Exploring the introduction of a complex intervention in primary health care facilities in the Western Cape: A single site exploratory case study of the C^2AIR^2 club challenge.

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Abstract

Context: The Western Cape Province's Department of Health, South Africa, implemented a complex intervention aimed at changing organisational culture across health facilities in the province called the C^2AIR^2 club challenge, in phases, starting from August 2013 and was still ongoing in 2016 at the time of the research. A group of front-line staff from each participating health facility called C^2AIR^2 club champions were capacitated to implement the intervention in their respective facilities. This study aimed to explored the process of introduction, diffusion, adoption and implementation of the C^2AIR^2 club challenge in one of the primary health facilities where the challenge was implemented, using a diffusion of innovation lens.

Methods: We examined the process of implementing the C^2AIR^2 club and the contextual and other factors that constrained and enabled this process. Working in one primary health care facility selected as a representative case, we explored the experiences of the champions and other staff members of the C^2AIR^2 club. Our methods included 21 in-depth interviews, informal conversations, document review, and non-participant observation.

Results: Innovation-fit, leadership, champions, adopters' characteristics, and contextual issues were the main factors that influenced the spread of the C^2AIR^2 club. Contextual issues particularly those related to resource constraints played a central role in determining the successful spread of the complex organisational culture change intervention. Sufficiently trained champions could successfully spread the intervention without onsite external change consultants' facilitation, however this took time and caution should be taken not to evaluate implementation success too early. Involvement of not only top leadership but of all other multi-levels and multi-disciplines facilitated the spread of the intervention.

Conclusions: When introducing an innovation like the C^2AIR^2 club challenge the impact of which is not immediate neither tangible, in an organisation where there are tangible problems such as lack of working space, staff shortages and shortages in working equipment, it is important that efforts are made to address these immediate challenges and where they cannot be addressed that this is openly acknowledged by the implementers and management. If this is not considered, organisational members are likely to acknowledge the innovation as a good initiative but one that they would not actively rally around as it does not speak to their problems.

Key words: Organisational culture change intervention, complex intervention/innovation, diffusion, spread, organisational champions, LMICs

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List of Acronyms

C:	**C^2AIR^2 club champion**
C^2AIR^2:	**Caring; Competence; Accountability; Integrity; Innovation, Respect and Responsiveness**
CDC:	**Community Day Centre**
CHC:	**Community Health Centre**
GS:	**General Staff**
HICs:	**High Income Countries**
LMICs:	**Low and Middle Income Countries**
NDoH:	**National Department of Health**
OC:	**Organisational Culture**
PHC:	**Primary Health Care**
WCDoH:	**Western Cape Department of Health**

PART A: PROTOCOL
Exploring the introduction of a complex intervention in primary health care facilities in the Western Cape: A single site exploratory case study of the C^2AIR^2 club challenge.

Introduction

The past decade has seen a heightened global interest in health systems strengthening within low and middle income countries (LMICs).[1] The push to reach the millennium development goals was pointed out as one of the main drivers of the interest.[1] Now, as we have just entered the sustainable development era, there is still significant work that has to be done to strengthen health systems in LMICs, and a systems thinking approach focused on innovative interventions is strongly advised if LMICs are to be able to address the constantly evolving health system challenges which continue to increase in complexity.[1, 2]

Complex innovations

As the complexity of health system challenges increases, so has the complexity of the interventions or innovations developed to address these challenges.[3] This has given rise to a need to describe what makes an intervention complex, as studying such interventions poses various methodological issues.[3] There is a difference between a complex intervention and a complicated intervention. A complicated intervention can be a new machine for diagnosis which is sophisticated and difficult to operate but might not necessarily be complex.[4] In contrast, the complexity of an intervention arises both from the intervention and the context in which it is implemented and the interaction between the two.[5] The medical research council of the United Kingdom offers an explanation of what a complex intervention is, in their guideline on the design and evaluation of complex interventions.[6] They describe a complex intervention as being made up of multiple interdependent components which are targeted at multiple levels

in the health system, from the individual patient all the way up to the population level, and from the health worker right up to the highest organisational level. In addition to this, the complexity is determined by the difficulty in the required mind-set shift and change in behaviour of those delivering and receiving the intervention, and the degree of the freedom allowed in reframing the intervention to suit the context.[6]

Since most complex interventions are often new ideas or technologies they can be referred to as complex innovations and the definition of the two concepts in the literature overlap and are strongly aligned.[4] Atun[7] defines innovations in health systems as "new medicines, diagnostics, health technologies, new ideas, practices, objects or institutional arrangements perceived as novel by an individual or a unit of adoption".[7(piv5)] The newness of the complex intervention can either be because it is an original idea or it can be related to the fact that it is being implemented in a new context.[7] In this study the terms complex interventions or complex innovation refer to the same concept.

Nature of problems addressed by complex interventions

Globally most of the complex innovations within health reforms have mainly addressed hardware issues such as financing, organisational restructuring, introduction of new technologies and drugs.[8] Some scholars have argued that health reforms focused on structural changes alone are not sufficient in improving the quality and performance of health systems.[9-11] Interventions that embrace and address intangible underlying issues that have to do with human relationships (such as: organisational culture; power; values; beliefs; social networks and other similar issues that influence observed behaviour of the people in the health system), have been suggested as an alternative to the structurally heavy interventions that have characterised heath reforms globally and in particular in LMICs.[11, 12] Blaauw and colleagues[11] refer to the intangible issues as the 'software' issues of the health system and further suggest

that ignorance of these issues has contributed to the poor success of incentives meant to improve performance of health systems in LMICs.[11] Nevertheless, inclusion of software issues is bound to be a challenging endeavour mainly due the fact that more normative strategies are required since there is no straight forward formula to modify human behaviour.[11]

Addressing organisational culture

However, health systems researchers in LMICs have in the past decade taken up the challenge to give attention to software issues as evidenced by both theoretical and empirical literature covering topics such as amongst others, power,[13, 14] organisational learning [15] and trust[16]. An important but complex topic that both researchers and health reformers in LMICs have scarcely covered is organisational culture. Perhaps the complexity and non-uniformity in the already well established scholarly bodies of literature in the organisational and institutional fields is a contributing factor to why this topic has been evaded.[11] There are multiple and contesting definitions of organisational culture that exist in the literature. Simply put, organisational culture can be said to be 'how we do things around here' and in the many definitions the common components of organisational culture that are pointed out are values, beliefs and assumptions.[17-19] These components are said to be shared and accepted by occupational groups and are translated into common and repeated patterns of behaviour which are also taught to new members joining the organisation.[10, 17, 19]

Organisational culture in HICs

Despite the lack of clarity on the topic of organisational culture, in HICs, organisational culture change in health care organisations has been identified as an additional and necessary ingredient in improving the performance of health systems.[9, 10] This interest in organisational culture transformation in HICs, stems from the notion that culture is related to organizational performance.[10] However, evidence that suggest a relationship is not clear cut and it is difficult

to articulate the nature of the relationship that exist between the two.[10] Nonetheless, this inconclusive evidence has not prevented the implementation of complex interventions aimed at changing organisational culture in HICs health organisations particularly in the UK.[20] Underlying these type of government-led organisational transformation strategies is an assumption that organisational culture can be manipulated; however, opinions on this assumption are a source of further contestations on the understanding of the nature of organisational culture.[21] There are two main schools of thought that exist on this issue. One that considers culture as an attribute which can be manipulated to achieve certain goals, and one that views organizations as cultural systems where the culture is produced by that organisation and hence not easy to manipulate.[10] However, it has been argued that organisational culture lies on a continuum between these two positions, hence although not entirely possible to control has some aspects which are amenable to manipulation.[10] Furthermore, some scholars have argued that complex adaptive systems such as health care organisations which are complex and unpredictable are amenable to planned transformation, if there are simple rules which allow room for adaptation.[22]

