The researchers in Case Studies 2 and 3 did not use explicit theories to guide implementation but referenced their clinical backgrounds and extensive experiential knowledge of the context.

Case Study 2 is typical of a tailored implementation approach, characterised by the researchers driving the implementation processes and adapting them to fit them into local clinical processes. As a clinical trial, it had a fixed protocol, but the implementation of that protocol

relied upon fitting in with the health centre systems, the clinical credibility of the researchers, and facilitation through building relationships and sharing clinical knowledge. Likewise, Case Study 3 can be aligned to a 'culturally appropriate' implementation approach and developed knowledge transfer materials through consultation, using local languages, images, meaningful metaphors, and employment of local people to build and deliver messages. (Kreuter et al. 2003).

This chapter presented data from the Phase One interviews with researchers triangulated with publications associated with the research programs, to yield information that would support the development of implementation program theories. The implementation program theories are described as 'if-then-leading to' realist propositions with a context-mechanism-outcome configuration. The initial analysis of the interview narratives identified key implementation strategies, context enabling and constraining factors and outcomes. These were presented according to the related health system level of broad policy (only relevant to Case Study 1), organisational program leadership (Case Studies 1,2,3), Indigenous primary health care centres (Case Studies 1, 2, and 3), and Aboriginal community levels (Case Studies 1, 2, and 3).

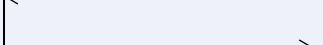
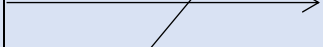
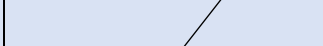
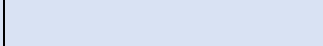
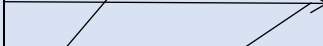

When focused on implementation at the Indigenous primary health care level six implementation program theories were found across the three case studies: 'working through influence', 'empowered by data', 'CQI thinking', 'respectful relationships', 'tailoring implementation' and 'telling a story'. These were then described as CMO configurations. To summarise, the CMOs configurations by case study:

- Case Study 1 researchers aimed for implementation outcomes that resulted in strategic support and resources for CQI to change Indigenous primary health care practices, employees empowered to make changes to Indigenous primary health care processes, an engaged workforce and an accepting of CQI as a basis for change.
- Case Study 1 contextual determinants largely focus on the capabilities of transformative leaders: ability to interpret and use the data, to plan and resource local level actions, access support networks and manage workforce supply, skills and workload.
- Case Study 1 mechanisms are 'trust and follow', 'believe they can make a difference', and 'sense of direction'.

- Case Study 2 researchers were seeking implementation outcomes of involvement of health professionals who recognise the need to implement the interventions in clinical practice settings, with a focus on sufficient workforce stability, manageable workloads, and using respected clinician researchers who build relationships through supportive activities, and, educating health professionals and families to recognise illness.
- Case Study 2 mechanisms of 'feeling valued' and 'seeing a use for it' reflect the focus on relationships and effective clinical practice.
- Case Study 3 sought effective engagement in the implementation of the intervention (integrated mental health care) into practice through employment of Aboriginal people, and tools that use culturally meaningful languages and images to 'connect and relate' to Aboriginal clients and families.

Realists assume that interventions will work through different mechanisms for different people in different contexts. As these implementation program theories were devised by experienced researchers, it can be assumed that the mechanisms synthesised from the cases studies are commonly predicted and may well be a relevant mechanism in other implementation scenarios. The interconnectedness of the proposed CMOs (see Table 4.7) means that any one mechanism may also be influential in triggering alternative mechanisms. For example, people may *trust and follow* opinion leaders leading to strategic support for CQI; strategic support for CQI will influence the availability of regional support systems and the use of CQI reporting systems. These may be contextual factors that provide a *sense of direction* for primary health care professionals and in turn lead to an engagement of the workforce in CQI.

Table 4.7: Summary, Interconnectedness and Level of Proposed CMO configurations

CONTEXT-MECHANISM	OUTCOMES	
<p>CMO1: When there are change agents in leadership roles, with a good knowledge of what needs to change and adequate resources (context) then people at health centre level will be influenced to trust and follow (mechanism), leading to...</p>		<p>... strategic support and resources for CQI to change Indigenous primary health care practices (outcome).</p>
<p>CMO2: Where there is visibility, control and interpretation of local level data and shared valuing (context) then primary health care professionals will believe they can make a difference (mechanism), leading to...</p>		<p>...employees empowered to make changes to Indigenous primary health care processes (outcome).</p>
<p>CMO3: Where there is local CQI capability, access to regional support systems, availability of CQI training, and a management system who use a CQI reporting framework to focus on health outcomes (context) then primary health care teams will have a sense of direction (mechanism) leading to ...</p>		<p>...an engaged workforce that accept CQI as a basis for change (outcome).</p>
<p>CMO4: When there is sufficient workforce stability, a manageable workload and respected clinician researchers who build relationships through supportive activities (context) then health professionals will <i>feel valued</i> (mechanism) leading to...</p>		<p>...involvement of health professionals in implementing clinical research interventions (outcome).</p>
<p>CMO5: When the intervention can be integrated into the clinical practice systems and there is recognition of illness by clinicians and families (context) then health professionals will see a use for it (mechanism) leading to...</p>		<p>...increased recognition of need to implement the intervention (outcome).</p>
<p>CMO6: When organisations employ Aboriginal people in the health workforce and health professionals are trained to use tools that have culturally meaningful language and images, (context) then health professionals will connect and relate to Aboriginal clients and families (mechanism) leading to...</p>		<p>...effective engagement for the implementation of the intervention (outcome).</p>

In summary, this chapter presents the program implementation theories from multiple case studies of intervention research. These are expressed as proposed CMOs, a realist form of propositions. At a higher level of abstraction, these CMOs are thought of as the 'predicted theories', or 'theories incarnate' of how and under what circumstances implementation happens. The next step of a realist evaluation is to understand how these 'predicted theories' play out in resourcing or influencing choices that primary health care professionals make in implementing these interventions.

The following chapter presents the perspective of primary health care professionals, including nurses, midwives, Aboriginal and Torres Strait Islander Health Practitioners, managers and CQI facilitators, describing the 'real world' of Indigenous primary health care and draws upon this data to recommend refinements to the proposed CMOs to reflect implementer experiences.

Chapter 5: Experiences of implementing change

5.1 Introduction

This chapter presents the experiences of health professionals in implementing changes and the patterns observed in relation to the proposed CMO configurations. It begins with a brief overview of the three Aboriginal community locations involved in the study, the characteristics of the participating Indigenous primary health care centres, and the health professionals who agreed to be interview participants. CMO configuration refinement is presented through interview narratives and observations that demonstrate the degree of congruence with the proposed CMO configurations. The concluding section of the chapter summarises evidence obtained in support of the proposed CMO configurations.

5.2 Context for the study

5.1.1 Overview of Locations

The health service organisation nominated the Indigenous primary health care locations for the Phase Two data collection from health professionals.

The Aboriginal communities varied in population sizes, had different models of management, governance, and connections to regional structures. All study sites were located on Aboriginal land, in very remote areas of the Northern Territory. The locations have characteristics in common with other remote Aboriginal and Torres Strait Islander communities. Positive features include strong cultural kinship networks, traditions, and use of Aboriginal languages. These contrast with their weak infrastructure, low employment levels, limited educational opportunities, and challenges related to food security, health and wellbeing.

Remoteness brings significant and costly access issues, whether in terms of service support to the community, or to its people needing to travel to access services. Residents rely for their health care on the local Indigenous primary health care facility, outreach specialist services or tertiary health facilities reached by car/ambulance or plane/air ambulance. Indigenous primary health care services are responsible for providing the initial care for medical emergencies and delivery of public and population health programs, including health promotion and

prevention. The characteristics of the primary health care centre study locations are set out below and summarised in Table 5.1.

At the time of data collection, **Location 1** (L1) had a total community population of 450, of whom 400 were Aboriginal people (ABS 2011 Community Census Profiles). Access to the community is by air or sea, and by 4WD vehicles from L3. A government health organisation manages the primary health care centre. Location 1 is a 'spoke', or sub-centre, in a 'hub' and 'spoke' relationship, with Location 3 as the 'hub' or main centre. The resident primary health care workforce profile at the time comprised a Remote Area Nurse/ Manager, Remote Area Nurses (x2), and Aboriginal and Torres Strait Islander Health Practitioners (x3), supplemented by a fortnightly visiting general practitioner clinic.

Table 5.1: Characteristics of Primary Health Care Centre by Location

Location 1 (L1)	Location 2 (L2)	Location 3 (L3)
Small- Med community (450)	Medium size community (625)	Larger community (1527)
Air/Sea access to regional town	Road access to regional town	Air/ Sea access to regional town
Visiting GP services	Dual – Governance (ACCHO-Government)	Aboriginal Health Advisory Board
Manager	Aboriginal Health Advisory Board	Area Manager
RANs	Long-term Aboriginal Health Practitioners	Manager
Long-term Aboriginal Health Practitioners	Mix long/ short term RAN workforce	Mix long/ short term RANs
	Short-term Managers (x2)	Resident GP (exiting)
	New Resident GP	Aboriginal Health Liaison
	Remote Area Midwife	Remote Area Midwife

Location 2 (L2) had a total community population of 625, of whom 544 were Aboriginal people (ABS 2011 Community Census Profiles). Primary health care delivery was managed through a

dual service arrangement between the Government organisation (Organisation A) and an Aboriginal Community Controlled Health Organisation (Organisation B). The Aboriginal Community Controlled Organisation also managed other health facilities in the region and had established an Aboriginal Health Board as part of the governance structure and which met 'a few times a year'.

There were several buildings associated with the delivery of health care, the government health centre, the offices of the Aboriginal Community Controlled Organisation, a renal dialysis 'donga' operated by another Aboriginal health organisation, and a newly built wellbeing centre that was not yet in service at the time of data collection. The resident Aboriginal Community Controlled Organisation employees included a non-clinical manager, Remote Area Nurses (x2) who worked collaboratively with the government health centre on chronic disease and child health programs, a general practitioner who worked out of the government health centre (and provided a visiting service to another remote community health centre, not in this study), and an alcohol and other drugs worker. The resident government health centre employees included a Remote Area Nurse/Manager, Remote Area Nurses (x3), Remote Area Midwife and Aboriginal and Torres Strait Islander Health Practitioners (x5).

Location 3 (L3) had a total community population of 1527 (at the time of data collection), including 1,350 Aboriginal people (ABS 2011 Community Census Profiles). This community is accessible by air and sea. L3 is a relative large but remote Aboriginal town, with the government-run health centre acting as a 'hub' centre for two 'spoke' communities, L1 and one another. It provided the location for an Aboriginal Health Advisory Board, and its staffing structure included the Area Manager, resident Medical Practitioners, Remote Midwife, and Chronic Disease nurse. The L3 resident primary health care workforce profile at the time was comprised of an Area Manager, Remote Area Nurse/Manager, Medical Practitioner, Remote Area Nurses (x5); Remote Area Midwife, and Aboriginal and Torres Strait Islander Health Practitioners (x2 – both of whom were on leave at the time).

5.1.2 Characteristics of Interview Participants

Table 5.2 lists the health professionals who participated in the interviews. Participants included Area Managers, Health Centre Managers, Aboriginal and Torres Strait Islander Health Practitioners, Remote Area Nurses, Remote Area Midwives, visiting Continuous Quality

Improvement (CQI) Facilitators and one Director of Nursing. All participants were health professionals, apart from one (L2) health centre manager. Health professionals' length of experience in Indigenous primary health care ranged from weeks to over 20 years (excluding Aboriginal and Torres Strait Islander Health Practitioners).

The interview participants included those living in the Aboriginal community and those who visited as managers and program support. Length of residency at the remote location ranged from 2 weeks to 4 years. Aboriginal and Torres Strait Islander Health Practitioners were, with one exception, members of the Aboriginal clans connected to the land and kinship groups at the location of interview. All had extensive experience working in the role, ranging from 19-25 years at L1 and 12-20 years at L2.

It was not possible to schedule interviews with some professionals during the period of data collection. Aboriginal and Torres Strait Islander Health Practitioners associated with L3 were on extended leave. Medical Practitioners were not available as L1 employed a two day a fortnight rotating locum Medical Practitioner service, while the Medical Practitioner at L2 declined an interview due to being new to Indigenous health practice. At L3 the Medical Practitioner's contract had recently terminated.

Table 5.2: Role and Location of Interview Participants

Role of Participant	Location 1	Location 2		Location 3	Total
		Org A	Org B		
Area Manager	*	1 [^]		1*	2
Centre Manager	1	1	1	1	4
Director of Nursing	*			1*	1
Remote Area Nurse	1	3	2		6
Remote Area Midwife	-	1		1	2
Aboriginal HPs	3 [^]	4 [^]			7
CQI Facilitator	*	1		1 [^]	2
Medical Practitioner	0		0	0	0
		(11)	(3)		
	5	15		5	24

[^] Aboriginal; *across locations L1&L3

5.1.3 Interview Environment

Interviews were conducted during the period January 2013- August 2013. Twenty of the twenty-four interviews took place at health centres in remote communities, while the remaining four were undertaken in regional offices. Clinical load, acute presentations, regulated time off after 'on-call' after-hours, and leave impacted on the availability of health professionals, particularly at L3. For example, a five-week unscheduled suspension of the regular flight services, leave for the health centre manager, resignation of another staff member and a steady stream of 2-3 clinical visitors (prioritised before research visitors) on most weekdays meant rearranging data collection at L1 multiple times.

Challenging interview conditions included interruptions due to duress and fire alarm system failure that periodically interrupted services for two days (L1 field notes) and a loudspeaker paging system at L2. Interviews were sometimes paused due to a small number of non-Indigenous health professionals taking the opportunity to debrief with the researcher about professional concerns and tensions caused by living and working with a small clinical team.

5.3 Patterns of Congruence with Proposed CMO configurations

The interview schedule guided health professionals to reflect and recount their experiences of implementing interventions, to identify processes enabling or impeding change, and to offer an analysis of factors raised in the literature and in the preceding interviews.

Interview data have been presented as verbatim quotes in order to capture the voice of health professionals, and to extend the understanding of the contextual circumstances of proposed CMO configurations. Quotes have been coded according to location and role (see Table 5.3) – for example, CHC1_RAN indicates Remote Area Nurse in Location 1.

Table 5.3: Coding of Respondents by Location and Role

CODE	CHC=L1	CHC2=L2		CHC3=L3	Total
		Org A	Org B		
Area Manager	*	ACM	-	ACM*	2
Centre Manager	HCM	HCM1	HCM2	HCM	4
Director of Nursing	*	-	-	M*	1
Remote Area Nurse	RAN	RANx3	RANx2	-	6
Remote Area Midwife	-	RAM	-	RAM	2
Aboriginal HPs	AHPx3	AHPx4	-	-	7
CQI Facilitator	F*	*	F*	*	2
General Practitioner	-	-	-	-	0
TOTAL					24

*across locations

During the case study data collection process, significant differences became apparent between health professionals' level of awareness and exposure to CQI interventions. All health professionals had a basic awareness of the implementation strategies in Case Study 1, recognising quality improvement as a high profile strategic program. However, exposure to the CQI interventions varied. The highest level of understanding of quality improvement processes was evident for the Area Manager and health centre managers at L1, L2 (Organisation B), and those at L3 who had been involved in the most recent audit and feedback and systems assessment cycle. The health centre manager at L2 (Organisation A) had been involved in audit and feedback at another remote health centre.

CQI facilitators are part of the interview sample, as these positions facilitate the implementation of the CQI program within health centres. The two CQI facilitators interviewed had completed both the recent audit and feedback, as well as systems assessment for the health centres in this study. All other health professionals were aware of the CQI audit process

and had had some exposure to the feedback, except for a RAN interviewed at L2 who was on a short-term contract.

This contrasted with the lower exposure to Case Study 2 and scant awareness of the mental health tools from Case Study 3. At each location, there were some health professionals who recalled children who had been on the weekly treatment for bronchiectasis (Case Study 2). Significantly, all Aboriginal and Torres Strait Islander Health Practitioners were aware of the tools for the mental health brief intervention but were not currently using them in practice. The Remote Area Midwife at L2 had recently found out about the mental health brief intervention tools and had ordered a set, but had yet to use them in practice.

These differing levels of awareness of the case studies reflected the relative exposure to the interventions. All selected locations participate in the CQI program, staff are supported by regional CQI program facilitators employed by the health organisations. Although all selected locations agreed to be sites for the clinical trial, exposure depended upon the residence of a child being treated for bronchiectasis. Case Study 3 offered training in regional centres and disseminated the tools through professional and research networks.

Interview data are presented for each of the six proposed CMO configurations. Many of the interviewees discussed implementation using the example of the CQI implementation process with which they were most familiar.