Organisational culture in LMICs

Conversely, organisational culture and software issues in general still have not received focused attention from health reformers in LMICs. Considering the set of problems that LMICs have to deal with compared to those in HICs it might be difficult to make a case for resources to be invested on issues such as organisational culture change which have undefined sets of outcomes and the results of which are only likely to be felt in the long-run.[23] In LMICs resources are more likely to be invested in interventions with well-defined measurable impacts, such as antiretroviral therapy, where quick gains can be made.[24, 25] Nonetheless one cannot ignore the role that relationships, values, power and others play in the implementation of these disease or structural focused interventions.[8] But the lack of studies that focus on how these

software issues can be used as approaches that can lead to improvement in the quality of care in health systems makes policy recommendation on such issues difficult in LMICs.[8] With regards to organisational culture change interventions within the health sector, there is limited empirical evidence even from HICs, further reducing the likelihood of LMCIs to devote resources on interventions that tackle organisational culture change.[17]

Background

Focus on organisational culture change in Western Cape Province Department of Health (DoH), South Africa

Given the broader context outlined above, it is, therefore, very surprising that the Western Cape Province department of health has recently implemented a complex intervention focused on organisational culture change in the health facilities and health districts across the province. This focus on organisational culture is particular to just this one province in the country, the rest of the country is in line with other LMICs where structural issues are the main focus of health reforms. However, it is not unusual for provinces the country to have varying focus areas, since each of the nine provinces in South Africa can implement their own health policy as long as it is within the national policy frameworks as they have the constitutional authority to do this.[15]

The Western Cape intervention is in line with their vision of providing person-centred quality care, as outlined in their latest guiding policy document called health care 2030 which represents a paradigm shift from the previous disease and structural focused strategy documents.[26] This shift came when it became evident as the department reflected on the successes and shortcomings of their health reform phases that the staff had been neglected throughout those phases. They recognized that without a satisfied and enthusiastic work force,

provision of quality care would remain an elusive goal.[26] Therefore, staff wellbeing and engagement are represented as key aspects to achieving the goal of person-centred quality care throughout the health care 2030 document.[26] Vision 2030 calls for a fundamental change in the way things are done in the department.[27]

The complex innovation

The complex innovation designed by the Western Cape DoH is called the C^2AIR^2 club challenge. It has been developed and implemented by Ernst and Young, a management consultancy group, working on contract with guidance from, the Department of Health. The innovation is aimed at changing organisational culture in the health facilities by reinforcing the values upheld by the Western Cape DoH. The values of the Western Cape DoH are: caring; competence; accountability; integrity; innovation; respect and responsiveness, and the name is an acronym of these values. Ultimately the goal is to create a work force that is empowered and is able to perform optimally and thus provide high quality care to engaged patients.[26] This initiative is being implemented in phases and it is now currently in phase 2. In this study, we will focus on both phase 1 and phase 2 of the C^2AIR^2 club challenge.

The C^2AIR^2 club can be seen as a complex intervention because it is multi-faceted, has multiple outcome measures, and targets different organisational levels and multiple groups of people. The behaviour change required of those targeted by the C^2AIR^2 club challenge is also difficult. In addition to this, it employs both financial and non-financial incentives to encourage organisational change and has a competition element to it which is probably why it is called a challenge. It is also innovative in that as a whole, it is a completely new concept even though most of its sub-components are not necessarily new in the health sector. The C^2AIR^2 club can also be seen as a collection of multiple interventions aimed at achieving a common goal, which are interdependent but could potentially be implemented as standalone interventions (See table

1.). In table 1, the multiple inter-connected interventions that can be said to make up the C^2AIR^2 club are classified according the values of the Western Cape DoH with examples of instances in other settings where these interventions were implemented as standalone initiatives.

Table 1. C^2AIR^2 club values and interventions

Value	**Intervention**		**For examples of cases where similar intervention see:**
Competence	Effective employee planning, patient appointments, patient forecasting and daily duty roster on display.		(Michie and Williams 2003)[28] (Hall 2013)[29]
Caring	Morale meetings attendance, patient and employee feedback and Golden C^2AIR^2 club recognition rewards.		(van Wyk and Pillay-Van Wyk 2010)[30] (Tasa et al. 1996)[31]
Accountability	Collaboration between district and facilities with regards to performance.		
Integrity	Manager requesting constructive feedback from her subordinates, promoting patient feedback about the facility and resolving patient complaints.		(Donaldson-Feilder and Lewis 2015; London and Smither 1995; Walker and Smither 1999)[32-34]
Innovation	Sharing best practices through innovation summits.		(Ebner et al. 2009)[35]
Respect	Cervical smears and Antenatal screening.		
Responsiveness	Unplanned absenteeism, waiting time approximation.		(Spaite et al. 2002)[36]

Structure of the intervention

The C^2AIR^2 club challenge was structured similar to a league competition and facilities were categorised into four leagues according to types of facilities. These were the four leagues in phase 1: community day centres (CDCs) league, including 12 facilities; community health centres (CHCs) league, including 9 facilities; metro district hospitals league, including 7 hospitals and a rural district hospital league, including 10 rural hospitals. The participating facilities comprised a total number of 6000 of the Department's 32 000 employees. The first phase started in August 2013 up until March 2015 and included 38 health facilities out of a total of 479 facilities. These facilities were chosen based on their size, diversity and ability to compete. Phase 1 of the challenge ran for approximately 18 months and ended with a prize giving ceremony in which the winning team in each league walked away with R60000.00 prize money to spend at their discretion. The first prize giving ceremony was a prestigious event in March 2015 in which the top performing facilities in each league were awarded prize monies, trophies and certificates. In this study, the focus will be on primary health care facilities. Phase 2 started in March 2016.

During the 18 months a report was sent each month to the administrators of the competition via an online system and each facility was scored based on their report and placed on a score ladder. There were six categories on which the facilities were scored based on the six values of the department, which each facility had to report on. Each value had specific items on which the facility could score points. Bonus points were earned for coming up with innovative ideas and penalties were given by subtracting points for any late or incomplete submission of the challenge report. The winning facilities were the ones which had the highest cumulative scores at the end of the 18 month and certificates of recognition were awarded to the facilities with the highest score in each category each month and there will be a similar process in phase 2.

Another area of scoring was the golden C^2AIR^2 club actions, in which facilities were scored according to how the staff displayed actions related to the values in their daily work. These actions were decided upon to be symbolic of each value by representatives of each facility and they were: I greet patients with a smile (caring); I treat patients and their families with dignity and respect (respect); I make time to listen to my patients (responsiveness); I support my team (integrity); I have a good relationship and open communication with my team. Every time the facility manager saw a staff member displaying these actions the staff member was given a golden C^2AIR^2 club reward action slip, the facility then earned points for every slip issued to a staff member.

Implementation of the C^2AIR^2 *challenge phase 1:*

The implementation process started with a consultation with the facilities by the initiative administrators in order to come up with aspects in the facilities daily work which could represent the C^2AIR^2 club golden actions. The administrative team then compiled the competition manual with all the required activities that the facilities competed and reported on monthly. The facility manager and selected members of staff from the facility were chosen to be change agents and thus champions of the initiative in the facility. Each facility chose change agents themselves using their preferred methods of nominations and each facility had varying numbers of champions depending on the size of the facility. In primary health care facilities, a champion representing each cadre of staff and or subunits from management to general staff was chosen with approximately 10 champions in CDCs and 15 champions in CHCs.