The next section considers the proposed mechanisms against the health care professionals' feedback, and observations made at the three Indigenous primary health care study sites.

5.2.1 Trusting to Follow

This proposed CMO configuration was generated from the CQI research program theory '**Working through Influence**'. The outcome sought was: Strategic support and resources for CQI being available at health centre level. Those in mid-level management and program leadership roles are predicted to influence other health professionals through triggering the mechanism of trusting to follow. The proposed CMO configurations for the primary health care level is presented below.

Proposed CMO1: When there are change agents in leadership roles, with a good knowledge of what needs to change, and adequate resources (context), then people at health centre level will be influenced to trust and follow (mechanism), leading to strategic support and resources for CQI to change Indigenous primary health care practices (outcome).

The health organisation had invested in the CQI program, including several CQI facilitators, and the CQI program support was acknowledged at health centre level. According to the CQI facilitator for L1 and L3 there was 'plenty of support and plenty of resources', 'adequate clinical staff' and 'a good relationship between the clinic and regional support teams'. One CQI facilitator said (firmly) of the CQI program that 'there is no relationship with research' (CHC2_V3).

Location 1: The proposed CMO configurations outcome for resources and support for CQI was supported by L1 health professionals who described working to the plan for the health centre. Two issues raised were inequity in the dispersion of support and resources between the hub at L3 and L1. It was felt that people and equipment 'clog up at the hub' (L3), which is located in the biggest town, and that there was some wastage of resources spent on sending people out to visit who were not always useful. Resources for programs other than the CQI programs were difficult to access, such as, afternoon tea for community events which the staff were funding:

...I don't think there is any lack of resources - there is plenty of stuff happening - information and people...flights that get wasted ... with people coming out here and give us information or not give us information (CHC1_RAN1).

Location 2: The number of people rotating into the health centre management position in the previous year was a concern for all of those at L2. When asked about how leadership affected the ability to implement change, one interviewee explained that the health centre had been 'in limbo', with no permanent manager for 12 months, and remarked that change was 'hopeless without leadership' (CHC2_RAN4). Furthermore, the lack of a permanent manager was seen as the barrier that had derailed any change that may have resulted from the CQI process.

...it really is the manager, the manager is what makes the clinic, if they have confidence in you and they know your capabilities it can just run smoothly (CHC2_RAN2).

...we have been trying to instil change, but with temporary managers it is very difficult...we haven't implemented any change following on from those audits. It comes down to the fact that we haven't had a permanent manager (CHC2_RAN4).

Location 3: The Area Manager for L1 and L3 was a 'strong driver', and stood out as a person leading change:

...there really needs to be a strong driver that is engaging with all people at all levels. Not just someone coming in and saying we are going to do this because the evidence says so. It is about engaging from the top down and the bottom up. Engaging in such a way that embraces the diversity of the members of the team (CHC3_V1).

Building trust extended to the community and one interviewee identified that -

You had to come in and demonstrate – if they identified something you had to come and fix it for them to gain that trust back and for them to listen as well (CHC3_ASM).

For CMO1, the interview data indicate that the impetus for change within health centres sits with the managers who are resident in that location. Change agents and influential leaders spoken about by researchers, who work at organisational wide and program level, were known to the primary health care managers, visiting support professionals and long-term Aboriginal and Torres Strait Islander Health Practitioners at L1, but not to RANs or RAMs. However, even for health centre managers and the CQI facilitators, influence came from those people with whom they had direct day to day contact. Those who were 'visitors' did not appear to influence the health professionals in the health centres. Instead, those attributed with influencing other health professionals, were local – namely, the area manager at L1 and L3.

Universally, the manager role was perceived as responsible for leadership and direction-setting for the clinical team. Interviewees described the need for 'strong drivers', someone who could 'engage with all people, at all levels', from the most senior management down. Engagement was considered the key, rather than evidence that the intervention worked. Interviewees in visiting support roles were in a position to compare different managers across different locations. According to CQI facilitators and RANs, leadership for change was the role of the local managers, resident area manager and health centre managers who needed to 'take it on

board', 'get enthused' and drive the implementation, engaging with the interventions in a way that 'embraces the diversity of the members of the team'.

Not all managers were regarded as having the different sets of skills needed both to lead change and manage day to day operational matters. The absence of a manager at L2 who was able to provide consistent leadership, manage challenges, understand the capabilities of the team and engender trust, meant that staff were unsure of how information from audits would be interpreted and of future directions.

The CQI program was recognised as a strategic priority at L1 and L3, which were acknowledged as well-resourced health centres having access to CQI facilitators and other program support staff. Location 2 was constrained by the absence of ongoing and consistent leadership and did not engage with available support. Resources for other programs, such as, health promotion programs, were limited and health staff at L1 reported paying for food for community programs to fill that gap. A further resourcing constraint identified at L1 and L2, was that non-clinical staff such as receptionists, cleaners, and drivers, who were recruited from the local community, were not always available, leaving the clinical staff to fulfil administrative and cleaning duties.

These narratives point to further refinement of the CMO configuration. The change agent on the primary health care team is the local level manager who is a 'stabiliser', able to embrace diversity within the team, and to engage both the local and regional support teams in change. Resources were not seen as a barrier to the implementation of the case study interventions and were excluded from the revised CMO configuration.

In summary, there was a strong positive congruence with the proposed CMO1 found in the analysis of the narratives of health professionals at L1 and L3. At L2 the outcomes predicted had not eventuated and no changes were reported to have been implemented following a recent audit. Health professionals sought leadership from the managers who were accessible to them - for L1 this was the area manager resident at L3. The long-term lack of leadership in Organisation A, at L2, was identified as the reason for a lack of response to the intervention of audit and feedback.

A refined CMO1 is proposed that reflects these leadership characteristics – a) the ability to embrace team diversity and b) to engage with both their local team and regional support people.:

Refined CMO1: Local level leaders, who can embrace team diversity, have a good knowledge of what needs to change, and work by engaging both the local team and regional support people (context) will inspire implementers *to trust and follow* (mechanism), leading to strategic support for CQI to change Indigenous primary health care practices (outcome).

5.2.2 Believing They Can Make a Difference

This proposed CMO configuration was generated from the CQI research program theory '**Potential for Empowerment by Data**'. The outcome sought was: Health professionals at the health centre level are empowered to make changes to Indigenous primary health care processes in order to improve care in areas identified by the audit and feedback process. It is proposed that health professionals' belief that they can make a difference will be triggered when they can access and understand local CQI data, and when their team values that information. The proposed CMO configurations for the primary health care level is described below.

Proposed CMO2: Where there is visibility, control and interpretation of local level data, and shared valuing (context), then primary health care professionals will *believe they can make a difference* (mechanism), leading to employees being empowered to make changes to Indigenous primary health care processes (outcome).

Changes to Indigenous primary health care processes in L1 and L3 were attributed to the Area Service Manager, including establishing an inclusive planning model involving all local staff and visiting program support staff, supported with monthly health centre meetings and an annual combined planning meeting. There was no health centre level plan for L2.

Location 1 and Location 3: The Area Manager was instrumental in bringing about the local level planning and changes to workload management. Significantly, this manager was resident at L3 and frequently visited L1. The planning process was described:

...I don't think people prioritise planning as important business, how can you prioritise if you don't have a plan? If you don't know what you are doing? If your staff know what is happening, it is a driver. You drive change; you drive outcomes.... We look at the gaps in it and then we identify what we can do with it... We go out and do about 100 surveys a year (survey of clients) about what they would like to see.... We sit down, and we go through what we have done for the month as far as achieving our operational plans (CHC3_ASM).

...planning is done at each site and then they are brought together for planning.... All of the staff are included as opposed to being just managers and health development people like myself, if they can come. It is a different model for implementing primary health care or change management.... I look at some of the other sites and 'think that site could use that model'.... [It] brings everyone to the table to discuss and to plan...not just for the next month but for the longer term If it is faltering, actually going back to the group and saying why is it not working? As opposed to either ignoring the idea because it is not going to work or just trying to push it through (CHC3_V1).

Another change identified as a result of the audit results was to adopt a strong programmatic focus. At its most basic, this involved allocating a nurse or health worker to the child health or chronic disease programs. Beyond that, there was variance in the amount of time available for individuals to focus on a single program, and in the proportion of time allocated to ongoing program requirements versus acute demands. At L3 a formal rostering system rotated staff between acute and programmatic work was described:

...we need to focus more on program and change the way we work and approach ... so we get better results. I had to change the system a little bit but discussed with the staff saying we are going to have certain days for set programs.... It really worked, and it is one of the changes that I said that I made.... We saw very good results because there were more preventable chronic disease reviews with the doctor's review completed (CHC1_HCM).

...program areas, (the manager) does it, says it's easy, certain days are program days, rosters people to relieve the women's health nurse, so they can run things, the child health nurse does that Monday-Wednesday-Friday, then on Tuesday and Thursday that nurse relieves the acute team so they can do their program. That works reasonably well (CHC3_HSM).

A visiting health professional remarked about L1, 'they love seeing how well they are doing and also when you look at where they are falling down' (CHC1_V1). 'Seeing the results' was offered as one reason along with the provision of comparative data to be definitely influencing outcomes.

However, this change to programmatic focus was difficult to maintain in L1, and workload management affected the number of times individual clients needed to present-

When we first got here it was a set program day... the program has fallen off, the programs are not happening as much, and the really defined days aren't happening as much (CHC1_RAN1).

... the problem with that (program days) is when they have their program days if someone presents for some other reason instead of doing what is on that recall, they will tell the client that they need to come back tomorrow to have this done (CHC1:3_F1).

The under-representation of clinical effort captured in the information system and reports also created tension. For example, when the proportion of completed adult health checks was less than expected, it was discovered that the electronic data system had not been designed to record work on chronic disease plans by AHWs or RANs unless a general practitioner had signed off in the system:

...when I looked I was shocked ... the nurses' part or the health workers' part is very up to date, the Key Performance Indicator report didn't reflect that at that time because the doctor hadn't completed the last part (CHC1_HCM).

At **Location 2** there was little indication that the clinical data produced by the CQI processes was valued, with some health care professionals interpreting audit results as judging them (CHC2_RAN1). When interviewees spoke specifically about the CQI audit and feedback at L2, it was apparent that the results were perceived by them as reflecting badly on their work, and that they were unable to see the usefulness of audit's outcomes. A visiting health care professional identified that research (interventions) need to be seen as beneficial to health care professionals for them to want to participate 'otherwise it is just numbers or data that is of no real benefit' (CHC2_V4). This was echoed by another who felt that the language used, and ideas expressed, were not relevant to their motivation for their work (CHC2_RAN1). The

feeding back of CQI data was particularly problematic at L2 where it was described as 'crucifying people' (CHC2_HCM2). Another described the feedback process as -

Rather than being seen as a productive thing (CQI audit), it was instead shoved to one side and seen as criticism (CHC2_RAN4).

However, the views of the CQI facilitator for L2 (who covered other locations in the area) contrasted with the perspective of the L2 managers and health professionals:

...for us, there has been some significant improvements in chronic disease management as a result of that, and we can demonstrate that. It's about follow up, it's about when people need their follow up bloods and treatments - a whole range of things. We can show the results we are getting ... [are] making a significant difference in chronic disease management (CHC2_V5).

...definitely influencing outcomes –having access to data on how they are going, comparative data, compared to NT and Australia, it has had a significant impact. Part of it is they are seeing the results; a bit is because we provide them with comparative data (CHC2_V5).

One finding relevant for all locations was that both health professionals and CQI facilitators found the system assessment and action planning interventions to be boring, and people avoided participating. They were also critical of the focus on outputs without providing information on health outcomes, creating disengagement by staff as a result of the impact of their work not being recognised or measured:

...I just never ever see follow through on those.... You do up an action plan with them and that's it - they never look at it again...after the first one everyone is absolutely bored with it (CHC1:3_F1).

...no one attended apart from myself and the manager and maybe one other person, nobody wanted to know. She is just going to tell us we haven't done any work (CHC2_RAN1).

...you don't hear about people living longer or having less diabetes or having lost weight. Don't hear much about that, you just hear about you have done 90% of your adult checks or done 80% of your Hb checks so you hear about the percentage of the work - which we are good at here. No human result. Even that language is missed. Interpretation is blank, and people are bored when people come to tell us this stuff. Doesn't motivate you to do any more or less. The things that probably feel good are hearing that ... you are doing better than other places...it's a competitive thing, I

think that's a great motivator to make people competitive about what they do (CHC1_RAN1).

Some were critical of the failure to tell a story or personalise the data so that a connection could be drawn with the people providing and receiving health services:

...they actually pull out patients' files and then look at what was done for them, but they don't create a story about that one patient which is what really if I was trying to change things I would personalise things...we are interested in people at this level and how much better this is making them...when feeding back, they need to feedback not with graphs but with stories that make them human because when they open a page and there is a graph, this is how many you did this year and this is how many you did last year, you know that is not what people want to know (CHC2_RAN1).

...It's boring (the systems assessment) people go to sleep, it is too long and drawn out. I hadn't done it before and have done it a few times here, but it is Oh My God, horrible, awful, often an all-day but no one comes back after lunch, why would you? Who is interested in figures and data, certainly not the practitioners? (CHC3_HCM).

In summary, there were CMO2 outcomes of changes made to Indigenous primary health care processes relating to Case Study 1. These changes were reported by the manager at L1, the area manager at L3 and the CQI facilitators, for whom 'making a difference' was a likely mechanism. The CQI program was credited for this process although information on performance indicators for the individual health centres and how they had performed against other locations came from a variety of sources.

Some health professionals were frustrated by the non-reporting of significant clinical activities in the reported data and the lack of humanised content in the feedback to indicate that the clinical activities were making a difference to people's health. At L2, there were no evidence of valuing of the data or change linked to data, instead, the manager was critical of any change. The CQI strategies of system assessment and action planning were not valued by any health professionals interviewed. Based on the data collected, support exists for the CMO2 outcome of empowerment to make changes for managers at L1 and L3 and the CQI facilitators. The missing aspects of this proposition for other health professionals appears to be the ability to find the data relevant to their work, which would be the basis for supporting the shared valuing

and interpretation of local level data. On this basis, the following refinement of CMO2 is proposed:

Refined CMO2: When local level data is relevant and meaningful (context) then primary health care professionals will believe they can make a difference (mechanism), leading to a shared valuing of data and a sense of empowerment to make changes to Indigenous primary health care processes (outcome).

5.2.3 A Sense of Direction

This proposed CMO configuration was generated from the CQI research program theory '**CQI Thinking**'. The outcome sought was: an engaged workforce who accept CQI as a basis for change. The proposed CMO configuration for the primary health care level is described below.

Proposed CMO3: Where there is local CQI capability, access to regional support systems, availability of CQI training, and management who use a CQI reporting framework to focus on health outcomes (context), then primary health care teams will have *a sense of direction* (mechanism), leading to an engaged workforce who accept CQI as a basis for change (outcome).

Within the narratives from managers and CQI facilitators there were statements that aligned to the proposed CMO configuration outcome of 'accepting CQI as a basis for change' and as 'a structured framework', 'allowing people to see the gaps' and 'significant improvement in chronic disease management'.

Location 1: The CQI facilitators spoke of the generalised acceptance of the CQI program:

...the department wants results, don't they? So, I guess doing this allows people to actually see. We had a meeting yesterday and it was excellent We looked at what we did last year, and was it achieved, and it was all on the table ... [with] the new ideas and what ... we [are] going to do this year [It] allows you to see where the gaps are and where you are doing well so that ... once you get those results and ... the feedback you can actually target where, prioritise where ... you want to start making an improvement (CHC1:3_F1).

One respondent supported the overall outcome of accepting CQI as a basis for change, but thought expressed the view that significant problems are caused when available data are unreliable. Frustration was expressed that local level data was inaccurate, misrepresentative of work effort, used parameters that fail to capture local clinical priorities, yet is presented to health professionals at the health centre to inform their work:

...the problem was that the people that they had screened were 18-55, but we hardly get anyone in that age bracket for STIs. Everyone is like 12-16 or 17. So they say we haven't followed up - they have skipped a whole group of people we spend all our time on. It's a small mistake but it frustrates you. All you remember at the end of getting the information back is that they don't think we do anything because they have looked at the stats to say we don't do anything (CHC1_RAN1).

Location 2: There were mixed responses by L2 health professionals to the CMO configurations outcome 'An engaged workforce who accept CQI as a basis for change'. The manager felt that the clinical audit was 'a huge impost for any clinic' (CHC2_HCM2). Whereas, another health professional thought that it 'serves the purpose for me' but reflected that 'a lot of people just see it as a threat' (CHC2_RAN4).

In the context of constantly changing health centre management at L2, there was inconsistent participation in the audit and feedback sessions. The interpretation of data was also inconsistent due to the changing management. A key issue identified was a lack of CQI capability in using the electronic information system, and one interviewee expressed the belief that workload was being driven by the information system rather than by client need:

...the computer has taken over that, and I don't really have a sense or an ownership of it ... there is almost a sense of being driven by the computer, not by the person. It is very task orientated.... As a nurse that is what I feel it has done, it has taken that control, that individual relationship has gone... The care coordinating has been taken away from us by the computer or by the chronic disease nurse so we are only left with the tasks (CHC2_RAN1).

Reflecting on the CQI facilitator role, the regional manager observed that not all CQI facilitators were having the same impact, noting that one CQI facilitator was leading the way elsewhere in the region, and that engagement with the CQI data was noticeably greater in the areas where this facilitator worked. However, on the whole, the regional manager believed that the CQI program was having a positive impact on outcomes:

...definitely influencing outcomes –having access to data on how they are going, comparative data, compared to NT and Australia, it has had a significant impact. Part of it is they are seeing the results; a bit is because we provide them with comparative data (CHC2_V5).

Location 3: Location 3 health professionals were engaged in the CQI audit data and had embedded CQI information into program planning as the basis for change, described as:

...the CQI intervention has provided some direction for Indigenous primary health care because our communities are very diverse ... and it provides more of a structured framework... Even though we have difficult systems to work within, to get the data, it is actually now a reality that we can ask... why is everyone in this community on a chronic disease plan not receiving services, when in another community with the same number of staff, more people with chronic disease issues are getting followed up? (CHC3_V1).

For one CQI facilitator working across L1 and L3, the engagement of staff in a CQI activity was dependent on two factors: firstly, the ability to concentrate on the process without a clinical load and secondly, the health centre manager taking a leadership role:

...what should happen is, I ask them to close the clinic for the day...it never happens...they are so preoccupied and all they can think of is that "I have so much work to do I don't want to be sitting here". I think that is what it is. "I need to see all these people and we are sitting here doing this". They are just overwhelmed. The list doesn't go away, it just gets bigger (CHC1:3_F1).

...my job is just trying to get them to change their way of thinking. Nobody likes change - taking them outside their comfort zones. [I] ... try not to be judgemental. I go out there and say this is what it is. How are we going to do this? It is not my program, so I am not going to tell them how to do an action plan. I will sit down and ask them how they want to do things and how will you put it in place. (CHC1:3_F1).

Overall, the employees acknowledged the direction being set by the CQI framework, and accepted CQI as a basis for change. However, health professionals were not necessarily engaged by the CQI reporting. As discussed in relation to CMO2, some health professionals pointed out that the data lack a human perspective, not reflecting the people for whom they provide care every day. The skills of the CQI facilitators were also reported as variable. The CQI intervention was not differentiated from other programs providing similar audit information - such as, the Traffic Light Report and the National Key Performance Indicators for Aboriginal and Torres Strait Islander primary health care.

A common concern was the lack of training and capacity of staff for using the electronic patient information system. This was discussed at length in all locations, and described by one person as:

...the most complicated wobbegong that I have come across in my life... it is like a swamp' (CHC2_HCM1).

Another issue identified concerned insufficient control over the clinical data, as these comments illustrate:

...critical things get lost to the system (CHC3_HCM).

...you on can go through 10 attempts and you still won't find what you want... We needed someone to simplify and explain it for us (CHC2_HCM1).

One respondent described the inconsistency and onerous frequency of reporting requirements across the accountability frameworks as a "complete nightmare", with different definitions for being a permanent resident and shifting boundaries for Medicare billing. One health professional identified inbuilt incentives in the reporting system for competing with other primary health care centres, with this being associated with L1 in particular. A visiting support worker made this observation about L1 -

They love seeing how well they are doing and also when you look at where they are falling down (CHC1_V1).

CMO3 was supported, without refinement, on the basis of the congruence found at L1 and L3. The regional manager and CQI facilitator for L2 indicated broader support for CQI processes. L2 health professionals reported poor engagement with the CQI processes with managers overwhelmed by the rival reporting and accountability frameworks. One finding of significance is that the CQI facilitator for L1 and L3 recognised the need for participants to be able to concentrate on the process without a clinical load, and secondly, for the health centre managers to take a leadership role in the process.

5.2.4 Feeling Valued

This proposed CMO configuration was generated from the Childhood Lung Disease Case Study 2 program theory - **Respectful Relationships**. The proposed CMO configuration for the primary health care level is identified below.

Proposed CMO4: When there is sufficient workforce stability, a manageable workload and respected clinician researchers who build relationships through supportive activities (context), then health professionals will *feel valued* (mechanism), leading to involvement of health professionals in implementing clinical research interventions (outcome).

For health professionals, the outcome of health professionals' involvement in implementing clinical research interventions was not straightforward due to lack of involvement and high workload. All locations reported a high workload, being overwhelmed and 'constantly swamped'.

Location 1: At Location 1 implementing new ideas in Indigenous primary health care was considered to be difficult, described as a 'frustrating long hard process' for the person trying to introduce new ideas and with frequent implementation failure. People who came to the centre were seen as most helpful when they contributed through supportive activities, and involvement in the local workload, with a positive attitude being a bonus. They were contrasted with those visitors who expressed condescension to the local team and failed to contribute to their work. Sometimes visiting researchers and health professionals brought different priorities and interests to those of the local team and this resulted in increased workload for them (CHC1_RAN1). What was desired was:

...to see someone coming out and doing some primary health care and taking some of the load helps you do it; to have an external person come in and do work, like physical actual work, putting needles in arms, or gathering people up and getting in the car and saying, "come out to do this" helps heaps (CHC1_RAN1).

Relationships between health centre staff and 'outsiders' (including researchers) was discussed frequently, and the key factor identified for improving those relationships involved valuing the capability of the health centre staff, in particular, the Aboriginal and Torres Strait Islander Health Practitioners who were identified as needing to be involved, and as early as possible:

...when people come out ...it would be better if they came out and introduced the whole thing and really get all the staff to be involved as well so they can get their input ... to how it could work better (CHC1_HCM).

The CQI program was identified as one that did liaise with health centre managers regarding the selection of areas for audit, and for providing feedback to health professionals.

Maintaining respectful social relationships within a primary health care team was identified as being very important:

...especially in a small place, [with] only 5 or 6 people here, relationships really matter. They make a massive difference (CHC1_RAN1).

For Aboriginal and Torres Strait Islander Health Practitioners, being involved and valued by the other health team members was identified as underpinning respectful relationships:

...Health workers we are on the same par, not here (hand higher), not there (hand lower) we are here (hand and eye level). And I have found with nurses there are up here (higher) and we are down here (lower) but, when they get stuck they come and ask us. Some of the nurses are like that, unfortunately, but not all of them (CHC1_AHW1).

Location 2. One of the enabling contextual circumstances proposed by researchers is workforce stability. Of the three locations, the impact of instability was reported by all participants at L2:

...we've had six managers since I started (12 months prior to interview) [and] in that time the three level four RANS have been changing. Agency staff come for six weeks at a time, two weeks at a time, it's a miracle if they stay eight weeks at a time (CHC2_RAN3).

Instability is associated with reliance on short term placements by staff who are often new to the remote and Indigenous practice setting and are perceived to have skill gaps. Workforce instability was described as fatiguing because it increased already heavy workloads of existing staff. One new to practice nurse was reported to have had no clinical supervision and spent time orientating short-term RANs. Short-term staff were described as being older, and less receptive to change or new ideas. The negative impact of the short-term workforce appeared to affect long standing staff more than others. At L2 this involved Aboriginal and Torres Strait Islander Health Practitioners and two long-term RANS:

...it just impacts on the clinic, as the [new] staff don't know the patients. The health workers don't know the new staff and ... if you have staff in for only two weeks it is hard to get together and work well and plan stuff. (CHC2_RAN3).

The Aboriginal and Torres Strait Islander Health Practitioners at L2 also commented that the health centre environment with its constantly changing faces was unsettling for them, and that they cope by 'staying strong together (as Aboriginal and Torres Strait Islander Health Practitioners) and trying to be positive'. These workers were described as the "constant" in the health centre, acknowledged for the support they provide to others but not always having a powerful voice. They articulated that they want to be listened to, on the same level, and to be part of the decision-making. Importantly, Aboriginal and Torres Strait Islander Health Practitioners reported feeling 'old', and 'not good enough', saying:

... one that listen to us work, work with us. Work with the nurses. Work as a team. Working together. That is on the line. Not someone up there and someone down there. On the same level. Respect. The Health Workers don't have any problems, the nurses have lots of problems, we just stand back see what is going on and... (discussion in language) we don't have leadership, we are working together. We talk to them to see if they are all right ...share things like you know, knowledge. She can teach, and we can teach them too - both ways...It feels like we are being left out or something. Not that we are blaming on nurses Like nurses change all the time Ah? And then you sit back. Watch them do it all the time. Maybe we feel old Ah? That we don't do good enough in the clinic. They come and change it around and then they go, and then another nurse come, and then they go. Like a hurricane sort of thing! It hits, and it goes (CHC2_AHW).

...people coming out with big ideas saying we should change this so that this would work they don't ask the health workers and they don't ask people here and they go and try, and do it and it doesn't work (CHC2_RAN3).

Location 3: Workforce instability was less of an issue at L3, with the manager reporting that they are always able to recruit staff, and that permanent staff change over every couple of years. Short-term staff were employed mainly to backfill permanent staff who were on leave. Workload was a significant factor at L3 with more than 500 people being managed for chronic diseases. The workload of the RAN managing the chronic disease program at L3 was the reason for declining an interview for this study.

One difference that was noted in the CQI program was that the implementers '*had a say*'. Managers contributed to decision making about content for standard audits and the whole team participated in system assessments. It was clear that the 'teams' in L1 and L3 were inclusive of people who provide visiting support. Being part of decision making processes was

clearly critical to health professionals' willingness to implement innovations. Only one interviewee identified as helpful receiving assistance with clinical load.

Aboriginal and Torres Strait Islander Health Practitioners at L1 and L2 (there were none interviewed at L3) had two strong messages about being involved in interventions. Firstly, that they wanted to be asked and secondly, that they wanted to be treated in the same way as other professionals (strongly emphasised at both L1 and L2). When Aboriginal and Torres Strait Islander Health Practitioners received equitable treatment, they felt valued for their knowledge and this enhanced team cohesion. For them, the distinction felt was based on being Indigenous or non-Indigenous – as opposed to being resident or visiting health professionals.

In summary, there was no congruence found with the proposed CMO 4 and the experiences of health professionals at any of the locations. Aboriginal and Torres Strait Islander Health Practitioners perceived that their work was not assigned equal value with that of non-Indigenous health professionals, and that they lacked equal power and decision-making influence. Based on their feedback, the CMO4 mechanism of *feeling valued* appears to be a cornerstone of functional teamwork at health centre level. On this basis, a refinement to the CMO4 is proposed:

Refined CMO4 When there is sufficient workforce stability and relationships built by working together for a two-way shared understanding (context) then all health professionals will *feel valued* (mechanism) leading to involvement of health professionals in implementing clinical research interventions (outcome).

5.2.5 Seeing a Use for It

This proposed CMO configuration was generated from the Childhood Lung Disease Case Study 2 - Program Theory: '**Tailoring Implementation**'. The proposed CMO configuration for the primary health care level is described below.

Proposed CMO5: When the intervention can be integrated into the clinical practice systems, and there is recognition of illness by clinicians and families (context), then health professionals

will see a use for it (mechanism), leading to increased recognition of need to implement the intervention (outcome).

Health care professionals agreed that the clinical practice systems were supporting care by identifying who needed services and by supporting service planning and coordination. Over the past decade, clinical practice systems in Indigenous primary health care have been incorporated into electronic information systems and managed primarily through the care planning function. Care plans augment many primary health care programs, such as, the chronic conditions, adult and child health checks. Care plans for priority conditions - for example, anaemia - are designed to be uploaded to the electronic patient information system. They are particularly useful tools as they can automatically generate recall lists and provide a clinical reminder for follow up care.

Location 1: At L1, two Aboriginal and Torres Strait Islander Health Practitioners explained how children in the clinical management of childhood lung disease intervention are managed through the clinical practice system, and how their management inputs to the child health program generate a weekly recall notification from the electronic information system. Their comments – for example, ‘I follow them every week’ and ‘we can follow all we need’, align positively with the proposed CMO5 outcome of ‘increased recognition of need to implement the intervention’:

...there are other kids with that problem, they are on Azithromycin and I follow them every week. I monitor them every week. I weigh them every week. I find the child, weigh them check their chest, their ears, their obs. and give them their antibiotic.... They just put them on the recall list (CHC1_AHP1).

... we put them on the recall and follow them up...We do that...That works (M). It is good, we can follow all we need (CHC1_AHP3).

The health centre at L1 implemented the management of these children by adding them to ‘recall lists’ created in the information system.

At L1, health care professionals were open to engaging with researchers and new ideas. In particular, the Aboriginal and Torres Strait Islander Health Practitioners had worked on multiple research projects by assisting with primary data collection, implementing selected interventions, and providing feedback of results to community members. For one of the RANs

interviewed, participating in new interventions was dependent on the degree to which the external person could minimise any impact on workload resulting from that intervention.

Location 2: Implementation challenges were exemplified in L2 in relation to children being treated for bronchiectasis, and on weekly medication, for whom weekly follow ups became difficult. One example involved follow-up requiring a child to be taken out of school on the outstation weekly visit, at a time when no close family relatives were available to provide consent for the child to be assessed and treated, leading to disengagement by the family in the process and the incorrect storing of medications for the child. The research team did not intervene with these family issues.

The only acceptable process for change, according to both managers at L2, was through the Best Practice Committee and subsequent incorporation of recommended processes into CARPA clinical guidelines. The process of researchers interacting directly with a health centre was not considered to constitute a pathway for changes to practice. Responses included:

...best practice evidence - got to be evidence based, I just refuse to accept it. Some of the research that people say that you should do this or that! I actually haven't had a researcher pull that stunt on me! I haven't had a researcher come out here ... "the medical tourist" people coming in wanting to bring a new change to something like that but the problem being that all our staff are obliged to utilise what is written in CARPA and the women's manual...For someone or a research group to say maybe you shouldn't be doing it that way it needs to be resolved because when it comes to the medico-legal side of things you have to be very careful that you have not going against what is in the set manual (CHC2_HCM1).

...there has been lots of change in communities and to be honest the locals become jaded...people come wanting to bring new changes...but the problem being that all our staff are obliged to utilise what is written in the manual...A lot of the research groups have not approached the owners of the manuals...to make sure the input is put into the manual (CHC2_HCM2).

Explanations of why researchers were rejected at L2 (excluding the Aboriginal and Torres Strait Islander Health Workers) ranged from 'new idea fatigue'... expressing the opinion that 'I know staff are over it' (research) to a questioning of benefits extending to the Aboriginal community 'what is in it for them, what benefits are there for them'? (CHC2_V4).

Other respondents reported that research activity was not encouraged at the health centre. This was described as 'resistance by management and managers saying no we don't want that'

(CHC2_RAN4) – even when the research involved the researchers undertaking a substantial load of clinical work that otherwise would not have been completed. One story of poor treatment of a researcher involved a specialist clinician doing research was told:

...she battled to get through the door, horrible, embarrassing... they won't, do this or do that ...nothing wrong with her approach, it was the reception, it wasn't her, it was the reception, it was the stupidity around what she was trying to do, the ignorance, like she was treated badly. I feel embarrassed by it... horrible (CHC2_RAN5).

...the manager was really, really hostile, it wasn't the present manager, it was an agency one, she was a good manager, but she didn't want any of this, she didn't know what it was about, she was obstructive all the way through the process... (CHC2_RAN1).

This same research project provided information and developed resources in the local language that were not available in the clinical guidelines or other resource manuals but were not implemented because of resistance, the reasons for which were unclear.

Questioning of the benefit of research for the community was raised at Location 2, but not at L1 or L3. Concerns identified by health professionals included the failure to provide feedback to centres about the findings of research, and the failure to communicate that to communities. However, there were also some reflection on the response to research:

...a lot of it is our fault because we approve all this research and then we just don't follow it up. The whole idea was to tighten it up by coming through remote health. Is there going to be benefit for communities and remote health, and are we going to make a difference? Theoretically, that's what drives it but we are not hearing anything back – so that is a big issue (CHC2_V5)

...overall people want to participate if research is beneficial to staff, otherwise it is just numbers or data that is of no real benefit... It can be overwhelming if you have visitors if it is not going to be beneficial to their work (CHC2_V4)

Perceived relevance emerged as being critical for gaining local level support for research-led interventions in Indigenous primary health care, with interviewees emphasising the need to participate in selecting interventions based on their expected benefits and outcomes (CHC2_HCM1).