C^2AIR^2 club champions: The key factor to the implementation and spread of the C^2AIR^2 club phase 1 were the C^2AIR^2 club champions. The role that opinion leaders and champions play in the spreading of new ideas in organisations is widely recognised in the organisational culture literature and has been suggested to be of great relevance to the organisational culture

change movement in health organisations.[37, 38] Champions have been identified as those who act as product representatives for a particular innovation by drawing the attention of others to the innovation.[37, 39] An important function of the champion is to influence and facilitate change in others through commitment to promoting the innovation with passion and persistence.[39] They also bring together different groups across occupational lines to work together and in this way develops informal support networks around the innovation.[37, 39] Champions help to translate the meaning attached to an innovation allowing other organisational members to make sense of an innovation.[37] In the C^2AIR^2 club challenge, change champions played a similar role and they acted as ambassadors of the initiative and were responsible for the spread of the ideals and values that the initiative was meant to reinforce.

Equipping the C^2AIR^2 club champions: Before the C^2AIR^2 club was introduced to the facility the chosen C^2AIR^2 club champions and facility managers attended a two-day induction training. At this training the background, aims and objectives of the C^2AIR^2 club were presented, and the content and technicalities of what the challenge entails and how it works were outlined. Most of the time in the training was spent with each facility team reflecting on their facilities, on challenges pertaining to communication, service delivery, staff engagement and bureaucracy and brainstorming solutions with the facilitation of the administrative team. There were team building activities during the training which included each team coming up with a descriptive name for their facilities, a motto and a song or dance for their facility. After the training the champions went back to the facility where they were expected to communicate and sell the whole concept of C^2AIR^2 challenge to other staff members. They were also expected to come up with an innovative idea to improve an element of service delivery in their facility which they showcased four months after the first training at an innovation summit, which is part of the C^2AIR^2 club challenge. Further training on listening skills and leadership was given to the champions and facility managers a day after the innovation summit was held.

Innovation summit: After four months from the implementation of the C^2AIR^2 club challenge in the facilities, an innovation summit was held. In the innovation summit, different facilities within each sub-district showcased the different innovations they had developed and implemented at their facilities. This served as a platform for sharing ideas and best practices across the different facilities. They also voted for the best innovation and the winner was awarded with a prize. The team from each facility that attended this summit was meant to go back and share ideas and implement relevant lessons learnt with the rest of the clinic staff. Examples of innovations developed varied widely, from new efficient methods of booking patients to new safety procedures that improves safety in facilities. This process of coming up with innovations was geared at instilling a learning culture within facilities and to inculcate a spirit of team-work.

Study Rationale

Fitzgerald and colleagues[40] proposed that, one of the preconditions to changes in existing practices in knowledge-based organisations such as health service organisations may be ensuring that new knowledge is diffused successfully.[40] From this it can be inferred that for the C^2AIR^2 club challenge to lead to change in organisational culture in the health facilities, knowledge about the C^2AIR^2 club including its aims and objectives is diffused successfully to all staff members. It is therefore important that the process of how such an intervention spreads is understood, so that this process of diffusion can be enhanced.

Moreover, successful adoption and diffusion of complex innovations such as the C^2AIR^2 club in health systems is necessary if the system is to be responsive to the mounting health challenges.[40, 41] There is a large and growing body of literature spanning the past four decades that has focused on diffusion of innovations in organisations across all sectors. This concept was first developed by Rogers and in general terms studies how innovations work their

way through or spread in organisations.[39] Diffusion of an innovation is conceptualised differently in various scholarly bodies that have studied the topic. According to Greenhalgh and colleagues[42] the concept can be understood by considering these four aspects: the diffusion; dissemination; implementation and routinisation of an innovation.[42] Where diffusion can be seen as the passive spread of an innovation, dissemination as the planned and direct efforts to influence others to adopt the innovation; implementation as planned and directed efforts to mainstream an innovation in an organisation and sustainability as integration of the innovation in the daily routines of the receiving organisation.[42]

The body of literature on diffusion of innovations within the health sector is also growing, and many factors influencing adoption and diffusion of innovations have been described such as a culture of learning, a receptive audience, presence of champions and opinion leaders, social networks and many more.[41] However, most of this research has been concentrated in high income countries and at organisational level. It is not well understood how complex innovations can be effectively introduced and diffused in LMICs health systems and this has been identified as a challenge to health systems strengthening efforts particularly in designing effective interventions.[7] The limited literature on diffusion of innovation in LMICs has focused at the system level and not at organisational or individual level.[7, 41, 43] In addition to understanding the diffusion of innovations at systems level, it is also essential to understand the organisational level spread of innovations. This is likely to illuminate the processes and mechanisms that determine spread at systems level and can be seen as a tracer for what is observed at the macro level of the health system. Furthermore, since the contextual and structural issues in HIC where most of the organisational level diffusion of innovations evidence is produced and that of LMIC are vastly different, it is expected that the factors that influence diffusion of new knowledge and ideas might be different, and the generalizable claims from HICs literature might not be easily transferred to LMIC settings.

Therefore, it is important to contribute to the body of literature on diffusion of complex innovations in the health sector at organisational level in LMICs, where there is a paucity of studies. Moreover, complex innovations such as the C^2AIR^2 club challenge that focus exclusively on cultural change are relatively new in the health sector and there are limited studies on them in both HICs and LMICs.[38, 44, 45] It is therefore critical that the opportunity to study such a unique case is not missed. This study therefore aims to study the diffusion of the C^2AIR^2 club as a complex innovation at organisational level, to contribute to building diffusion of innovation literature at organisational level in LMICs.

The study question

It is not well understood how far and how the C^2AIR^2 club challenge has spread within the facilities where it has been implemented. It is important to determine how different actors within the facility and organizational networks visualise this complex innovation and the problem it is meant to solve, and how they interacted with each other and with the innovation since its introduction in order to understand the diffusion process. Therefore, this study aims to explore how the C^2AIR^2 club, a complex innovation focused on organisational change was introduced, how it diffused in a health care organisations and the type of contextual, organisational and individual issues that contributed to and shaped this process, through a diffusion of innovations lens by asking the question:

How has the C^2AIR^2 club challenge, a complex organisational culture change intervention aimed at empowering frontline workers, spread in primary health care facilities in the Western Cape, which were included in Phase 1 and 2 of the challenge, and what has enabled or constrained this process?

The researcher wishes to understand in-depth how the C^2AIR^2 club challenge was passively and actively spread in the CHC, and if and how the intended purpose of the C^2AIR^2 club as

being a vehicle for staff engagement and staff empowerment has been captured by the staff. To operationalise this question this study will explore the introduction and spread of the C^2AIR^2 club challenge in a single Community Health Centre(CHC), in order to draw wider lessons about the introduction of the C^2AIR^2 club in primary health care facilities with similar settings to the CHC where this research will be conducted. This process will be studied in-depth in order to construct a detailed picture on how the C^2AIR^2 club challenge was introduced and spread within the facility. This question will be answered by addressing the following three objectives which are adopted from a protocol on the process evaluation of a complex innovation[46]:

The first objective will be to document how the programme was introduced into the facility, and this will also include exploration of the role of the manager and the C^2AIR^2 club champions in this process and their interaction with the administrative team responsible for developing and implementing the initiative. Since the manager and the champions are the key staff that are responsible for the spreading of the initiative it is important that there is a specific focus on them. Understanding what they understand the challenge to be about and the meanings they have attached to the challenge will be key to exploring how they then spread the intervention within the facility. Within this objective, the nature of the C^2AIR^2 club will be explored to see if the way the innovation was designed appealed to the champions. The researcher will look into issues pertaining to how champions were selected and if they were comfortable in the ongoing role that they have to play. This will be an important window into the experience of the rest of the staff since the way this group understands the C^2AIR^2 club to be ultimately is the way that the rest of the staff received it.