Location 3: Integration of change through the clinical management system was positively supported at L3:

...it is a good working tool for the coordinators and then they can coordinate the work for the month' (CHC3_ASM).

These changes have led to stronger clinical practice systems described as bringing greater accountability and ensuring adherence to clinical guidelines.:

...at the end of the day you hope it decreases the adverse events and reduces the clinical errors ... [by] making sure that people are providing good documentation (CHC3_ASM).

In summary, changes integrated into the electronic information system were effective for a clinical intervention based on clinical consultation, as required by Case Study 2.

CMO5 was supported, without change, at all locations with health care professionals needing to see the usefulness of change in clinical practice systems. Health care professionals were vocal about interventions that they did not regard as useful, or with which they could not engage.

5.2.6 Connecting and Relating

This proposed CMO configuration was developed for Case Study 3 and relates to the Indigenous Mental Health Care research program theory of '**Telling the Story**'. The outcome sought was effective engagement in the implementation of the intervention. The proposed CMO configuration for the primary health care level follows.

Proposed CMO6: When organisations employ Aboriginal people in the health workforce, and health professionals are trained to use tools that have culturally meaningful language and images, (context) then health professionals will connect and relate to Aboriginal clients and families (mechanism), leading to effective engagement in the implementation of the intervention (outcome).

However, when participants were asked if they knew about the Indigenous Mental Health Care research program, it was found that no one had participated in the training for use of the mental health tools, and that one respondent had heard of the tools and searched for a copy but was yet to use them. Aboriginal and Torres Strait Islander Health Practitioners were aware of the development of the tools, but none were using them. Significantly, some responses by health professionals working in the primary health care setting showed a disinterest in mental health care, saying:

...anything to do with mental health you kind of get the impression the staff think that it is not our job' (CHC1:3_F1).

...the majority of mental health patients are men you know - I don't want to see men so why should I do that?! (CHC1_AHW1).

...more likely be used by the alcohol and other drug workers than primary health care staff (CHC2_V4).

Other, more general comments about working in Indigenous primary health care did relate to the CMO configuration outcome of effective engagement in the implementation.

Location 1: The difficulty of effectively engaging Aboriginal clients and families was hard and the lack of response challenging:

...investigations and things get done, that is easy to do, that is work, that is simple, but the follow through is hard... But if someone sends me an inbox saying, 'can you adjust so and so's Perindopril dose and make sure they take it', that is weeks and weeks of work, that may or may not get done, the person may or may not take it What you get back from people doesn't always inspire you to keep going... You end up putting in what people are giving back to you. Like someone really can't be bothered with it I don't feel guilty about letting it go, but if someone is coming back and trying or engaged at all, you are more likely. If people were knocking at the door to get involved it would be so simple, it would really be easy to get through the work... [I] really find it hard to get people to tell me what they want – from health centre staff and from anyone. (CHC1_RAN1).

One Aboriginal Health Practitioner commented on non-Indigenous people working in an Aboriginal health setting:

...what they don't understand when they first come is the community life. They come out here thinking they are going to save the world - it doesn't work like that, unfortunately (CHC1_AHW1).

Location 2: One health professional described their interactions with Indigenous consumers as having 'fuzzy boundaries':

...if you have good relationships, clients come to the health centre, but then what they request isn't related to work, they're asking for help to get credit on the phone. There are so many reasons for me to help, and so many reasons for me not to help (CHC2_RAM1).

Similarly, negotiating adequate preventive interactions with clients was difficult:

...you can't make them come in. They don't come in for regular checks and by the time they come in they are sick, Yeah, we can tell them but they might not come in. There is just this whole thing can you make them come in? Where else do you make people come to the clinic for their health? Maybe they don't want to come back and wait for half an hour. It is difficult and it's just difficult (CHC2_RAN3).

Location 3: Engagement of Indigenous clients in their care was challenging because of the perception of non-Indigenous staff that these clients had low levels of interest in becoming engaged in self-care, saying:

...it's really hard to keep it happening. There is so much apathy. Is this general? There was more response in the Cape, totally different. Here you just get nothing. Here you get bargaining, it is so hard to get two-way involvement in patient care or program work – people do not want to be engaged (CHC3_HCM).

In responding to a question about the awareness of the mental health intervention one interviewee commented that 'anything to do with mental health you kind of get the impression the staff think that it is not our job' (CHC1:3_F1) while another observed that mental health tools were 'more likely be used by the alcohol and other drug workers than primary health care staff' (CHC2_V4).

Failure to make information engaging appears to generate loss of connection with that information, resulting in a failure to get the message across and people disengaging from that information. Interviewees shared how de-motivation accompanies clients' lack of engagement and lack of response, inhibiting communication and behavioural change. This finding was consistent across all locations and all professional groups - managers, RANs and AHWs.

As there was no evidence of the anticipated outcome leading to effective engagement with Aboriginal people in clinical practice, there was no support found for the proposed mechanism

of *connecting and relating*. The absence of connection between non-Indigenous health professionals and Indigenous clients were described as the 'big gap' in Indigenous primary health care-

If there is a big gap in Primary Health Care it is in getting things instigated, it is mostly to do with people's motivation and people's ability to engage people and how they react when people don't engage (CHC1_RAN1).

In the analysis of Phase Two interviews no evidence was found of the triggering of the mechanism of connecting and relating, or of effective engagement with Aboriginal people in clinical practice, or of Aboriginal clients and families connecting with, and relating to, clinical care. Instead, the research identified health professionals being perplexed about an inability to connect and relate to Aboriginal clients in ways that lead to those clients' engagement with clinical care. Non-Indigenous interviewees attributed this to Aboriginal clients responding 'differently', some to perceived 'apathy'. Another non-Indigenous interviewee remarked that once they had built up relationships within the Aboriginal community they found the lines became blurred between when a client would contact for clinical care or when they would contact to seek support with other non-clinical issues. Aboriginal and Torres Strait Islander Health Practitioners indicated that the expectations of health professionals were not aligned with community life.

In summary, in this study there was a no congruence found between the proposed CMO6 outcomes and the experiences of health professionals at any of the locations. CMO6 is reported in these findings as unsupported, but the mechanism of *connecting and relating* was recognised as a gap in the cross-cultural interactions between Indigenous and non-Indigenous team members and between non-Indigenous health professionals and Indigenous clients.

This CMO configuration was refined to reflect how this gap may be bridged:

Refined CMO6: When organisations have relational accountability to Aboriginal people, and non-Indigenous health professionals have the cultural competency to contextualise ideas (context) then they will connect and relate (mechanism) to Aboriginal clients and families, leading to effective engagement in the implementation of an intervention (outcome).

5.4 Summary

In summary, health professionals perceive the implementation of new initiatives in Indigenous primary health care as challenging. Awareness of the case study interventions and outcomes varied across health professional categories and across locations. This study found that those employed in the roles of area manager, health centre manager or visiting program support had greater awareness of the Case Study 1 intervention. There was less awareness of Case Studies 2 and 3 at all three locations. The most obvious explanation for this finding is that Case Study 1, unlike the other interventions, had been scaled up to a strategic level, with a specific workforce of CQI facilitators, within the health organisation. The CQI data formed part of a suite of indicators for assessment of progress and accountability. Put another way, it was highly visible, and interventions were repeated on annual cycles.

Comparison of congruence between what researchers had intended, and what was experienced by health professionals, is set out below. Overall, a pattern emerged of L1 and L3 supporting CMO1 *trusting to follow*, CMO2 *believing they can make a difference*, CMO3 *a sense of direction* and CMO5 *seeing a use for it*. Location 2 supported CMO5, *seeing a use for it*, for Case Study 2. In addition, the regional CQI facilitator for L2 supported CMO2, *believing they can make a difference*. Neither CMO4 *feeling valued* or CMO6 *connecting and relating* outcomes were supported by the narratives of health professionals at L1, L2 or L3. However, the mechanism of *feeling valued* had congruence with what Aboriginal and Torres Strait Islander Health Practitioners described as 'being on the same level' and critical for cross-cultural teamwork. Likewise, the mechanism of *connecting and relating* leading to engagement of Aboriginal clients and families, was described as the 'big gap in primary health care'.

CMO1 was supported. There was a positive congruence with '*trusting to follow*' at L1 and L3, but not at L2. The context was refined to reflect the critical characteristics of leadership for health professionals: being able to embrace diversity, and work through engagement of the local team and regional support people. Resources were not recognised as a barrier to implementation of the case study interventions and were removed from the revised CMO configuration.

Proposed CMO1	Refined CMO1
<p>When there are change agents in leadership roles, with a good knowledge of what needs to change, and adequate resources (context), then people at health centre level will be influenced to <i>trust and follow</i> (mechanism), leading to strategic support and resources for CQI to change Indigenous primary health care practices (outcome).</p>	<p>Local level leaders, who can embrace team diversity, have a good knowledge of what needs to change, and work by engaging both the local team and regional support people (context), will inspire implementers to <i>trust and follow</i> (mechanism), leading to strategic support for CQI to change Indigenous primary health care practices (outcome).</p>

CMO2 was supported, with a positive congruence found for the mechanism *believing they can make a difference* for managers in L1 and L3 and the regional CQI facilitators (including the CQI facilitator for L2). However, other health professionals did not find the data relevant as it did not reflect significant areas of clinical activities or was meaningful. The CMO configuration was refined to reflect the call for data to be relevant and meaningful. Shared valuing was refined to be an outcome rather than context for this CMO configuration. It is likely that shared valuing could also operate as a mechanism to contribute to a sense of empowerment to make changes to Indigenous primary health care processes.

Proposed CMO2	Refined CMO2
<p>Where there is visibility, control and interpretation of local level data and shared valuing (context), then primary health care professionals will <i>believe they can make a difference</i> (mechanism), leading to employees being empowered to make changes to Indigenous primary health care processes (outcome).</p>	<p>When local level data is relevant and meaningful (context), then primary health care professionals will <i>believe they can make a difference</i> (mechanism), leading to a shared valuing of data and a sense of empowerment to make changes to Indigenous primary health care processes (outcome).</p>

CMO3 was supported by a positive congruence with the mechanism '*a sense of direction*' at L1 and L3, but not at L2.

Proposed CMO3	CMO3 Supported without change
Where there is local CQI capability, access to regional support systems, availability of CQI training, and management who use a CQI reporting framework to focus on health outcomes (context), then primary health care teams will have a <i>sense of direction</i> (mechanism) leading to an engaged workforce that accept CQI as a basis for change (outcome).	Where there is local CQI capability, access to regional support systems, availability of CQI training, and management who use a CQI reporting framework to focus on health outcomes (context), then primary health care teams will have a <i>sense of direction</i> (mechanism) leading to an engaged workforce that accept CQI as a basis for change (outcome).

CMO4 was not supported. No congruence was identified for the proposed mechanism of *feeling valued* in the narratives of health professionals. The absence of context elements of workforce stability (at L2), a manageable workload and respected clinician researchers, may have also contributed to this finding. Aboriginal and Torres Strait Islander Health Practitioners' expression of not feeling valued was a general comment and not attributable to the Case Studies.

Proposed CMO4	CMO4 Refined
When there is sufficient workforce stability, a manageable workload and respected clinician researchers who build relationships through supportive activities (context), then health professionals will <i>feel valued</i> (mechanism) leading to involvement of health professionals in implementing clinical research interventions (outcome).	When there is sufficient workforce stability and relationships built by working together for a two-way shared understanding (context) then all health professionals will <i>feel valued</i> (mechanism) leading to involvement of health professionals in implementing clinical research interventions (outcome).

CMO5 was supported as there was positive congruence found for the proposed mechanism *seeing a use for it* at L1 and L3, and for Case Study 2 at L1 and L2.

Proposed CMO5	CMO5 Supported without change
When the intervention can be integrated into the clinical practice systems and there is recognition of illness by clinicians and families (context) then health professionals will <i>see a use for it</i> (mechanism) leading to increased recognition of need to implement the intervention (outcome).	When the intervention can be integrated into the clinical practice systems and there is recognition of illness by clinicians and families (context) then health professionals will <i>see a use for it</i> (mechanism) leading to increased recognition of need to implement the intervention (outcome).

CMO6 was not supported, with negative congruence found for the proposed mechanisms of *connecting and relating* across all locations for non-Indigenous health professionals. Importantly, both non-Indigenous health professionals and Aboriginal and Torres Strait Islander Health Practitioners living and working at the health centre level were keen to 'have a say' about the implementation of interventions, and particularly those that impacted the community.

Proposed CMO6	CMO6 Refined
When organisations employ Aboriginal people in the health workforce, and health professionals are trained to use tools that have culturally meaningful language and images, (context) then health professionals will <i>connect and relate</i> to Aboriginal clients and families (mechanism) leading to effective engagement in the implementation of the intervention (outcome).	When organisations have relational accountability to Aboriginal people, and non-Indigenous health professionals have the cultural competency to contextualise ideas (context) then they will <i>connect and relate</i> (mechanism) to Aboriginal clients and families, leading to effective engagement in the implementation of an intervention (outcome)

These findings uphold the proposition that contextual features significantly influence the degree of implementation success (Rycroft-Malone et al. 2011). Context matters, and despite experienced researchers being aware of an array of potentially enabling and constraining factors in the implementation setting, mechanisms operating at the local health centre level impacted upon how, and who engaged with interventions.

The study findings highlight that implementation is likely to be mediated by three mechanisms: '*trusting to follow*', '*sense of direction*' and '*seeing a use for it*' in locations where there is stability of leadership and workforce. The managers and CQI facilitators who had a positive congruence with the mechanisms '*trusting to follow*' and a '*sense of direction*' were empowered to integrate changes into practice and had congruence with a further mechanism, '*believing they can making a difference*'.

More specifically, these three key contextual factors emerged as critical:

1. Stable local leadership is required to trigger the mechanism of '*trusting to follow*' and mediating the support for change;
2. An organisation that is orientated toward CQI, and health professionals with CQI capabilities, constitute two important outer and inner context factors that together support the mechanism '*a sense of direction*', which is required to facilitate an engaged workforce accepting of CQI processes as a basis for change, and
3. Clinical practice systems that can 'fit' local circumstances are important for activating the mechanism '*seeing a use for it*', leading to increased workforce participation in the implementation processes.

In L2, inadequate local leadership, workforce instability, resistance to external support, and distrust of the CQI data constrained the mechanisms of '*trusting to follow*', '*believing they can making a difference*' and '*a sense of direction*', which all contributed to lack of CQI implementation outcomes.

Working relationships characterised by underdeveloped cross-cultural understanding and sensitivity emerged as a further likely contextual factor constraining the uptake of interventions designed to trigger the mechanisms of '*making a difference*', '*feeling valued*', and '*connecting and relating*'. Although non-Indigenous health care professionals shared the researchers' aspirations for the successful implementation outcomes of the interventions,

including effective engagement with Aboriginal people, they did not feel that they could *connect and relate* to Aboriginal people. Aboriginal and Torres Strait Islander Health Practitioners stated that they *did not feel valued* as equal members of the health professional team. All health professionals who were resident in a health centre advocated for *having a say* early in the development of a research project.

Table 5.4: Summary of Congruence with Proposed CMO Configuration by Location

CMO configurations	Location 1	Location 2	Location 3	(Support, Reject Refine)
<p>CMO1: When there are change agents in leadership roles, with a good knowledge of what needs to change and adequate resources (context) then people at health centre level will be influenced to <i>trust and follow</i> (mechanism), leading to strategic support and resources for CQI to change Indigenous primary health care practices (outcome).</p>	<p><i>Context:</i> Manager supported by Area Manager at L3 <i>Mechanism:</i> +ve <i>Outcome:</i> 'plenty of support and resources' for CQI - not necessarily for other programs- not necessarily dispersed</p>	<p><i>Context:</i> Multiple Managers in Organisation A which is the clinical care provider; non-clinical manager in Organisation B; Difficult for CQI facilitators to access health centre <i>Mechanism:</i> -ve <i>Outcome:</i> No consistent direction to request organisational support, no changes to IPHC achieved since audit;</p>	<p><i>Context:</i> Strong leadership. Area Manager resident at L3; <i>Mechanism:</i> +ve <i>Outcome:</i> accessing visiting program support</p>	<p>= Congruence with CMO found at L1 and L3, No evidence found for congruence with CMO at L2; Context impacting on outcomes at L2 Leadership at local level only not at organisational level</p>
<p>CMO2: Where there is visibility, control and interpretation of local level data and shared valuing (context) then primary health care professionals will <i>believe they can make a difference</i> (mechanism), leading to employees empowered to make changes to Indigenous primary health care processes (outcome).</p>	<p><i>Context:</i> health centre planning and changes to practice responding to CQI audits; RAN 1) focus on other priorities 2) distrust of data) lack of meaningful feedback data <i>Mechanism:</i> +ve for Managers and CQI <i>Outcome:</i> Managers feeling empowered to make change; RAN although +ve about</p>	<p><i>Context:</i> interpretation of data dependent on Manager/ multiple managers; no shared valuing of data; Request for data to be more humanised <i>Mechanism:</i> -ve for health professionals +ve for CQI facilitator <i>Outcome:</i> no changes to IPHC achieved since audit; audit seen as a source of criticism; didn't trust the data</p>	<p><i>Context:</i> health centre planning and changes to practice responding to CQI audits <i>Mechanism:</i> +ve for Managers and CQI <i>Outcome:</i> Managers empowered to make changes; managers can target people who are not</p>	<p>= Congruence with CMO found at L1 and L3 for managers and CQI facilitator</p>

	providing better chronic disease care was frustrated by inaccurate data; local priorities don't always get counted;	from electronic information system; being judged or data used to crucify people; disengagement in CQI process	meeting standards and they can be educated	
CMO3: Where there is local CQI capability, access to regional support systems, availability of CQI training, and a management system who use a CQI reporting framework to focus on health outcomes (context) then primary health care teams will have <i>a sense of direction</i> (mechanism) leading to an engaged workforce that accept CQI as a basis for change (outcome).	<i>Context:</i> Regional support; CQI and other reporting framework; Mechanism: +ve In addition, achieving better than others were suggested as motivator for efforts <i>Outcome:</i> Accepting of CQI; get better results; prioritising where to improve	<i>Context:</i> Resistant to regional support, lack of consistent leader; no planning evident; no consistency between managers in Organisation A <i>Mechanism:</i> -ve, and +ve for CQI facilitator <i>Outcome:</i> Mixed response, some interested others suspicious CQI reporting as 'not doing our job'; Manager wanting to force the focus of CQI on staff; no action following audit and feedback; recall system providing task lists	<i>Context:</i> Regional support network engaged routinely; CQI reporting framework and others driving planning; Mechanism: +ve <i>Outcome:</i> Accepting of CQI; 'allows you to see the gaps' 'prioritise where to improve'	Positive outcomes / changes attributable to Case Study 1 for L1 and L3 Evidence of support and CQI resources in form of a CQI facilitator at L1, L2, L3 =Congruence with CMO at L1 and L3;
CMO4: When there is sufficient workforce stability, a manageable workload and respected clinician researchers who build relationships through supportive activities (context) then health professionals will <i>feel valued</i> (mechanism) leading to involvement of	<i>Context:</i> AHPs felt that they were not treated on par with others; supportive activities help the relationship building; health professionals want to be involved early, before people arrive; different priorities; so much work	<i>Context:</i> AHPs felt that they were not treated on the same level as others; not valued as part of team; reluctance of organisation A to work with outsiders on implementing clinical interventions; overwhelmed by work; non-Indigenous workforce	<i>Context:</i> High workload; managing short-term staff with long-term staff Mechanism: <i>Outcome:</i> Health professionals willingly involved in implementing clinical research interventions	=No congruence with CMO at L1, L2, L3 not necessarily attributable to case studies in this study Negative congruence expressed by Aboriginal Health Practitioners which are generalisable to all interventions not necessarily

<p>health professionals in implementing clinical research interventions (outcome).</p>	<p>Mechanism: -ve <i>Outcome:</i> AHPs Did have some involvement with research interventions but strongly stated they 'wanting to have a say'; affirmation that helping out and building relationships matter</p>	<p>coming and going 'like a hurricane'; AHPs on Aboriginal Health Board Mechanism: -ve <i>Outcome:</i> AHPs wanting to work in a 'both ways' where knowledge and power are shared; work as a team;</p>		<p>attributable to case studies in this study</p>
<p>CMO5: When the intervention can be integrated into the clinical practice systems and there is recognition of illness by clinicians and families (context) then health professionals will <i>see a use for it</i> (mechanism) leading to increased recognition of need to implement the intervention (outcome).</p>	<p><i>Context:</i> integrated into clinical information system by health professionals; Aboriginal Health Practitioners competent with electronic information system Mechanism: +ve <i>Outcome:</i> fitted in; worked for us, does the job; helps heaps</p>	<p><i>Context:</i> Extensive backlog of recalls; reluctance of community to come to the health centre; stable RANs with strong clinical skills and community connections employed by organisation B not reporting to clinic manager; no administrative support staff Mechanism: =ve <i>Outcome:</i> electronic information system seen as a difficult system; Recognised need to implement Case Study 2 but implementation due to mobility of family</p>	<p><i>Context:</i> Health Centre Manger role seen as a clinical governance role and actively managed clinical workflow through the electronic information system Mechanism: +ve <i>Outcome:</i> electronic information system seen as a good working tool, requires management</p>	<p>= Positive congruence for CMO at L1;</p>

<p>CMO6: When organisations employ Aboriginal people in the health workforce and health professionals are trained to use tools that have culturally meaningful language and images, (context) then health professionals will connect and relate to Aboriginal clients and families (mechanism) leading to effective engagement for the implementation of the intervention (outcome).</p>	<p><i>Context:</i> AHPs described inequity in power <i>Mechanism:</i> -ve <i>Outcome:</i> follow through is hard; what you get back does not inspire you to keep going; how to react when people do not engage</p>	<p>Context: AHPs described inequity in power; nurses have a lot of problems; nurses change all the time; RANs with community connections employed by organisation B not reporting to clinic manager; Aboriginal Health Board associated with Organisation B not the Health centre; <i>Mechanism:</i> -ve <i>Outcome:</i> You can't make them come in.</p>	<p><i>Context:</i> Community consultations occur; no AHPs at this location <i>Mechanism:</i> -ve <i>Outcome:</i> 'people do not want to be engaged'</p>	<p>Negative outcomes generalisable to all interventions not necessarily attributable to case studies in this study =Negative congruence with CMO at L1, L2, L3</p>
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Chapter 6: Mechanisms as Agents of Change

Mechanisms are agents of change (Pawson 2013:115)

6.1 Introduction

This chapter discusses the significance of the findings from a single realist evaluation cycle, exploring the implementation of intervention research in Indigenous primary health care. The purpose for this research study was to explore '*how, for whom, and under what circumstances does new knowledge get implemented in Indigenous primary health care*'. Accordingly, this realist evaluation was designed to address five research objectives:

1. Which implementation program theories inform KT approaches to intervention research in Indigenous primary health care?
2. What mechanisms are likely to influence implementation success (or not) in Indigenous primary health care?
3. What are the important contextual factors to implementation success?
4. What theoretical understanding of successful implementation can be learnt from this realist evaluation?
5. How can this study inform KT strategies of future intervention research in Indigenous primary health care?

This discussion chapter responds to these five objectives. The first section of the discussion addresses the first three objectives. It sets out new knowledge of the mechanisms that are likely to influence implementation success (or not) in the contextual conditions found in Indigenous primary health care. The second section sets out the contribution of this study to the theoretical understanding of successful implementation by discussing the implications for the PARIHS conceptual framework. The third section discusses the lessons learnt from this study and how they can inform future KT strategies in Indigenous primary health care.

6.2 Mechanisms that Influence Implementation Success

Realist evaluation focuses on the contexts, mechanisms and outcomes patterns that influence the choice-making of people in the implementation setting. The PARIHS conceptual framework, as a mid-range theory of successful implementation provided the underlying structure for the study. Implementation program theories were synthesised from data collected about KT in three research program case studies. For Case Study 1, the Changing Practice through CQI Intervention, the implementation program theories synthesised from the interviews with researchers were a) working through influence, b) empowered by evidence, and c) developing CQI thinking. The theories of diffusion of innovations, Continuous Quality Improvement, and change agents informed the design of the implementation strategies, which were then adapted to the setting through participatory action research. In contrast, researcher experience informed Case Study 2, the Clinical Management of Childhood Lung Disease program implementation theories of d) respectful relationships and e) tailoring implementations. Participatory research with Indigenous researchers informed Case Study 3, the Integrating Indigenous Mental Health Care implementation program theory, f) telling the story.

When approaching evaluation through a realist lens, it is expected that implementation of interventions in the Indigenous primary health care setting would happen through multiple potential mechanisms contingent upon the circumstances found in each location. As this study, was designed look for what mechanisms are influential in implementation of intervention research, all six proposed CMO configurations were analysed for congruence with the experiences of health professionals working in Indigenous primary health care centres. The evidence for the support and refinement of the CMO configurations with the six mechanisms, *trusting to follow, believing they can make a difference, sense of direction, feeling valued, seeing a use for it and connecting and relating*, was presented in Chapter 5. Four of these mechanisms of implementation were active in two of the three Indigenous primary health care locations, the remaining two mechanisms, although there was no evidence of the mechanisms being triggered at any of the locations, were regarded as fundamental for improved implementation in this setting.

To recap briefly, mechanisms are a deeper, usually non-observable, underlying causal process of reasoning or resources that will only 'fire' when the context is right, for some people

(Westhorp 2014). There may be many potential mechanisms in a context, however, the implementation program theories guided the identification of the main mechanisms proposed in this study and represent the theoretical foundations of how researchers reasoned implementation would happen. When grouped by theoretical relationships, three types of mechanisms can be identified. Firstly, mechanisms that related to the nature of the interventions. Secondly, mechanisms that relate to motivational theories. And thirdly, mechanisms that relate to facilitation.

Intervention mechanisms: The mechanisms that related to the nature of the intervention were '*a sense of direction*' which leveraged reasoning and resources from the audit, feedback and action planning, and '*seeing a use for it*' which leveraged reasoning and resources from the clinical practice systems. The variations found in the health professionals response to the new ideas and resources provided by the interventions, or whether the outcomes were achieved at the different locations, were impacted on by the main context factors of local CQI capability, regional support and mastery of the clinical information systems. Responses varied depending on the scope and level that the position category held in the health services organisational structure. For example, the CQI facilitators worked across different Indigenous primary health care centres and participated in organisational, NT wide and national networking events, including those held by the CQI Interventions project. Accordingly, the CQI facilitators were confident with the CQI processes. Likewise, local managers were accepting of the philosophy of CQI as a mechanism to reform the primary health care sector. Although other health professionals recognised the CQI processes as useful for direction, they were primarily focused on how to manage the workload and master the electronic information system. One explanation for 'firing' of these mechanisms is that as the interventions were developed through participatory processes, the contextual reasoning of *seeing a use for it* and *sense of direction* became attributes of the intervention itself.

The wide-scale spread of the CQI intervention was augmented by a substantial increase in resourcing of Indigenous primary health care. Area managers and CQI facilitators were two of the new roles established out of the additional 250 positions funded across the NT to support primary health care reform as part of the Australian Government Expanded Health Service Delivery Initiative (EHSDI). This initiative was announced in the 2008 May budget and rolled out in 2009. Area manager roles were designed to provide regional management supports for

local Indigenous primary health care centres. The CQI facilitators were regional positions to do the audit and feedback and assist the area manager interpret the results. At the same time, the NT Government funded further roll out of the primary health care information system (PHCIS). Si et al. (2008), using data from the first phase of CQI intervention program (2002-2005), found only 33% of the Indigenous primary health care centres had funding for chronic disease care, 75% of Indigenous primary health care centres reported a shortage of equipment for chronic illness care, and only 42% of primary health care centres had a chronic disease coordinator position. The perceptions of those interviewed in this study were that resources, such as funding and equipment, were available for supporting initiatives at the local level. However, some health professionals were of the opinion that resources did not flow out from the hub health centre.

Motivational mechanisms: Two mechanisms related to motivating people, '*trusting to follow*' and '*believing they can make a difference*', were both supported and refined in this study. The context element for the mechanism '*trusting to follow*' was refined to reflect the importance of a local leader who can harness the organisational support and resources for change. The analysis of health professional narratives identified that leadership was required at the local level for the mechanism of *trusting to follow* to be activated.

The absence of leadership was an overwhelming factor at Location 2, negating implementation of any change associated with the CQI audits. The impact of leadership on implementation success was considered to be proportionate to the intervention itself and involvement of health professionals. The lack of support for implementation at this site was predictable as the variability of leadership and management functions have previously been connected with outcomes at the health centre level. In this case the variation of outcomes was linked directly to the variability in the leadership essential for embedding CQI practices (Gardner et al. 2010).

The second motivational mechanism '*believing they can make a difference*' was congruent for managers and CQI facilitators who had system-wide understanding and the CQI skills to 'pull it all together' but not for other health professionals. The CMO configuration was refined to reflect the call by other health professionals for relevant and meaningful data for triggering the mechanism '*believing they can make a difference*' to achieve the outcome of a shared valuing of the data. This refined CMO configuration has similarities to the work by Schierhout et al. (2013), who's realist evaluation of the CQI program, led to the proposed mechanism of

'shared valuing of clinical data for improvement purposes' in circumstances of a centrally led CQI group or in a devolved model with local level CQI capabilities. A realist understanding of this is known as a ripple effect: the CMO configuration in this study *believing they are making a difference*, is assumed to be one in a series of CMO configurations, where the outcome, shared valuing of data becomes the context for the next CMO in an implementation chain (Jagosh et al. 2015). A significant difference between this study and that of Schierhout et al. (2013) that may explain this distinction is the data was gathered from the research program employees, not from health professionals working within primary health care centres.

Facilitation mechanisms: The third type of mechanisms identified in the study are those that relate to facilitation. CMO4 related to the interaction between researchers and cross-cultural team members through the mechanism of *'feeling valued'*. CMO6 related to the engagement of Indigenous clients and families through triggering the mechanism *'connecting and relating'*. Neither of these mechanisms were found to have congruence with the experiences of health professionals. However, this lack of congruence, does not signal a lack of support for the CMO configuration. On the contrary, Indigenous, and non-Indigenous health professionals were explicit about cross-cultural interactions being a significant gap in Indigenous primary health care. i.e. they both wanted it to happen, but it didn't.

In general, there was little evidence for the outcome of engagement between health professionals and researchers having been achieved. When it was mentioned, there were reflections on how the relationships could be improved, and some health professionals reported active resistance to working with researchers (although not connected to the research case studies in this study). It was somewhat surprising to find such little interaction between researchers and health professionals regarding any intervention research. The most likely exposure to implementing an intervention was through the CQI program. This was understood as an organisational program, with one CQI facilitator adamant that it was not connected to intervention research. This distance between research and the health professionals could be accounted for in number of ways, the time lag of between active research activity and data collection; design features of the research with knowledge transfer vested in tools, the small number of children on the clinical trial, and workforce instability. Workforce instability or interrupted supply have been reported as a hindering context factor in a number of recent intervention studies in Indigenous communities (Lovett et al. 2014; Marley et al. 2014; Spurling

et al. 2013). Furthermore, Allan (2010) found that stability of the workforce is also critical for intervention sustainability following a program being established.

Yet, in this research the message was clear about how the relationships between researchers and health professionals should work. Furthermore, how relationships between the Aboriginal and Torres Strait Islander Health Practitioners and other team members, including researchers, should work. The advice from Aboriginal and Torres Strait Islander Health Practitioners, was that they should be involved in designing how the implementation of interventions happens—that people should be '*strong together...to be positive...to be on par with each other and to have a say*'. CMO4 was refined to include a context of relationships built on working together for a two-way shared understanding. These elements are fundamental for people feeling valued in cross-cultural teams and becoming involved in decision-making whether for research or practice. Based on this finding, implementation strategies that value Indigenous knowledge and look for two-way equity of power between Indigenous and non-Indigenous health team members should be explored and trialled in future intervention research. International realist research with culturally diverse teams has also found that '*working all together, all engaged, all involved*' was linked to outcomes of organisational commitment and trust (Marchal, Dedzo & Kegels 2010a).

In this study, there was no congruence found between the proposed facilitation mechanism of *connecting and relating* and the health professionals' experiences. The finding that cross-cultural connections were weak and that non-Indigenous health professional experiences found engagement with Indigenous people difficult, was important, with one non-Indigenous health professional describing this as the biggest gap in Indigenous primary health care. Giving weight to this finding is the finding of a large-scale stakeholder engagement study, done by the CQI research program (Matthews et al. 2015). In this study health professionals reported that engaging with Aboriginal clients who are reluctant to come to the health centres was difficult. They also noted that the therapeutic relationship between non-Indigenous health professionals and Aboriginal clients was perplexing for nearly all of those interviewed. This tension increased with the length of time people had lived and worked in Aboriginal communities (Matthews et al. 2015). The refined CMO6 proposes that context factors important for effective engagement of Aboriginal clients and families are organisational relational accountability and the cultural competency to contextualise ideas. Gardner et al.

(2010) reported health services' desire to be accountable to Aboriginal communities. A summary of the intervention, motivational and facilitation mechanism appears at Table 6.1.