The second objective will be to describe the way in which the other staff members as a group adopted the initiative and engaged with various aspects of the C^2AIR^2 club challenge. The staff refers to the different cadres of staff such as cleaners, data capturers, receptionists,

nurses, doctors, champions and managerial staff including the facility manager. Their experience of the challenge will be studied in-depth, with a particular focus on whether the initiative is having the intended effect of changing the culture in their facility and empowering them as frontline actors to be pro-active and innovative in their service delivery. This will help to understand individual and intervention characteristics that may have enabled or constrained successful spread of the C^2AIR^2 club as an intervention.

The third objective will be to build a thick description of the context in which this process occurred in order to understand contextual issues that might have influenced the introduction, spread and the way in which staff members interacted with the C^2AIR^2 club programme. Context has been described in the literature as an important factor that influences how intervention work in practice.[7, 15, 42] Since each facility is unique, it will be important to understand the contextual issues that results in the way that the C^2AIR^2 club challenge spreads in a facility, including how desired and undesired consequences come about.

Theoretical framework

In this study two theoretical frameworks with their roots in the diffusion of innovation theory will be used. The diffusion of innovations is a common theoretical framework that has been used in research on implementation of various forms of initiatives and interventions across different organisations.[3] It focuses on studying how innovations work their own way through organisations and was first developed by Rogers and further refined for use within in the health sector by Greenhalgh et al. 2004.[39, 42]

The first framework that will be used is a framework for analysing adoption and diffusion of innovations in health systems developed by Atun et al. 2012 for the study of diffusion of innovations primarily at system level.[7, 43] (See figure 1.) Although this framework was developed for application at a more system level and not necessarily organisational level,

health facilities can be viewed as micro-systems and the various aspect of the framework that are considered at system level are also relevant at organisational level.[47] This framework is seen as particularly relevant since it has been developed from LMIC literature and contextual issues which this study aims to explore in depth are significantly placed within the framework. The framework has three layers, the first one is the institutional level in which the innovation, the problem which the innovation is meant to address and the adopters who are meant to adopt the innovation are located. The second one is the health system with its specific characteristics within which the institutions operate. The third layer considers the broader context in which the health system and the institutions are located. The framework allows one to consider the interaction between all these layers and the role all the different aspects considered in the framework play in the process which an innovation spreads throughout a particular health system.

This study will focus on the institution level in the framework (see figure 1.). In this study the institution will be the CHC in which this study will be conducted. The innovation in this study is the C^2AIR^2 club, the problem is the issues described above which the C^2AIR^2 club was developed to address and the adopters are the staff at the facility, including the C^2AIR^2 club champions and facility manager. The health system is the Western Cape and contextual issues that will be thoroughly explored will be those specific to the CHC and more broadly those of the Western Cape and South Africa. All the aspects that the framework considers, such as the way the problem is understood by those meant to adopt the innovation and understanding the innovation, are seen as foundational in answering the study question and hence this framework will be helpful in guiding the thinking around this study.

The other framework that will be considered is a conceptual model developed through a systematic review of empirical research studies by Greenhalgh and colleagues[42] which is useful for considering the determinants of diffusion, dissemination and implementation of innovations

in health service delivery organisations.[42] (See Figure 2.) This model is not in any way prescriptive and the authors caution against it being used as such. However, the model is a useful memory aid when thinking about diffusion of innovations, particularly at organisational level.[42] Since its development, the model has been widely used in diffusion of innovation research in health organisations and researchers have modified and refined the model to suit their research purposes. In this study, the model will be used as a guide for considering the different aspects of the diffusion process, and aspects which are relevant to the purpose of this study will be focused on, particularly the role of champions in the spread of innovations which is within the communication and influence box in the conceptual model. See figure 2.

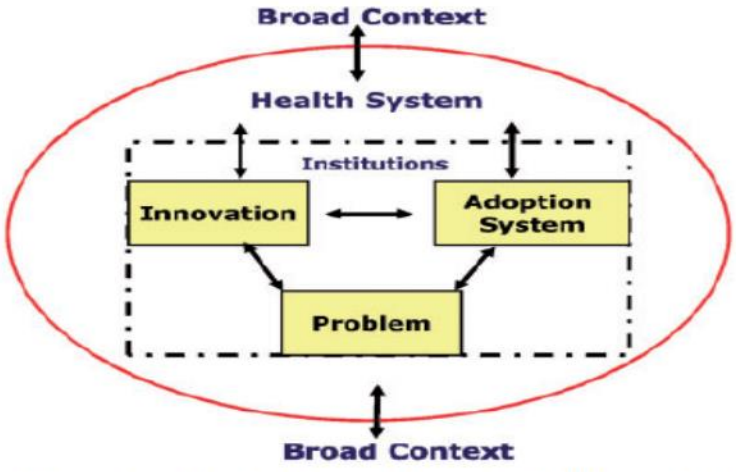

Figure 1 "Framework for Analysing Adoption and Diffusion of Innovations in Health Systems." [43(piv5)]

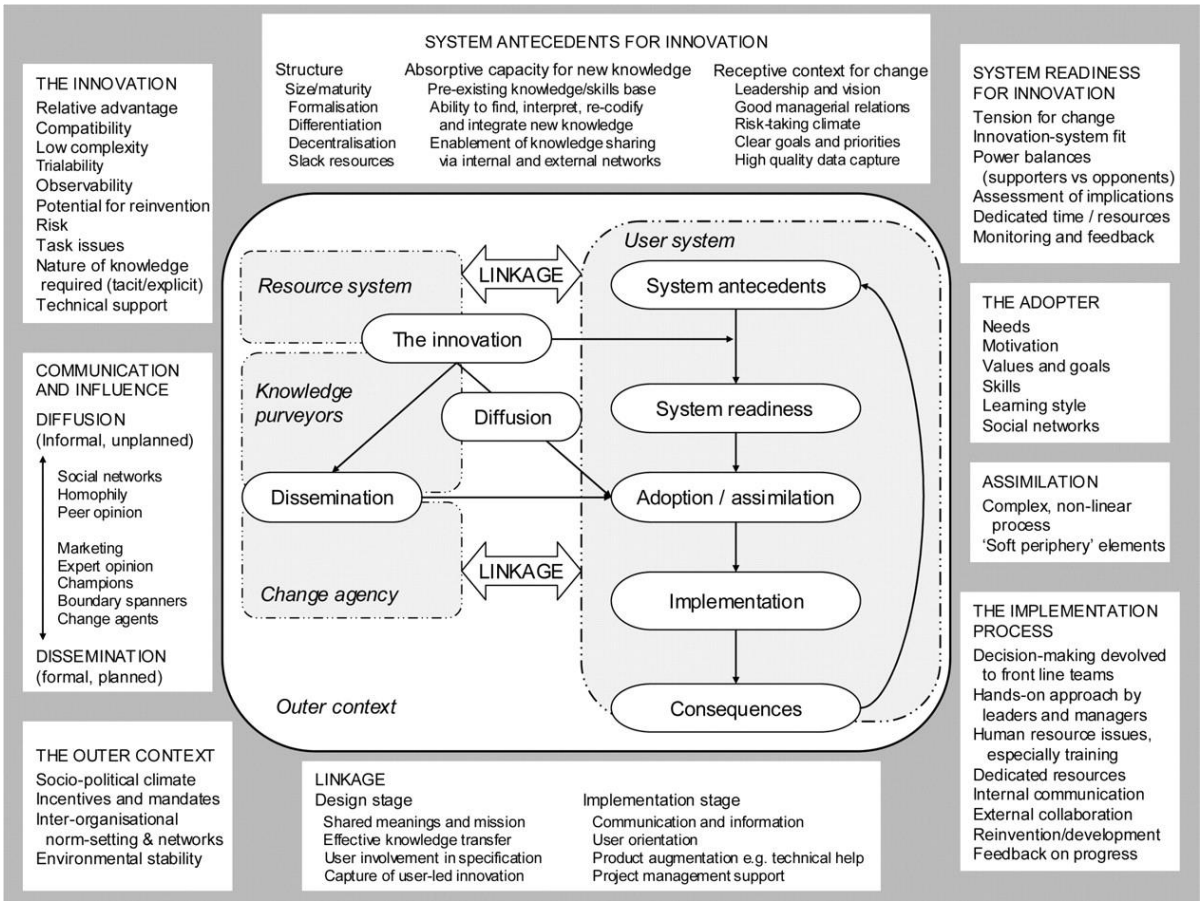

Figure 2 "Conceptual Model for Considering the Determinants of Diffusion, Dissemination and Implementation of Innovations in Health Service Organisations Based on a Systematic Review of Empirical Research Studies." [42(p595)]