Table 6.1: Typology of Mechanisms

<i>Intervention mechanisms</i>	<p>Where there is local CQI capability, access to regional support systems, availability of CQI training, and a management system who use a CQI reporting framework to focus on health outcomes (context) then primary health care teams will have <i>a sense of direction</i> (mechanism) leading to an engaged workforce that accept CQI as a basis for change (outcome).</p>
	<p>When the intervention can be integrated into the clinical practice systems and there is recognition of illness by clinicians and families (context) then health professionals will <i>see a use for it</i> (mechanism) leading to increased recognition of need to implement the intervention (outcome).</p>
<i>Motivational mechanisms</i>	<p>Local level leaders, who can embrace team diversity, have a good knowledge of what needs to change, and work by engaging both the local team and regional support people (context), will inspire implementers to trust and follow (mechanism), leading to strategic support for CQI to change Indigenous primary health care practices (outcome).</p>
	<p>When local level data is relevant and meaningful (context), then primary health care professionals will <i>believe they can make a difference</i> (mechanism), leading to a shared valuing of data and a sense of empowerment to make changes to Indigenous primary health care processes (outcome).</p>
<i>Facilitation mechanisms</i>	<p>When there is sufficient workforce stability and relationships built by working together for a two-way shared understanding (context) then all health professionals will <i>feel valued</i> (mechanism) leading to involvement of health professionals in implementing clinical research interventions (outcome).</p>
	<p>When organisations have relational accountability to Aboriginal people, and non-Indigenous health professionals have the cultural competency to contextualise ideas (context) then they will <i>connect and relate</i> (mechanism) to Aboriginal clients and families, leading to effective engagement in the implementation of an intervention (outcome)</p>

One of the attributes of realist evaluation is the generalisability and therefore portability of the refined, evidence-informed, CMO configurations (Punton, Vogel & Lloyd 2016). The CMO configuration typology, of intervention, motivational and facilitation related mechanisms, developed in this study, provide a platform for researchers to continue to test these CMO configurations with knowledge that these mechanisms, or similar mechanisms will be relevant for generation of the outcomes and sensitive to the context factors identified. Thus, through further cycles of realist refinement will result in confidence in the realist derived program theories.

Overall, the findings show that the development and refinement of the CMO configurations from this single cycle of realist evaluation offer a deeper understanding of the complexities or 'black box' of implementation in Indigenous primary health care than a simple evaluation of the intervention strategies. How the interplay between mechanisms and the challenging implementation contexts has the potential to add to the current understanding of the variable success found in intervention implementation is discussed in the following section.

6.2.1 Adding to the Understanding of Implementation

Variation between locations is one measure of the success (or not) of implementation. Differing success in implementation across locations was an anticipated finding for this study. Substantial variation in the implementation of interventions in different primary health care sites are regularly reported in both international and Indigenous health services (Carlfjord et al. 2010; Schierhout et al. 2013). Furthermore, the factors that prevent or enable improvements, are considered to affect different types of changes differently, and vary in impact conditional to context (Flottorp et al. 2013). This section of the discussion reflects on how locational variation has been understood to date, and how the new knowledge discussed in the previous section can add to the explanations of *how* and *why* the success of implementation varies between locations and across time the same location.

In the data captured in Phase One of this study, researchers identified key contextual factors enabling implementation at the health centre level as good information flow, leadership, resources, adequate systems to collect data and recall, facilitated interpretation of data, planned local action to address gaps in practice, comfortable with the control of the data, positive experience of CQI, clinicians as part of the team, access to regional support structures,

professional development opportunities, respected research team members, long engagement with research team, health professionals who care. Researchers in Phase One of this study also identified the constraining contextual factors at health centre level as health care professionals being overwhelmed by the complex morbidities and workload, workforce mobility and instability, limited understanding of and confused by the data, medical inertia, burnout, lack of familiarity with the research program or Indigenous primary health care setting, absence of Aboriginal and Torres Strait Islander Health Practitioners or did not see research as part of clinical practice role. These factors are similar to the stakeholder accounts of the challenges of implementing change in the Indigenous primary health care setting in the literature through the lens of barriers and enabling factors (Bailie et al. 2014; Gibson et al. 2015; Grundy & Johnston 2003; Laycock et al. 2016).

Publications arising from the CQI Intervention research program have consistently reported variation in implementation and outcomes between places over the three phases of the program, and sought to understand the reasons why this happens (Dowden 2006; Gardner et al. 2010; Schierhout et al. 2013; Si et al. 2007). Variation in an Indigenous primary health care centres clinical audit data has been accounted for by differences in: levels of organisational capacity, level of resourcing to support implementation; organisational characteristics of leadership; ability to build new relationships to support services; the valuing of clinical data; communication systems and the individual characteristics of competency, priorities, interests, role clarity and an orientation to public health (Bailie et al. 2004; Gardner et al. 2010; Schierhout et al. 2013). Findings in this study point to how these same context factors could influence outcomes negatively or positively depending on how they relate to different types of mechanisms and people. These factors could also be interconnected through mechanism-mediated implementation chains. This study identified refined CMO2 as one segment of a potential chain, where relevant and meaningful data, mediated by the mechanism '*believing they can make a difference*' is likely to result in the outcome of health professionals valuing clinical data. The next segment of the chain would be see the valuing of clinical data as a context element in another CMO configuration.

Important context factors are emerging from further analysis of the CQI program data set, with associations found between improved Indigenous primary health care centre performance in clinical audit results and remoteness, longer length of participation in the CQI processes and

regularity of client attendance (Matthews et al. 2014). Data from a different set of indicators reported in the first *National Key Performance Indicators for Aboriginal and Torres Strait Islander primary health care* (AIHW 2014) supports the premise that well-established CQI programs make a positive difference and noted that the NT organisations performed 'better than other jurisdictions for the majority of the indicators' (AIHW 2014, p. 54). It also provided evidence that performance is varied, and, not reliant on geography or size, rather a number of interconnected factors that have a bearing on performance including the organisation's history and relationship to the community (AIHW 2014). However, the understanding of context factor association is complicated with a recent regression analysis of the CQI intervention health centre performance data, collected between 2005-2013. This data showed that Indigenous primary health care centre performances had no consistent association between the patterns of change over time (consistent high performance, sustained high performance, decline, marked variability, consistent low performance and no specific increase or decrease) and service characteristics of accreditation, governance, remoteness, population size, CQI commencement and completion of health service assessments (Larkins et al. 2016). In a study by Matthews et al. (2015) with CQI intervention stakeholders, two areas were identified for attention a) addressing the workforce issues of recruitment, retention and capacity building, and b) working with Aboriginal communities for engagement, participation and enhanced community involvement in health programs.

Gardner et al. (2010) comprehensively reported on the features of the Indigenous primary health care service environment influencing the uptake of interventions for the first cycle of the CQI Intervention. This work detailed the practices within Indigenous primary health care centres according to the diffusion of implementation framework characteristics of organisational capacity for new knowledge, leadership and management, organisational readiness (tension for change, compatibility with systems, support for change), at the local level. The findings from this study provide a deeper understanding of human experience and the mechanisms influencing choice-making of health professionals in the Indigenous primary health care environment. These learnings are both useful for those working in the context of focus and can be generalised to other settings. The following section discusses how a greater understanding of mechanisms can contribute to the mid-range theory development of the PARIHS conceptual framework.

6.3 Theorising about Successful Implementation: Implications for Theory Development

This thesis has drawn on the PARIHS conceptual framework to provide a systematic way of identifying the common implementation issues, their common causal pathways and as a guide of how to identify the main mechanisms and contextual factors when analysing the data. This section will discuss how the findings of this study align with the PARIHS conceptualisation of successful implementation.

The PARIHS conceptual framework is a mid-range theory about successful implementation explained by the patterns of interaction of the elements of evidence, context and facilitation (Rycroft-Malone et al. 2013). The theoretical beginning for this research was the central proposition of the PARIHS conceptual framework– that successful implementation of research in health services is dynamic, and involves the interplay of three elements, evidence, context and facilitation with the pattern of interactions between these elements, and related outcomes, contingent upon the implementation setting (Kitson et al. 2008). Successful implementation in the PARIHS conceptual framework was later refined and described as a process of:

evidence-based changes by organisations, teams and individuals resulting in sustained improvements to care, patient outcomes, and service delivery, which are driven by and embedded in organisational strategy' (Rycroft-Malone et al. 2013, p. 10).

In the most recent refinement of PARIHS, the i-PARIHS framework, successful implementation is characterised by the achievement of implementation goals with the uptake and embedding of the innovation in practice with engagement of at all organisational levels and results from the facilitation of an innovation into a context (Harvey & Kitson 2016). Of significance for this study, is that the PARIHS framework continues to evolve, reflecting further empirical research and theories, and thus is open to further development to the constructs of evidence, context and facilitation. This realist evaluation aimed to increase the explanatory power of the PARIHS conceptual framework.

6.3.1 Evidence for Intervention Implementation

Evidence is thought about broadly in the PARIHS conceptual framework. It draws from the evidence-based practice concept of seeing evidence as 'robust', but also takes into account the tacit aspects of knowledge and that health professionals 'agree' with it (Rycroft-Malone et

al. 2013). This signals that evidence, or in the case of this study, an intervention, has different characteristics that need to be considered when implementing them in a practice context.

For each of the case studies examined in this study, the 'robustness' of the evidence was largely uncontested. The CQI process of audit and feedback is commonplace in health care and well understood, the auditing of care provided was measured against CARPA, a set of well accepted clinical guidelines. Case Study 2, the Clinical Management of Childhood Lung Disease, were testing an altered regime for a common drug and the Case Study 3, Integrating Indigenous Mental Health care, employed motivational interviewing and cultural images for communication. Case Study 1, has been scaled-up over time through piloting and feasibility phases. The third phase could be categorised as an interventional implementation study, with the transition of the research into a health service program that is likely to be sustained by the embedded intervention strategies (Pinnock et al. 2017). In comparison, Case Study 2 was a pragmatic study primarily aiming to demonstrate effectiveness of an intervention with implementation measures that included acceptability, uptake, fidelity and implementation coverage (Peters et al. 2013). Case Study 3 had progressed through the pragmatic effectiveness phase and was looking to scale-up into a wider implementation study but had not secured funding for this phase. All case studies had planned and delivered implementation strategies in Indigenous primary health care.

The finding that mechanisms related to the nature of the intervention, *seeing a use for it* and *sense of direction*, were congruent with health professionals' experiences, adds further explanatory depth to the PARIHS construct of evidence regarding the nature and attributes of an innovation. As noted in Chapter 2, the assessment by health professionals of whether the intervention is a good 'fit' for the context, interfaces closely with the construct of facilitation. In this study, the mechanisms related to the intervention were triggered through health services systems providing CQI capabilities, training, regional support and integration into clinical practice systems the system, each of which require a level of organisational facilitation to enabling conditions and local adaption.

The PARIHS construct draws upon the diffusion of innovations theory by Rogers (1995) which has been further advanced for health services research in the work by Greenhalgh et al. (2004). These mechanisms appear to relate to the innovation attributes of relative advantage, compatibility, trialability, and observability. When these attributes are positive it is a known

predictor of future uptake. It is likely that the participatory method used for the development and early phase of the CQI intervention provided the opportunity for embedding tacit knowledge of health professionals and substantial contextualisation to the NT setting.

This realist evaluation also illustrates the complicated relationships between the constructs of evidence and context. Different motivational mechanisms were operating differently for different levels and roles. For example, in relation to the CQI intervention, presentation of relevant and meaningful data was identified as factors likely to be mediating the mechanism of *believing they can make a difference* for health professionals at a local level. Yet, shared valuing of data was more important for managers and CQI facilitators who operate at the organisational level.

6.3.2 Contextual Influences on Mechanisms

Contextual elements were a major factor influencing the congruence between the predicted CMO configurations and what was found at the three locations. Overall, the findings in this study upholds one of the key PARIHS propositions: that contextual features significantly influence the degree of implementation success (Rycroft-Malone et al. 2011). As detailed in Chapter 2, the PARIHS concept of context is focused on the immediate setting or the implementation site (Kitson, Harvey & McCormack 1998). The motivational mechanisms of *trusting to follow* and *believing they can make a difference*, that found support in this study fit well with the original construct analysis of context element that that conjectured that successful implementation is more likely, when the leadership style is more facilitative, and humanistic values such as trust and self-worth of individuals are incorporated into the culture of an organisation (McCormack et al. 2002).

In the recent re-visioning of the PARIHS framework, the integrated or i-PARIHS framework, the construct of context delineates the inner and outer aspects of context. The inner context encompasses the immediate implementation setting at the local level and the organisational level, while the outer context encompasses the political and regulatory influences of the wider health system (Harvey & Kitson 2016). This revision increases the synergy between the PARIHS construct of context and the realist perspective of context which includes the individuals, their interpersonal relationships, the institutional setting and the infrastructure of the wider social and cultural setting (Pawson 2013, p. 37). Importantly, neither approach disaggregates context

from the mechanism or the innovation and recipient to understand outcomes or successful implementation. Both assume that context matters, and that context impacts on mechanisms, and those mechanisms that 'fire' will influence outcomes.

In this study, the implementation activities take place at an Indigenous primary health care centre with program level support delivered through a regional outreach model. The PARIHS construct of context, as the sub-elements found in the immediate implementation site, was inadequate to describe the breadth of this practice environment. The i-PARIHS construct of the inner context as multi-layered will have greater resonance with the Indigenous primary health care sector. Within this inner context, the main contextual influences on the proposed mechanisms and outcomes included the level of organisational support for change; leadership of cross-cultural teams; workforce stability and synergies with rival programs.

The finding that there was an engaged workforce that accepting CQI basis for change as an outcome in the causal mechanism *sense of direction* CMO configuration, when there is a context of supportive organisational systems for management and training, is evidence of a supportive organisational climate for the CQI program. A supportive organisational climate is a factor that PARIHS identifies as predictive of successful implementation. The findings from this study would suggest that successful implementation, in a context of widespread organisational level support for an intervention, is contingent upon local level leadership. The person in the manager role at the Indigenous primary health care centre is looked to for providing leadership. A local level leader is important for the motivational mechanisms of *'trusting to follow'* to 'fire'. Leading cross-cultural teams adds to the dynamic of leadership as described by PARIHS. The expectation was that the manager would have the leadership skills to 'stabilise' the workforce, embrace the diversity of a cross-cultural team and to harness external support. The presence or absence of leadership made a noticeable impacted on the circumstances at the implementation setting. The complexity of the interdependence of different context elements is demonstrated by the finding that the site with a strong local leader, had the least issues with workforce stability and the most successful implementation outcomes.

The workforce in remote Aboriginal communities in the NT has experienced two periods of growth in the period 2004-2015, during 2009-2011 and again in 2013-2015, reflecting increases in funding, but the workforce is characterised by significant instability/ turnover

(Zhao et al. 2017). Importantly, this long-standing instability/turnover affects the functioning of teams and disrupts the relationship building between team members Gibson et al. (2015) reported similar workforce factors such as staff turnover, workload, clarity of role, employment of Indigenous Health Workers and noted that the factors could act either as an enabler or a constrainer, differ in their degree of influence and are interrelated. Workforce stability is critical for being able to build cross-cultural relationships. Yet, amongst this angst about workforce instability it should be recognised that Aboriginal and Torres Strait Islander Health Practitioners are local workforce but numbers are steadily declining (Zhao et al. 2017). This research suggests that for interventions to be successfully implemented in a scenario of a high non-Indigenous workforce instability, researchers need to consider implementation program theories that acknowledge the dichotomy of local Indigenous workforce stability vs non-Indigenous workforce instability and employ alternative implementation strategies that can leverage off the stability of a local Indigenous workforce, although that workforce may not necessarily be Aboriginal and Torres Strait Islander Health Practitioners. These strategies are likely to operate through mechanisms that relate to motivation and facilitation.

Likewise, program rivalry, as predicted by Pawson (2013), was a significant context factor that was found to add complexity to the context. Aboriginal communities are sites for frequent and simultaneous intervention programs and policies, often with impact at the community level, the organisation, or stakeholders of the Indigenous primary health care centres. This happens at different levels, between research organisations seeking Aboriginal community participation in a project, between research programs, and, rivalry as identified in this study, between programs that appear similar to the knowledge-user. Health professionals did not differentiate between the different programs that produced data, whether for quality improvement purposes or performance indicators. How to manage the local realities of program rivalry requires further evaluative research.

6.3.3 Facilitation Tailored to the Local Context

In the PARIHS conceptual framework, the construct of facilitation is the 'active ingredient' for the other constructs of evidence and context in the implementation process. Facilitation encompasses facilitation roles and activities that enable teams to form relationships by working together, learning from experiences and partaking in shared-problem solving. Facilitation as an enabling process can increase ownership and empowerment in the

implementation process (Harvey & Kitson 2015). When implementation is a dynamic process, facilitation can be mobilised to mediate mechanisms that might be related to the intervention, or to motivate and to modify the context-mechanism interface. However, this process requires people in facilitation roles to have sufficient understanding and knowledge of the intervention, mechanisms and context.

Facilitation was common to all research case studies in this study: the CQI Intervention had a team of dedicated external facilitators, working at the health system-wide level of the CQI program. The other research case studies also used an external research team facilitator who took a primarily educative role in the Indigenous primary health care setting. However, this realist study would suggest that in the Indigenous primary health care setting, external facilitation contributed to the activation of mechanisms that related to the intervention, such as *sense of direction*, but had negligible impact on the mechanisms related to motivation or facilitation, that may have supported in engaging or empowering all members of the health team. Health professionals expected that leadership for implementing strategies is would come from the local health centre manager, not external facilitators. Simplistically, this could be seen as a call for local over external facilitation and that could potentially result in tension between leadership and facilitation roles (Stetler et al. 2006).

Harvey and Kitson (2015) offer another way to delineate facilitator roles by distinguishing between novice, experienced and expert facilitators in the i-PARIHS framework. This approach represents a continuum of advancing understanding and knowledge of the innovation, motivation and organisational context. When related to the findings from this study, effective facilitation in Indigenous primary health care requires experienced facilitators who have an in-depth understanding of implementation specific to this context, and the cross-cultural skills to enable the development of a shared understanding, between researchers and both Aboriginal and non-Indigenous health professionals.

Overall, this study contributes to the understanding of the relationship between the PARIHS constructs of evidence, context and facilitation and how the interplay impacts upon implementation outcomes at a local level health practice setting. Specifically, this study has been able to give meaning to the elements and sub-elements of the PARIHS conceptual framework for the Indigenous primary health care setting. The interaction was evident between the PARIHS context sub-element of leadership and the construct of facilitation. Leadership at

the local level was important for health professionals engaging at the strategic level for change and stimulating collective change.

The PARIHS conceptual framework aligned well with a realist approach to synthesis and was sufficiently robust to embrace multiple program theories, that seek different outcomes with many potential mechanisms contributing to those outcomes. This realist study also upholds the claim that PARIHS conceptual framework can be a practical and pragmatic tool for health professionals and researchers at the local level (Kitson et al. 2008). Moreover, this realist study design has combined experiential knowledge with theoretical evidence, a process that is reasoned to be more likely to produce knowledge tailored to the implementation context (Harvey et al. 2011).

6.4 Applying Knowledge of Mechanisms to KT

How then can this new knowledge, embedded in the supported and refined implementation program theories (CMOs) inform future KT strategies in Indigenous primary health care? As established in the last section, both PARIHS and realism challenge the traditional idea that KT is linear, with researchers producing the knowledge and transferring it to health professionals. Neither the framework (PARIHS) nor methodology (realist evaluation) disaggregate the mechanisms that reflect how people respond to interventions and the implementation strategies from the context in which people experience the intervention. Importantly, what is clear from the implementation research literature, is that new knowledge from realist evaluations can help implementers plan how best to transfer lessons learnt, and adapt interventions to new contexts, as mechanisms are not unique to a particular setting (Westhorp 2014).

The previous section argued that a path to successful implementation can be by design, with the direction shown by theories, and by using the guideposts of a conceptual framework. The sections that follow outline an approach for the implementation of intervention research between researchers and knowledge-users based on a foundation of collaboration, engagement, facilitation, and capacity building. The aim of this approach is to better align implementation program theories and implementation strategies to reflect both the contextual reality and the knowledge-user's experiences of Indigenous primary health care.

6.4.1 Collaboration to Integrate Research

The intervention-related mechanisms of *a sense of direction* and *seeing a use for it* were supported for interventions integrated into the health system, a process that was shaped through collaborative and participatory processes. Linked to these, is the motivational-mechanism of *believe they can make a difference* which the program theory predicts is reliant upon the intervention being meaningful and relevant to the context and can lead to a sense of empowerment to make changes to Indigenous primary health care processes.

Collaboration is a way of ensuring that new resources and new ideas embedded in interventions, trigger mechanisms 'in tune' with the context of implementation. Collaboration is more than just 'having a say', it is about long-term synergistic relationships built on trust and reciprocity leading to alignment of goals and purpose (usefulness of the results) (Greenhalgh et al. 2016; Jagosh et al. 2015). Furthermore, when Indigenous people are stakeholders in the research, collaboration is a way to balance the power differential between Indigenous people and the dominant culture, thus promoting shared ownership, empowerment and acknowledgement of the responsibilities for relational accountability (Wilson 2008).

Fundamental to collaboration is the shift to undertaking research *with* knowledge-users, not *on* knowledge-users. Traditional research processes are based on the conceptualisation of knowledge as the outcome, often without explicit acknowledgement of how, where and when collaborative approaches are needed to generate new knowledge (Graham, Tetroe & McClean 2014). Guidance for collaborative approaches can be found in the growing evidence-base that includes research approaches variously described as Integrated KT, co-KT, co-creation, co-production, participatory realist evaluation, research-practice partnerships, collaborative and engaged scholarship (Greenhalgh et al. 2016; Heaton, Day & Britten 2015; Kitson et al. 2013; Ovreteit et al. 2014). Evidence of the gathering momentum for collaborative approaches is apparent from the 2008 decision by the United Kingdom National Institute of Health Research to fund nine Collaborations for Leadership in Applied Health Research and Care (CLAHRC) trials between academic researchers and health service organisations. One of these academic-health services collaboration trials, the PenCLARHC, explicitly set out to design, conduct, and implement research on a system known as "Engagement by Design[©]", testing the theory that knowledge-users driving the research in collaboration with researchers, would produce more

useful evidence for end-users. The evaluation of PenCLARHC found that closer collaboration between academics and health services happened when it was driven by local knowledge-users, by finding common objectives, when people were open to melding different types of knowledge, using facilitative leadership of small teams, ability to harness resources, and sharing findings. Significantly, the realist evaluative approach showed that change is created by the knowledge-users response to opportunities that programs provide (Heaton, Day & Britten 2015).

Co-creation in community-based health services is described as 'collaborative knowledge generated by academics working alongside other stakeholders' (Greenhalgh et al. 2016, p. 392). For Greenhalgh et al. (2016) the principles of successful co-creation include: a systems perspective; a creative approach to research focused on improving human experience, and careful attention to governance and process. Co-creation is locally-adaptive, shifting the locus of knowledge and power further toward the knowledge-user by a process of drawing upon their experiences and knowledge of the local level.

A collaborative approach emphasises both the nature of relationships between researchers and knowledge-users, and the nature of the processes and structures that support the collaboration. How should collaboration look in Indigenous primary health care where the Aboriginal and Torres Strait Islander Health Practitioners reported that they wanted to work together with non-Indigenous health professionals? Van de Ven and Jing (2012) engaged with Indigenous people as collaborators in the research process known as engaged scholarship. Engaged scholarship occurs through collective learning and respectful recognition of other knowledges. Which knowledge, (dominant, Indigenous or an integrated knowledge from multiple perspectives) and how knowledge is embedded in interventions is important. A Canadian realist review by Smylie et al. (2016) reported that Aboriginal communities had an acute sense of when programs were 'autonomously initiated' or whether they were being imposed from an outside Western system. Put simply, Aboriginal people were finely tuned to whether programs were 'ours' or 'theirs'. They identified that local investment leads to high levels of community participation that is likely to be triggered by the realist mechanisms of *community ownership* and *community activation*.

In Australia, Martiniuk et al. (2010) found that for intervention research with Aboriginal people to be effective and inclusive, it needed to be long-term, locally owned, sufficiently resourced

and context-sensitive. That Aboriginal and Torres Strait Islander Health Practitioners did not feel valued or empowered to participate in decision-making within the health centre, yet felt they had a voice in decision-making on community-level boards signals a missed opportunity for a more collaborative and locally-adaptive approach to KT. The exclusion of Indigenous Health Workers from decision-making was also noted in a study by Gibson et al. (2015).

One example of how collaboration can be inclusive of Indigenous ways of collaborating is the Yolngu cultural framework shared by the Yolngu researchers working with the Yalu Marnggithinyaraw Indigenous Cooperation. They use the Ganma, (a place where fresh water blends with salt water) as a metaphor for talking about how to bring two knowledges together to co-create new understandings. In this cultural framework, knowing and doing are intertwined, action is as important as understanding (Garŋkulkpuy, Maypilama & Djamalaka 2012). Another model of Indigenous collaboration is one where all decisions about the research process are conducted within a 'shared space', with the criteria of making sense and accessibility for all partners (Cairney et al. 2017).

Trust, respect, improved research quality, empowerment, capacity building, long-term synergy building and sustainability of programs are known outcomes of successful collaborative research practices (Jagosh et al. 2012). In the Indigenous primary health care setting collaboration could help offset the high-level of community stress, racism and discrimination encountered by Indigenous people and the apparent weak relationships between non-Indigenous health professionals and Aboriginal and Torres Strait Islander Health Practitioners.

In summary, collaboration is a way to integrate multiple ideas and experiences and work together toward a shared perspective that can offer empowerment and inclusiveness for Indigenous participants. Collaboration is interrelated to engagement and facilitation as approaches that put both theory and people at the centre of a research process.

6.4.2 Engagement of Knowledge-users

The motivation-related mechanisms of *trusting to follow* and *believing they can make a difference* found in this study indicate the importance of relationships. The triggering of the motivational-related mechanisms within the health team were closely linked to leadership. Leadership is important for harnessing the collective energy and attracting the organisational support and resources necessary for change. Local leaders play a pivotal role for building trust

across diverse primary health care teams. They are critical to creating local support and adapting the implementation to the local context, which may involve championing capacity building strategies. This study found that a leader who can embrace the diversity of the team, have a good knowledge of what needs to change, to inspire, and uses a CQI reporting framework to focus on health outcomes was important. A similar set of leadership characteristics (clout, connections, drive, enthusiasm and tenacity) were described by Heaton, Day and Britten (2015) as characteristics of a facilitative style of leadership, with 'facilitative leadership' likely to be important to achieve the active engagement of partners required for co-creation.

It is clear from this study that a high workforce turnover is a main constraining contextual factor. Therefore, continuing with a strategy of investing in a single person model of non-Indigenous leadership in remote Indigenous primary health care is unlikely to result in change. An alternative is to support transformational change by engaging individuals at all levels in the implementation process. In reviewing the evidence for transformational change Best et al. (2012) recommended having both a formal designated leader, such as a health centre manager, and distributed leadership – a team responsible for implementation. A distributed leadership approach in Indigenous primary health care has the potential to engage the health professionals who cannot see how they are making a difference and the Aboriginal and Torres Strait Islander Health Practitioners and who do not feel valued. The CMO configurations predict that facilitation-related mechanisms influence outcomes of involvement and empowerment. Moreover, this distributed approach would enable all the team to bring their professional power and networks and personal knowledge and relationships, and a history of what has worked (and not worked) in the past to the process of implementing change.

Engagement and participation of Aboriginal people in research has been written and spoken about for decades (Grundy & Johnston 2003; Jamieson et al. 2012; Smylie et al. 2004). Action research and participatory action research are familiar research methodologies to Indigenous health research but often fall short of the redistribution of power between the researcher and Indigenous collaborators. Engagement needs to go beyond simply involving Indigenous people to instead amplify and value the Indigenous voice.

Van de Ven and Jing (2012) described a model of Engaged Scholarship as combining context-specific and general theoretical knowledge with deep stakeholder engagement in all stages of

research. The Engaged Scholarship process begins with problem formulation and progresses to design and solutions. Each step requires a much deeper and reflexive engagement so that Indigenous people may contribute. Guidance on how to navigate a deeper level of engagement comes from Indigenous researchers. Shawn Wilson (2008) advised that Indigenous ideas are created through relationships within a specific context. Thus, knowledge of the relationship becomes part of the idea. Successful engagement leads to developing a deeper relationship, the ideas are context-sensitive and owned by local Aboriginal people.

6.4.3 Facilitation as an Active Component

The facilitation-related mechanisms of *feeling valued* and *connecting and relating* signpost what the facilitation process would need to be like to achieve the aim of involving all the health team, and, engaging Aboriginal people in the implementation strategies. Local facilitation would enable the research-practice relationships to develop by working together to achieve relational accountability to Aboriginal people and communities. The CQI intervention used external facilitation as an implementation strategy. This realist evaluation would suggest that effective facilitation would be underpinned by the mechanisms of people *feeling valued* and *connecting and relating* to manage the cross-cultural group dynamics and communication.

Although the study design did not target client perspectives, the lack of congruence at all locations for the mechanism *connecting and relating* is indicative of the broader issues of failure of engagement and the subsequent puzzlement that this causes. A study by Davy et al. (2016) also reaffirms the findings of this study and indicates that engagement with health services for Aboriginal and Torres Strait Islander people is based on relationships of trust and respect and that discrimination or distrust leads to disengagement.

Since the 1980s a common organisational response to the culturally diverse health workforce has been to attempt to improve the cultural awareness through cultural awareness training workshops. In Australia, accreditation requirements mean that cultural awareness approaches are required to be added to the curriculum of core degrees in the health professions and within professional development programs. However, a systematic review of evaluated cultural competency programs concluded that it was difficult to determine which programs were most effective, for whom, in what context in relation to particular outcomes and recommended further research (Truong, Paradies & Priest 2014). Moreover, cultural awareness does not

circumvent the disparities in power between health professional groups, particularly when membership of one is based on Indigeneity.

This study indicates that an active approach to enabling teams to work together at the local level is required for effective collaboration and engagement. In contrast to existing approaches facilitation can be a means to assisting health professionals, who have little knowledge of the impact of colonising history or exposure to the cultural nuances of the environment, to reflect and learn from their experiences in Indigenous primary health care. Enabling teams to develop a shared understanding is a key role of facilitators. For example, being able to facilitate shared understandings of the situation described by health professionals is essential for motivating Aboriginal people to participate and engage with each other.

Facilitators can also identify the complexities or nuances of the context, identify potential mechanisms that may enhance, and assist the team to develop ideas of how implementation should work (Harvey & Kitson 2015). Facilitation skills, if embedded within existing roles at the local level, can through inclusive and empowering facilitation strategies, pay attention to the mechanisms of *feeling valued* and *connecting and relating* that were considered fundamental to the team working together.

Who should take on facilitator roles? The most identifiable facilitator role currently in Indigenous primary health care are the CQI facilitators. These roles generally align with the internal facilitators as described by Stetler et al. (2006). However, due to the geographic isolation of many Aboriginal and Torres Strait Islander communities the CQI facilitators are 'external' and infrequent visitors. Indigenous researcher O'Donoghue et al. (2014) found the difficulties of driving implementation of a health promotion CQI project from afar were minimised by a model of co-facilitation. In the co-facilitated approach, the external facilitator worked alongside a facilitator from the local health service. Other Indigenous researchers have also noted that program uptake is weakened by external people coming into Indigenous communities and failing to consider how local people view knowledge (Smylie, Kaplan-Myrth & McShane 2009; Wilson 2008). Conversely, it has been argued that localising control may lead to further disconnect with the overall, and most likely centralised health service organisational support structure (Dowden 2006).

A unique aspect of the NT Indigenous primary health care workforce is the Aboriginal Health and Torres Strait Islander Practitioner category. In this study, Aboriginal and Torres Strait

Islander Health Practitioners reported a low sense of value and low sense of power in the workplace. As a workforce category with high locational stability, and familiarity with research, Aboriginal and Torres Strait Islander Health Practitioners are an ideal group that could be targeted for capacity development for collaborative research and facilitation. However, the low numbers of Aboriginal and Torres Strait Islander Health Practitioners may limit this option in many communities. An alternative is to employ locally based Indigenous researchers who work alongside researchers and health professionals in a facilitation role.

6.4.4 Capacity Building

It follows that to establish a collaborative, engaged and facilitated approach for implementing interventions in Indigenous primary health care services, both health professionals and researchers require the skills and capabilities to work in this way. This realist study has focused on exploring the local level. However, to support an integrated approach to implementing interventions capacity development will need to occur from the local to the organisational level, in both health services and research organisations.

Building workforce capacity is frequently recommended in intervention research publications (Liu et al. 2015). Implementation, is ideally a shared responsibility between research and practice domains. Although KT is gaining traction within the research domain, little attention has been paid to building the capacity of either researchers or health professionals to successfully implement interventions. The lack of attention paid to implementation in intervention studies, as found in Chapter 2, suggests that a greater focus on differentiation between an intervention and the implementation strategies would increase the evidence-base for implementation and thus provide greater guidance for both researchers and health professionals. This then would encourage the distinction between intervention and implementation to be made at the design level, known as hybrid designs which combine components of both clinical effectiveness and implementation research (Curran et al. 2012).