Methodology

Study design

The design of this study will be a single case study.[48, 49] The case in this study is the particular CHC where the study will be conducted focusing on the process of spread of the C^2AIR^2 club challenge in the facility. A case study design was found to be the most appropriate approach to adequately address the research question, since case studies are defined as a strategy for doing research which involves empirical investigation of a particular contemporary phenomenon,

within its real life context using multiple sources of evidence.[48] Furthermore, case studies are appropriate when answering why and how questions which are the questions this study aims to investigate about the C^2AIR^2 club challenge.[48, 49] Case studies are able to produce a clear picture of an intervention in practice as well as reveal both intended and non-intended consequences of an intervention.[50] Even though this is not a formal evaluation study, it has some aspects of a process evaluation and case studies have been said to be characteristic of evaluation research.[48] Exploratory case studies are especially useful for studying interventions like the C^2AIR^2 club which have no clear set of outcomes.[48] A number of studies on implementation of interventions in health seeking to answer similar questions have used the case study approach.[51-53] The sort of answers provided by a case study are useful to both those implementing an intervention and those receiving an intervention.

This study will be an exploratory case study because it seeks to build understanding around the topic of the C^2AIR^2 club challenge of which little is understood.[48, 54] Limited research exists on organisational culture intervention in health globally and in South Africa there are no published studies that have addressed this topic to the best of the researcher's knowledge.[55, 56] There has also not been a province wide, government led organisational change intervention implemented in South Africa before. A case study approach will therefore allow for a deep exploration of the C^2AIR^2 club challenge. In order to extensively explore the process of spread of the C^2AIR^2 club challenge, a multiple-comparative case study would be beneficial; however, with the given time and resource constraints the researcher foresees that if more than one case study is undertaken, such cases will be superficial and not of sufficient quality and depth. Therefore, a single-case study has been chosen to allow the immersion of the researcher into this particular facility where in-depth rich data can be produced that can adequately illuminate understanding of the topic under study by allowing a thorough exploration of the C^2AIR^2 club challenge in one facility.[49] Moreover, as the CHC chosen in the study is typical of other CHCs

in large metropolises in South Africa, this case study can be seen as representative of other CHCs and can offer insights into implementation experiences in other similar facilities, further justifying why a single case study is a suitable design.[48] As such this study might also eventually serve as the first study in a series of case studies of the C^2AIR^2 club, that can be done in similar type of facilities in different settings where the initiative is implemented.[48]

Setting

The study will be conducted in a Community Health Centre (CHC) within the Cape Town Metropolis Health District of the Western Cape Province. The Cape Town Metro has eight health sub-districts and serves 64% of all patients seeking public health Care in the province.[15] In the sub-district in which this research will be conducted, over 500 000 people use public primary health care facilities. It is one of the poorest peri-urban sub-districts in the city, but has been said to be a relatively strong performer service delivery wise.[15] Nevertheless, there is still room for much improvement as there is no shortage of service delivery complaints on the quality of care offered in the facilities, and the general health status of the population in the sub-district remains poor and is reflective of the quadruple burden of disease in South Africa.[15]

Service delivery is primarily offered to the population through Primary Health Care (PHC) facilities, which are usually the entry point for the population into the broader public health system. PHC facilities are foundational to PHC-oriented health systems, and the way clients' needs are responded to in these facilities is indicative of the level of PHC orientation of that health system. PHC facilities in the Western Cape are divided into clinics, community day centres and CHCs. CHCs are the largest type of PHC facilities, they run for 24 hours and are mostly situated within the business district of the townships they serve. They are large complex public service organisation that serve approximately 40 000 clients in a month. In

these facilities, multiple clinical services are offered through several interconnected sub-units, mainly classified according to the type of clinical services offered, the main ones being: preventative services; curative services; emergency unit; HIV/TB services; and clubs for chronic conditions. They also have some specialised services which are offered by specialists from the referral hospitals who do weekly outreaches to the CHCs. Complicated cases are referred to District Hospital and Tertiary Hospitals.

Historically within metropolises in South Africa, CHCs employ a doctor-led model of care; however, they are managed by professional nurses as in many other LMIC countries. This manager oversees approximately 150 staff members representing different occupational groups each with its own sub-organisational culture. The occupational groups include: the managerial staff; doctors; nurses; pharmacists; allied health professional; administrative staff and general staff members. All these staff members contribute to the client's experience of the facility, from the receptionist who opens their folder, to the cleaner who keeps the clinic hygienic, all the way to the clinician with whom they consult. CHCs can be seen as the middle ground between a community day centre and a district hospital, with each one of them being able identify with various organisational features of a community health centre

Case selection and sampling

Sampling will be in three phases: firstly, selection of the case facility; selection of the sub-cultures; and selection of the study participants within the sub-cultures.

a) Selection of case facility

The facility will be selected purposefully based on the performance of the facility in the C^2AIR^2 club. The researcher is seeking to explore a common experience, and therefore looking for a facility which is typical of community health facilities within the Cape Town Metro. Facilities that had average to good performance on the C^2AIR^2 club are likely to possess attributes

common to and represent a typical facility. In contrast, extremely excellent or poor performers are more likely to represent the exception or outliers. Therefore, a facility that has had an average to good performance in phase 1 of the C^2AIR^2 club will be preferred for selection if possible. Selection will further be informed by a facility manager's willingness to have the research done at their facility. The researcher will choose a facility where the manager is familiar with the kind of research where the researcher and those researched are co-producers of knowledge. This is important as the facility will be seen as a partner throughout the execution of the study. Facilities where the manager was involved in the DIAHLS project (District Innovation and Action Learning for Health Systems Development), a long term action research partnership which aims to better understand, intervene in and research routine health system governance practices will be chosen, as these managers are familiar with this kind of partnership in research.[15]

b) Selection of embedded units within the facility

Health organisations are made up of distinct sub-cultures mainly due to the way that health organisations are structured historically.[10] One way of categorising organisational sub-cultures which is relevant to this study is to do so across occupational lines, such as doctors, nurses, pharmacist and others [10, 57]. Furthermore, each sub-culture has a different type of social network which is effective for spreading different kinds of messages. Recognising these social networks is important, since the embracing of innovation by individuals which is key to the spread of that innovation, is strongly associated with the structure and power of social networks.[42, 58] The sub-cultures will therefore be the different occupational groups, which represent different social networks and will be purposefully selected to be maximally representative of the occupational groups in the facility. This will include the following groups: the managerial staff; doctors; nurses; pharmacists; allied health professionals; administrative staff and general staff members.

c) Selection of study participants

Study participants will be purposively selected to represent views of the sub-cultures and the diversity of view on C^2AIR^2 club challenge. Furthermore, the participants' willingness and availability for the in-depth interviews will influence the selection process.

In-depth interviews: Approximately 20-30 participants will be purposively selected for the in-depth interviews, 10 will be the C^2AIR^2 club champions including the facility manager. The other 10 to 20 will be selected from staff members who are not part of the designated C^2AIR^2 club champions in the facility, to represent each of the occupational groups. This classification is important since these two groups of staff will have a different experience of the C^2AIR^2 club challenge because of the nature of their involvement in the challenge.