Recently published reporting standards for implementation studies however, recommend a dual reporting of implementation strategies and the intervention. By explicitly separating the implementation objectives and the intervention objectives this promises to result in a stronger focus on implementation science (Pinnock et al. 2017).

For researchers and health professionals to work in a more integrated way, there are a range of individual and organisational capabilities required to support the necessary collaboration, engagement, and facilitation. However, this study would suggest there are three areas requiring focused attention. Firstly, increasing the understanding of implementation, leading to better delineation between implementation strategies and intervention strategies and focusing on the mechanisms that influence peoples' responses to the intervention, and the contexts required to potentially switch on those mechanisms. Secondly, building capacity for collaborative partnerships that value the knowledge and experiences that researchers and health professionals, including Aboriginal and Torres Strait Islander Health Practitioners, bring to the Indigenous primary health care context. Thirdly, this research has identified a need to embrace collaborative structures such as the 'shared space' and processes such as facilitation as an enabling strategy for people to be able to trust, find direction, connect and relate.

Importantly, this research also suggests that success of collaborative approaches should be measured by the processes that build the capacity of researchers and all stakeholders to work together to develop a shared language, shared meaning and shared interest in overcoming implementation challenges.

6.5 Recommendations for Advancing KT

This section sets out to address the fifth research objective: to inform future intervention research that takes place in Indigenous health care services. The primary audience for new knowledge emerging from this thesis are health research and health services organisations who seek to implement innovations or interventions in Indigenous primary health care. The secondary audience is the implementation science community, as this is an example of integrating a theoretical implementation framework (PARIHS) and realist evaluation which adds deeper understanding of mechanisms influencing implementation in practice settings.

Reciprocity and usefulness of 'fit' for both researchers and health care professionals has influenced the recommendations that arise from this work. These recommendations are grouped under the categories of local level, organisational level, and researcher actions.

6.5.1 Indigenous Primary Health Care (local level)

At the local level, this research recommends:

- Seeking out integrated research approaches to support the implementation of new knowledge into evidence-based practice for Indigenous primary health care.
- Exploring leadership approaches at the local level that are able to motivate, value, engage, and empower culturally diverse health teams toward shared goals and enabling teams to tailor the implementation strategies to the local context.

6.5.2 Health Services (organisational level)

At the organisational level, this research recommends:

- Recognising that Indigenous people have a right to participate in and expect more from health services and health research to reduce the significant gaps in health equity experienced by Indigenous people world-wide.
- Extending the policy and program responsibilities of health services beyond acceptance of proposed research and expectation of a final report to instead seek to collaborate, engage, facilitate, and build capacity of the Indigenous primary health care workforce.
- Health service organisations recognising and providing the organisational support required for implementation strategies including shaping organisational structures to support collaboration through local leadership.
- Developing the skills of the existing health workforce so that they can collaborate, engage and facilitate processes with researchers and Indigenous stakeholders

6.5.3 Researchers

At the organisational level, this research recommends:

- Exploring collaboration using an integrated approach to deliberately create opportunities for research with knowledge-users by investing in long-term relationships and employing credible people to facilitate the engagement strategies required for co-creation.

- Recognising that collaboration, engagement, and facilitation can maximise participation of knowledge-users. Open thinking to Indigenous research paradigms. Work together to align goals and purpose; collaborating in ways that empower; design collaborative structures that are 'safe' places; valuing relationships; use facilitation to encourage all partners to connect and relate; be patient and recognise the importance of relational accountability.
- Developing skill sets in listening and communicating with different audiences.
- Making explicit the implementation aspects of intervention research. Consider hybrid intervention research designs that seek to study the effectiveness of intervention and the success of implementation.
- And finally, researchers should seek to publish full descriptions of the intervention, the implementation program theories, the implementation strategies, mechanisms, outcomes and main contextual features of the context. This will support knowledge on implementation to be accumulated across different interventions, so that they are visible for other research designs to incorporate if shown to have success for some contexts and people.

6.6 Summary

In summary, this chapter has addressed the five research objectives of this study. In doing so, a full cycle of a realist evaluation has been discussed—from theory constructing, the congruence found between the proposed implementation program theories and experiences of health professionals, mid-range theory refinement and concludes with proposing a way to apply this new knowledge by taking a prospective collaborative approach to implementation research. Notwithstanding that further realist cycles of testing and refinement should occur for realist accumulation, the refined program theories demonstrate that a realist approach can provide a method of sense-making within complex settings. The realist process of sense-making (proposing, testing and refining mechanisms in an implementation program theory) was successful in exposing interrelationships between mechanisms and the main contextual factors found in Indigenous primary health care.

The new knowledge derived from theoretically-informed implementation research offers a real opportunity to advance implementation science in Indigenous primary health care, and thus

the shared benefits of evidence-based research. By continuing to refine theories in evaluated cycles, knowledge can be accumulative and thus more generalizable beyond Indigenous primary health care, to other cross-cultural implementation settings. This realist research makes a direct contribution to implementation science by adding to the theoretical understanding of implementation and has made explicit causal mechanisms that may lead to successful implementation in the context found in Indigenous primary health care.

To apply this new knowledge to future KT in Indigenous primary health care, requires a shift of focus toward the mechanisms contained in the evidence-informed program theories rather than solely on the interventions. To do this an integrated approach is proposed that builds on the evidence-informed program theories that were refined during this study, with elements of collaboration, engagement, facilitation, and capacity building. Collaboration leverages from the intervention-related mechanisms of *a sense of direction* and *seeing a use for it* so that researchers and knowledge-users can integrate both ideas and experiences of Indigenous primary health care and respect Indigenous ways of knowing. Deep, reflexive engagement aims to trigger the motivational-mechanisms of *trusting to follow* and *believing they will make a difference* with Indigenous and non-Indigenous knowledge-users. Facilitation that enables people to contextualise shared ideas based on their knowledge and experiences will trigger people to *feel valued* and to *connect and relate*. Success of the relationships between researchers and knowledge-users should be judged by long-term partnerships, engagement in all stages of research and relational accountability to Aboriginal people and communities.

This chapter included recommendations for how to advance the KT field in Indigenous primary health care. These can be taken forward in future research partnerships. The next, and concluding chapter of this thesis, offers reflections on what could be expected from taking the theory-driven approach of a realist evaluation and what challenges were encountered.

Chapter 7: Reflections on Using a Realist Approach

...a strikingly young literature (Marchal et al. 2012).

7.1 Introduction

This concluding chapter, reflects upon the experiences of doing implementation research in the KT field by using the nuanced theoretical literature of realist evaluation to design and execute a study in Indigenous primary health care. In doing so, this study has attempted to address a recognised gap in the theoretical conceptualisation of implementation (McCalman et al. 2012). This is the first realist evaluation, to my knowledge, to collect and explore implementation of intervention research from the perspective of health care professionals tasked with implementing interventions in Indigenous primary health care centres.

Approaching the question '*how, and for whom, does new knowledge get implemented in Indigenous primary health care*', from a realist perspective has meant extending the explanatory reach beyond describing enablers and barriers to that of exploring the mechanisms-context dyads influencing health professionals and their engagement in implementation.

The next three sections conclude this thesis by discussing the emerging methodology of realist evaluation, the challenges encountered and an overall conclusion.

7.2 What Should be Expected from a Realist Evaluation?

Realist evaluation has been put forward as a method that can be used to evaluate complex interventions beyond describing the determinants of change: the factors that prevent or enable improvements, and are conditional to context (Flottorp et al. 2013). The rationale for adopting a realist evaluation approach was a) an interest in exploring the construct of context and its impact on implementation, b) the synergies between the PARIHS conceptual framework and realist evaluation and c) and the potential to provide new knowledge in the field of implementation research that was generalisable to future intervention research projects in Indigenous primary health care.

Using realist evaluation as a way to understand intervention in different primary health care sites had been used internationally (Carlfjord et al. 2010). At the time, this study was being developed, it was the first to take a realist approach to look specifically at implementation in Indigenous primary health care. Parallel to the data gathering phases for this study, the CQI intervention team undertook a realist analysis of data from a workshop with hub-coordinators, research managers and researchers, the findings were published by Schierhout et al. (2013). The realist work by Schierhout et al. (2013) analyses proposed mechanisms of collective valuing of clinical data for performance improvement, collective change efficacy; and organisational change to encompass a population health orientation. This assisted in implementation program theory development. Valuing clinical information, a team approach and a population orientation were incorporated as context elements in the CMO configuration rather than mechanisms. This thesis extended the realist work in Indigenous primary health care by including the implementation experiences of health professionals working in the health centres located in Aboriginal communities.

Intervention research programs introduce new ideas and/ or resources into the implementation setting. This study was designed to ask 'how' implementation was happening, for whom, and in what circumstances in Indigenous primary health care. It did not set out to evaluate the effectiveness of an intervention. Central to the realist evaluation approach is to look for evidence of generative mechanisms, explained as the additional resources provided by an intervention or program and the reasoning that influences a person's choice-making that leads to an outcome. 'Outcomes' for a realist include both intended and unintended changes for people and organisations resulting from an intervention (Westhorp 2014). From a realist perspective, interventions 'work' by participants who are exposed to these new ideas/resources making choices. Recognising congruence with proposed CMO configurations was assisted by the advice to first look for evidence of outcomes (Westhorp 2012). Analysing from the Pawson and Tilley (1997) understanding of 'mechanism' as a participants' reasoning and choice-making in response to the resources created by the intervention that leads to the outcome did not present methodological problems in confusing the mechanism with the intervention described by Marchal et al. (2012). This way of thinking about a mechanism is similar to what was developed by a scoping review of the concept by Lacouture et al. (2015), which determined that:

a mechanism is an element of reasoning and reactions of (an) individual or collective agent(s) in regard of the resources available in a given context to bring about changes through the implementation of an intervention (Lacouture, et al 2015:8)

One of realist evaluation's tasks is to improve the understanding of how programs work by distinguishing between situations with effective and ineffective implementation (Pawson & Manzano-Santaella 2012, p. 177). However, implementation practices and context always mediate effectiveness of implementation. Realists place the emphasis on understanding outcomes through focusing on the links between the intervention, the mechanisms and context factors. This approach takes the understanding of how programs work to a deeper theoretical level by first making the implementation program theories explicit and then constructing CMO configurations. In this study, the mechanisms were not explicit in the implementation program theories and were predicted from underlying general theories.

Adopting a realist lens meant that this research was framed around the research question 'how, for whom and under what circumstances does new knowledge get implemented in Indigenous primary health care', which has provided useful information for researchers and program leaders about the reasoning and resources that are likely, in certain circumstances, to lead to successful implementation in primary health care settings. The research design captured an account of human agency and reasoning of from the perspective of primary health care professionals. In doing so it provided visibility to the difficulty both Indigenous and non-Indigenous people have navigating the cultural boundaries that hinder effective engagement between co-workers and clients. On a methodological level, this PhD study also demonstrated that a realist methodological approach can add theoretical depth to the constructs of evidence, context and facilitation within the PARIHS conceptual framework by making explicit the interrelatedness of main contextual factors and the causal mechanisms that lead to implementation success.

7.3 What challenges were Encountered?

The foremost challenge was timing. Realist evaluation is a relatively new research approach which has been increasingly used for health services research, particularly in the United Kingdom (Greenhalgh et al. 2015). During the timeline for this study, design (2011-12), data collected (2011-13), and analysis (2013-15), realist methodologies were emergent with many methodological gaps or poorly described guidance for 'doing' a realist evaluation. Notable

gaps included, how to conduct realist interviews, realist analysis of qualitative data and presentation of realist findings. However, during the timeframe over which this study has taken place (2011-2017), there was a surge of realist evaluations published, the establishment of the RAMESES blog, the first (and second) realist evaluation conference and a set of methodological standards for realist evaluation (Wong et al. 2016). These activities by the realist community provided guidance and clarity for applying realist principles to design, analysis and reporting of data (Greenhalgh et al. 2009; Marchal et al. 2012). Many of the challenges presented in this study were also encountered by others. The responsiveness of the online community on the RAMESES blog provided much needed advice and assisted in overcoming the methodological gaps. During the timeframe of this study (2011-2017), the interpretation of the realist philosophical principles into pragmatic methodological guidance have continued to evolve in the literature and research practice, changing the landscape for future researchers. In particular, the clarification of core concepts such as mid-range theory and CMO configurations have reduced the confusion of identifying between context and mechanisms.

The realist research design was, in principle, followed as it had been planned. However, the scope of the study was constrained by the agreement of only one health service organisation to participate and to restrict access to only three locations from which to gather data from the Indigenous primary health care workforce. In an alternative study design, this may have limited the generalisability of the findings. However, generalisability in realist methodology is considered to be at the level of the CMO configurations. In any realist evaluation the explanatory theory, in the form of CMO configurations, is always propositional and as they are context-dependent open to further testing and refinement. Therefore, the CMO configurations from this study are a platform for further testing in other Indigenous primary health care settings.

The multi-level process for ethical and health service organisation approval to access Indigenous primary health care centres in Aboriginal communities meant that there was a significant time lag between implementation activities and data collection from health professionals. For the Clinical Management of Childhood Lung Disease and the Indigenous Mental Health Care research programs this lag was up to two years between implementation activities of and visits to the study locations to observe practice and interview primary health care professionals. The CQI Intervention was not affected by the delays in access to the locations

to collect the Phase Two data from health professionals as implementation was ongoing through the study period at all study locations. The brevity of time observing and interviewing in remote health centres constrained the time for relationship building with those interviewed. The Indigenous primary health care setting is very fluid from day to day and the health centre is reactive to community life such as sporadic violence, mourning and funerals, sporting events, political visitors or traditional ceremonies so the staffing profile is in constant flux. Fortunately, prior exposure to the Indigenous primary health care centres and the Aboriginal communities meant that a rapid situational analysis of the broader environment was achieved. The delay in collecting the Phase Two data and the lengthy time taken for realist analysis led the completion of only one cycle of proposing and refining CMO configurations. This meant that the refined CMO configurations were not subjected to a further cycle of evaluation, nor were alternative mechanisms explored. Nor were the perspective of Aboriginal community members able to be captured, beyond that of the Indigenous respondents, within the timeframes and resources for this study. This perspective is important in future research.

On reading the first published standards for realist evaluation Wong et al. (2016), there were two potential challenges of a realist approach that were not encountered in this study, firstly using a realist review to begin the development of the proposed CMO configurations, and secondly, using quantitative data to add to the qualitative descriptive accounts as evidence of success or not for program outcomes. In defence of the first limitation, given the scarcity of literature of relevant intervention studies, that included implementation findings, a more traditional approach was used to critically interrogate the scant body of literature (see Chapter 2). In defence of the second limitation, the collection of quantitative data was beyond the financial scope and timeframes of a PhD study. Despite these limitations, this study strongly adheres to the principles of a realist evaluation set out by Pawson and Manzano-Santaella (2012). It also is compliant with the recently published reporting standards for realist evaluation by Wong et al. (2016).

7.4 Concluding Reflections

Indigenous primary health care has been a fascinating context in which to commence implementation research, and one that is an authentic fit with my own experiences. I have had the opportunity to renew connections with Aboriginal and Torres Strait Islander Health

Practitioners, be reminded of the unique perspective that they bring to Indigenous primary health services, and, accept my relational responsibility to enable them to 'have a say'. I am also reminded of the tension of juggling responsibilities of a health team member and being responsive and accountable to the Aboriginal and Torres Strait Islander communities in which they relate to and live. Likewise, I acknowledge the pressure that non-Indigenous Health professionals feel when working in Indigenous primary health care, in often remote areas and professionally isolation.

In undertaking this journey into realist evaluation, I have straddled the methodological challenge of melding program theories and the reasoning that shapes how people respond to issue in a specific context. The resulting refined evidence-informed program theories have begun the process of opening the 'black box' of how implementation happens in Indigenous primary health care. However, much work remains to enable evidence-based interventions to contribute to improved Indigenous health outcomes. Recognising that Aboriginal and Torres Strait Islander people can be equal partners in the process is key to two-way ownership and relational accountability. Relational accountability is the cornerstone for Aboriginal and Torres Strait Islander people collaborating and engaging with Indigenous primary health care services. Implementation research built on a foundation of collaboration, engagement, facilitation, and capacity building is a promising way forward rather than attempting to navigate this complex implementation context without the wisdom of knowledge-users.

The strength of this study is threefold: firstly, the realist evaluation design that made explicit and refined CMO configurations that have resonance for both researchers and health professionals; secondly, the presentation of an integrated approach to improve implementation success that is responsive to context; and thirdly to contribute to the PARIHS mid-range theory of implementation, and more generally the field of Implementation science.

Future implementation research should aim to use theory-driven approaches and continue to refine CMO configurations that can inform Indigenous primary health care. This program of research should focus on how strategies of collaboration, engagement, facilitation, and capacity building work, for whom and under what circumstances these strategies increase implementation success.

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