Informal conversations: A range of additional informal conversations will occur as the researcher spends time in the facility. These conversations will seek to expand the range of views explored during the study, and to ensure the researcher captures the diversity of views within each social network.

Data Collection

During a 4 week, intensive period of data collection in the selected facility, multiple qualitative methods will be used to collect data and this will include: document reviews; non-participant observation and in-depth interviews. This data will be triangulated to improve credibility, and data collected from each method will be used to inform the other methods during the data collection process.[59] Qualitative methods of inquiry are appropriate for this study as they are useful in understanding what form certain interventions take in practice, and also on how and why the way in which a programme is structured was appropriate or not.[60]

a) Non-participant observation

Non-participant observation will be recorded as field notes and will be foundational to building a thick description of the context of the facility and will occur throughout the 4 weeks. Observations will be of overall physical, social and political environment of the facility and will start while the researcher gets familiarised to the facility, and will be throughout the period of field work as the researcher moves around the different areas in the facility. More specifically, as is permitted and appropriate within the facility, there will be observations of general staff meetings, C^2AIR^2 club meetings and specific clinic subsections of the facility (such as ARV clinic, pharmacy, chronic clubs, reception and others) selected based on their relevance to understanding the study question in the specific facility context. Observations have been used to study the way that staff in a clinical setting adopt to the introduction of interventions in the facility.[50, 61] Observations will be valuable for noting the values, personal interests and power distributions in the facility that play a role in the spreading of the C^2AIR^2 club challenge. Understanding of these elements is important as it determines the diffusion pattern of complex innovations.[57] During staff meetings, the researcher will observe things such as: how the staff interacts with each other and the C^2AIR^2 club champions; personal attributes of the champions; how the C^2AIR^2 club is communicated about and will watch out for staff members to invite for inclusion in the in-depth interview. If there is an introduction of any new things into the facility during the time that the researcher is at the facility, observations of how such matters are debated in the staff meetings will be recorded. Observations within different subsections of the clinic will focus on observing how the staff interacts with each other and with patients, with reference to the C^2AIR^2 values and golden actions. Existing social networks will be watched out for, and the researcher will listen out for the way in which other new things in the facilities such as new guidelines, are spoken about among staff outside of the context of staff meetings.

b) Document reviews

Document review will involve the collection of relevant documents directly or indirectly related to the to the C^2AIR^2 club challenge. This will include formal documents that the manager has on the C^2AIR^2 club such as information brochures and posters. Agendas, minutes and/or reports of staff meetings relating to the C^2AIR^2 clubs and monthly staff meetings that the researcher is allowed access to will be reviewed. The researcher will look at monthly reports of the facility on the C^2AIR^2 club challenge from phase 1 to 2 and the facility performance over the intervention period. Relevant communication with the C^2AIR^2 club administration team over this period will also be reviewed. This data will be important to enhance understanding of the C^2AIR^2 club and to guide the researcher in issues that might be relevant to explore during interaction with staff. They can also be a common reference for the researcher to refer to when asking staff about certain aspects of the C^2AIR^2 club challenge. Furthermore, this material will be used to assess for the way in which the C^2AIR^2 club is integrated into the day to day workings of the facility.

c) In-depth interviews

Face-to-face semi-structured in-depth interviews will be done to allow deeper exploration of the staff's experience and understanding of the C^2AIR^2 club challenge. Each interview will last 45 to 60 minutes, but ultimately the length will be guided by the responses that the participant has to share. The in-depth interview allows the researcher to explore broadly various underlying factors such as reasons, beliefs and feelings behind a participant's answers.[62] Therefore, this will allow the researcher to delve deeper into the staffs' experience of and meaning attached to the C^2AIR^2 club phase 1. Open-ended question will be asked in these interviews to allow the participants to express their ideas and thoughts around the C^2AIR^2 club in a naturalistic setting. Therefore, thoughts and ideas which might be restricted if a structured

tool is used are likely to emerge.[62] Moreover, there is room for exploration of other issues that come up during the interview process that the researcher might not have thought of. In-depth interviews combine structure with flexibility and will allow the researcher to probe deeper into issues around the spread of the C^2AIR^2 club.[62] The face-to-face interview allows the researcher to identify non-verbal expressions which then allows the researcher to probe further or clarify certain things especially if there is discrepancy in what is being said and what is being expressed.[59, 63]

The in-depth interviews will be guided by Greenhalgh and the Atun frameworks, outlined above using an interview guide (See appendix E). The interviews for the manager and champions will focus on their role in spreading the initiative, how they were equipped to carry out this role and the contextual and individual issues that made it easy or difficult for them to carry out this task. Whereas the interview for the other staff members will focus on how, if at all the initiative was spread to them. The in-depth interviews will also be informed by findings from the document review, non-participant observations and informal conversations.

d) Informal conversations

Since this is an exploratory case study, it is important to explore as many aspects and collect as much data as possible that can contribute to answering the question.[48] Due to staff time limitations, the researcher anticipates only being able to interview 20-30 staff members in-depth, but will seek to represent the diverse range of views of the different cadre of staff and social networks that exist in the clinic through additional informal conversations. Other studies have shown that informal conversations with front line staff are an effective method of collecting data that allows the views of as many staff as possible to be captured within clinical organisations.[44] The researcher will therefore have informal conversations with staff while doing the non-participant observations. In these conversations, the researcher will focus on

general experience of the C^2AIR^2 club to get an overall view of spread of the C^2AIR^2 club within the facility. Some themes that emerge during these informal conversations will be considered for deeper exploration in the in-depth interviews. Furthermore, seemingly divergent views expressed during in-depth interviews will be tested in these conversations to see if they are generalized.

Data analysis

Data analysis will start in the field while collecting data and will be an iterative process throughout the whole process. This will be characterised by the researcher reading and re-reading the data in order to become familiar with the data which will help with building ideas for the analysis.[64] This approach is important as it will allow the researcher to see while still in the field if there is missing data which is important to understanding the subject under study that needs to be collected.[64] Such missing data could be the inclusion of a group of study participants that was not initially planned, but through analysis of interviews in the field it becomes evident that this group needs to be included. Data will be analysed using thematic description of the different factors or issues that will come up during the data analysis process. This method is called a thematic analysis approach and is used to identify, analyse and report themes within data.[65] This approach is helpful in this kind of research which aims to provide an initial description of a situation of which little is known or understood.[65]

The case will be analysed as a whole coherent body, involving constant comparison of each participant and sub-culture. Coding and interpretation will be inductive, allowing themes and sub-themes to emerge directly from the data.[64] Deductive themes will be developed according to the themes in the interview guide and literature on diffusion of innovations relevant to this study.[64]

Rigor

Different sets of data collected which are the in-depth interview, field notes and informal interviews will be triangulated to improve credibility. In addition to this, the analysis process will be thorough and patterns and explanations will be tested to improve credibility. The researcher will be reflexive throughout the study. To ensure accuracy of the data the researcher will listen to the recordings while reading the transcribed transcript and correct any mistakes.[64] An audit trail of the research process will be kept to improve dependability, each change in the data coding will be documented. Limitations will be declared – these might include, for example, that those who are not interested in the C^2AIR^2 club might not want to engage with the researcher and might be less interested in participating in the in-depth interviews. Member checking will be done by taking time to check with the participants that the researcher understands the information they have shared accurately. For transferability, the researcher will make sure that a thick description of the context of the participants is available so that readers are able to evaluate for themselves if the findings can be applied to their settings.

Ethical considerations

Ethics approval will be sought from the University of Cape Town ethics committee, and permission from the Western Cape Department of Health will also be sought. Permission to work in the site will ultimately be sought from the facility manager.

a) Informed consent

Written informed consent will be obtained from the participants (See Appendix A, B, C & D). The consent form includes information on the duration of the interview, the possible risks anticipated, the benefits and issues of reimbursement and others. Since this research involves ethnographic observation and informal conversations, written consent to do the observation will be obtained from the facility manager. Furthermore, all staff members will be informed of

the researcher's presence and role in the facility and the researcher will be formally introduced to all staff members at a staff meeting. The staff will be informed of the main aims and objectives of the study by the researcher before the researcher begins to do any work in the facility. Any staff member who does not wish to interact with the researcher will be free not to and this is made clear in the consent form and will be verbally conveyed to the staff when the researcher is introduced. It will be made clear that they will be no negative consequences for any staff members if they do not wish to engage with the researcher. The researcher will ask permission in every area of the facility where she needs to do observations in addition to the consent given by facility manager. The staff in that area will need to allow the researcher to interact with them and the researcher will not do observations in any areas where the staff is not comfortable with being observed. All interactions with staff will be voluntary.

b) Privacy and Confidentiality

Since this research is a single case study, the site of the research will not be mentioned in any part of the study and certain elements that might lead to easy identification of the facility will be left out in all reporting and publishing. Permission to use a quiet room that can be locked and is slightly removed from the clinical areas will be sought and secured from the facility manager before the start of the study; this will be to ensure privacy and to enhance confidentiality. All data collected will be anonymised. All the identifying information will be removed from the data and where necessary pseudonyms will be used. The in-depth interview will be audio-recorded and anonymity will be ensured. At no point in the interview will the participants name be mentioned unless they mention it themselves, should it happen, this will be anonymized during transcribing. Permission for recording will be obtained from the participant and it will be explained that the recording is to ensure that the interview is transcribed accurately for the purposes of data analysis. If there are parts of the interview that the participants do not wish to be audio recorded, they are free to tell the researcher to stop the

recording. All audio taped interviews will be transcribed and the audio recordings destroyed to protect the study participants' identity. The recorded data will be protected by a password and only the researcher and supervisor will have access to them. All versions of the transcript will be clearly labelled and stored in a password protected folder. A master copy will be kept and an external sever and hard drive will be used as backup, all of which will be password protected. NVIVO will be used as the data management software, for all data collected and the data will be accessed only with a password. Data will be kept for an indefinite period in soft copy with only the researcher and supervisor having access to it.

c) Benefits

This research is likely to benefit participants positively as they will gain more knowledge about the C^2AIR^2 club challenge and the interview might serve as a space where they can think deeply about the C^2AIR^2 club with likely progressive effects. They can have a point of sharing any frustration about the C^2AIR^2 club since the researcher will be there to listen to their story. Their involvement in the study could lead to important findings which can be used to help the facility improve its absorptive capacity for future innovations. This research is likely to benefit the staff by helping them engage with the C^2AIR^2 club champions in a positive light.

d) Risks

Although the researcher perceives the risk associated with this research to be minimal the researcher acknowledges that the topic under study may be a sensitive one for some staff. Those who might have had any forms of negative experiences that are directly linked to the C^2AIR^2 club might find this research to be emotionally taxing. This will be explained to the participants and they will also be offered a list of counselling services available through staff wellness, should they require counselling. All this information is included in the consent form.

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PART B SCOPING LITERATURE REVIEW: Key attributes of organisational culture change initiatives that have been implemented in health service organisation in LMICs and HICs: A scoping review

Introduction

The past two decades has seen a rise of interest in the idea of changing organisational culture as a means to improve health systems performance.[1] Many evidence based practice interventions have been shown to fail because they were not supported by the organisational culture of the organisations in which they were implemented.[2] In health systems literature, organisational culture is often mentioned as a factor that influences critical components of health system performance such as health worker motivation.[3, 4] However, health reforms have mainly addressed hardware issues such as financing, organisational restructuring, introduction of new technologies and drugs.[5] In support of organisational culture change initiatives, some scholars have argued that health reforms focused on structural changes alone are not sufficient in improving the quality and performance of health systems.[6-8] Interventions that embrace and address intangible underlying issues that have to do with human relationships (such as organisational culture, power, values, beliefs, social networks and other similar issues that influence observed behaviour of the people in the health system), have been suggested as an accompaniment to the structurally heavy interventions that have characterised heath reforms globally, particularly in LMICs.[8] Blaauw and colleagues[8] refer to the intangible issues as the 'software' issues of the health system and further suggest that ignorance of these issues has contributed to the poor success of incentives meant to improve performance of health systems in LMICs.[8]

However, organisational culture as a broader topic in health systems remains largely understudied and thus organisational culture change even less so, specifically in developing countries. Organisational culture is a widely contested and fluid concept, and this might be the deterrent for health systems particularly in LMICs from focusing on it. Most define organisational culture using Shcein's[9] simplified definition as, "the way we do thing round here".[9] Recently some have suggested that this should be changed to the "the way we think we do things round here" as each organisational member can have a different view of the very same organisational culture.[10] Schein[9] formally defines the culture of a group as "a pattern of shared basic assumptions, learned by a group as it solved its problems of external adaptation and internal integration, which has worked well enough to be considered valid and therefore to be taught to new members as the correct way to perceive, think and feel in relation to those problems"[9(p18)]

Studies from the small but growing body of literature on organisational culture in health care systems from high income countries have mainly focused on the relationship between organisational culture and different elements of the health system such as leadership, clinical governance and evidence based practice.[7] Most of these studies merely highlight the potential of organisational culture change interventions to improve a particular element of a health care organisation.[11-15] The most noticeable sub-category of organisational culture literature in health is that of safety culture, but a large number of the studies are on the measurement of safety culture and not on interventions.[16] Although widely advocated for, it is unclear what form organisational culture change initiatives should take and if these interventions should be distinct from practice intervention such as the use of evidence based practice in clinical management.[17] There is a need to try and understand organisational culture change initiatives, how to scale them-up and how to spread them across the health system.

In a systematic review that sought to draw conclusion on effective strategies for changing organisational culture the authors failed to find primary studies that fulfilled the methodological criteria for inclusion.[1] However studies on this topic might exists which are not randomised controlled trials, quasi-experimental studies, controlled clinical trials, controlled before and after studies, and interrupted time series which was the inclusion criteria of this review.[1] Studies similar to one conducted in South Africa by Mash and colleagues,[18] that demonstrate that organisational culture change initiatives can be successfully implemented in poorly resourced environments are likely to have been excluded. There is a lack of other forms of reviews, such as scoping reviews that summarise the evidence on organisational-level implementation strategies of culture change, and little is known about what they might comprise.[19] There is therefore a need for a scoping review that can draw from the limited experience of how to support organisational culture change towards wider performance gains that might be missed by traditional systematic reviews. The purpose of this review was therefore to identify and describe key attributes of organisational culture change initiatives implemented in healthcare organisations, and was guided by the following question:

- What are key attributes of organisational culture change initiatives that have been implemented in health service organisation in both LMICs and HICs?
- Health service organisations refers organisations whose main purpose is to provide health care services to the population such as hospitals, clinics, mental health institutions and other such organizations.

Methods

Scoping studies are commonly defined as a mapping process, where a range of evidence is summarised for the purpose of conveying the breadth and depth of a field. Scoping studies can

also be used for determining the value of conducting a full systematic review and summarising and disseminating research findings.[20, 21] Unlike in systematic reviews, the quality of reviewed studies is not typically assessed.[20, 21] The purpose of this review was to examine the extent, range and nature of research activity in organisational culture change interventions in health service organisation and to identify gaps in the existing literature.

This scoping review was done following the methodological framework developed by Arksey and O'Malley[21] which was further clarified and enhanced by Levac and colleagues.[20]

The methodology involves the following six stages:

1. Identifying the research question

2. Identifying relevant studies

3. Study selection

4. Charting the data which is a 'narrative review' or 'descriptive analytical' technique that is utilized to extract the data from each study.[21]

5. Collating, summarising and reporting the results

6. Consultation with identified stakeholders

The last stage of consultation although rich and provides for a more comprehensive picture is said to be optional and in this review it was omitted due to resource and time constraints. [21]

Identifying the research question

As outlined in the introduction.

Identifying relevant studies

The following databases were searched: Web of Science, PubMed, Scopus and Africa Wide Information. The review considered all published literature between 2006 and 2016. The search terms in table 1 below were used.

Table 1.

1. Health organizational culture / organizational culture
2. Health organisational culture/or organisational culture
3. Health organizational climate / organizational climate
4. 1 and change
5. 2 and change
6. 1 and transformation
7. 2 and transformation
8. 4 and innovation
9. 5 and innovation
10. 4 and intervention
11. 5 and intervention
12. 4 and strategy
13. 5 and strategy

The initial search yielded a large number of studies, to expedite the identification process, only those references that referred explicitly to "organisational culture/climate" in the title or the abstract were included leaving 122 article. A title and abstract review of the 122 articles searching for only those articles that referred to organisational culture/climate change left 86 articles. A final review searching for organisational culture/climate change interventions resulted in 21 articles which were fully reviewed and only 7 of the studies fulfilled the inclusion criteria.

Inclusion criteria

Studies were included if they were empirical studies on an intervention that had organisational culture change as one of its main objectives. The studies had to be conducted in a health service organisation. Only studies published in English were considered.

Exclusion criteria

Title and abstract scanning of search results in each database facilitated the exclusion of articles relating to:

1. Clinical practice changes, such as change in surgical procedures and prescribing practices.
2. Broader organisational change initiatives that focused on other changes without any specific elements of organisational culture change.
3. Studies which focused on safety culture, which is a specific body of literature focusing on elements of culture that determine the commitment, style and proficiency of managing a safe organization.[16]

Charting the Data

Table 1. provides an overview of the 7 articles selected for inclusion in the scoping review. For each study, details of the organisational culture initiative and period of intervention were extracted including an indication of the type of health service organisation and the geographic location in which it was situated. The reason why the culture change initiatives was implemented was also extracted. Lastly change in organisational culture and how it was measured was extracted.

Author, year and country	**Description of the study and culture change initiative**
(Jain et al. 2006) (USA)[22]	This study was a preliminary before and after hypothesis generating study. The culture change intervention was part of a quality initiative to reduce nosocomial infections, mortality and cost in an ICU department of a hospital located in Northern Mississippi, USA. The implementation was done through a collaboration of the hospital management and a membership network composed of over 200 organizations and individuals working collectively to improve health care under the expertise and guidance of the Institute of Healthcare Improvement (IHI) called IMPACT. The culture change component focused on building a culture of team-work in which every member of the multidisciplinary team was empowered to contribute and was listened to regardless of their position in the team. Culture change was not measured but teamwork was reported to have been

	improved. Nosocomial infection rates were measured before and after the study and were found to have decreased after the intervention. The intervention was over a period of 2 years.
(Kinjerski and Skrypnek 2008) (Canada)[23]	This study was quasi experimental before and after study, evaluating the impact of a programme which included culture change as part of the programme, in a long-term care centre in a western Canadian city. Long-term care is a bundle of services aimed at meeting a person's health or personal care needs during a short or long period when they can no longer perform everyday activities on their own. The intervention was over a three-month period and was made up of a 1-day workshop called, "Cultivating Spirit at Work in Long-Term Care," accompanied by eight weekly 1-hour booster sessions. The initiative was implemented with the goal of increasing employee spirit at work, job satisfaction, organizational commitment, employee wellness, and to decrease high staff turnover and absenteeism. The concept of Spirit at work is centred around employees feeling that they are engaged in meaningful work that contributes to something larger than themselves. Culture was measured at base-line and at the end of the intervention and there was a positive change measured.
(Kusy and Holloway 2014)(USA)[24]	This study was a single case study in the United States of America (USA) in which a "real time" five phase model for culture change based on the researcher's own and others research was implemented. It was conducted in a community health centre where doctors' disrespectful behaviour towards each other and other staff had disrupted the continuity of care within their

	team. Real time culture change refers to the fact that: "the assessments and interventions are integrated into one seamless process with providers and leaders participating simultaneously in the creation of a culture change process and plan."[24(p 295)] Culture change was measured through qualitative methods and a patient satisfaction survey was used as an indirect measure of the impact and indication of culture change. The intervention with the consultant present was over a period of 9 months and there was a follow-up at 12 months.
(Lukas et al. 2007)(USA)[25]	This study was a comparative case study of 12 health care systems that mainly consisted of a central hospital and satellite primary health care sites that referred to the central hospital. The study emanated from a national evaluation of the Pursuing Perfection (P2) Program, a major initiative of the Robert Wood Johnson Foundation (RWJF) created in 2001 in response to the Quality Chasm, in the USA. P2 health care organizations sought to achieve dramatic improvements in patient outcomes by pursuing perfection in all major care processes, with technical assistance from the Institute for Healthcare Improvement (IHI), the national program office for P2. Organisational transformation, a large part of which involved culture change, was part of the initiative. The study was conducted 4 years into the implementation of the initiative. Culture change was measured qualitatively and was based on the reflections of the participants interviewed. Most of the systems reported a significant positive culture change and a few reported small changes. A conceptual framework for analysing transformational programmes was developed as part of the study.

(Miller 2015) (UK)[26]	This paper reports on a single case study in the United Kingdom (UK), with the purpose of exploring an initiative to change organizational culture in a low-secure unit by using the introduction of a self-advocacy group. Low secure units are defined as: "units that deliver intensive, comprehensive, multidisciplinary treatment and care by qualified staff for patients who demonstrate disturbed behaviour in the context of a serious mental disorder and who require the provision of security."[27(p286)] The self-advocacy group was a group of patients being cared for at the centre who represented fellow patients. An independent evaluation was carried out by means of a theory-based methodology using various qualitative methods such as observations, interviews and focus groups. Culture change was measured qualitatively through interviews with patients, staff and management. Patients and management reported a positive change and the staff reported no change. The period of intervention was not clear.
(Mash et al. 2016) (South Africa)[18]	This was a participatory action research (PAR) where the organisational leadership was engaged with action and reflection over a period of 18 months in a 24hrs community health care facility in Cape Town, South Africa. Development of transformational leadership was the main intervention aimed at changing organisational culture and this included 6 months of coaching of three key leaders in the organisation. A cultural values assessment (CVA) survey was used to measure organisational culture change at baseline and at 18 months. A positive change in the culture was reported.
(Young et al. 2015) (Australia)[28]	This was a participatory action research over a period where organisational development was used with the aim of changing organisational culture in a rural hospital in Australia. The study was over three years and the researchers were active

	participants engaged in facilitating the process of change. The project aimed to develop an organisational change approach that focused on the people management practices, processes, including systems, policies, behaviours and attitudes, to improve and create an effective and innovative organisational culture. The organisational developmental approach promotes involving employees in change and decision making processes, and aims to align individual desire for growth with organisational goals. Culture change was measured qualitatively through interviews with staff and management. Management reported a positive culture change, and some of the staff reported no change in culture, and some reported a negative change in the culture.

Discussion: Collating, summarising and reporting the results

The studies were analysed and common themes relating to the key common features of the change initiatives were drawn. The common features identified were those elements which were reported to have contributed positively or negatively to the success of the interventions in changing organisational culture. The following four main elements were identified, and each study was reviewed on each one of them:

1. The reason the culture change interventions were implemented
2. The driver of the culture change intervention
3. Why and how the organisational culture change was measured
4. The role of sub-cultural boundaries

The reporting of the results and discussion below discusses all the above elements in the order they appear but it starts with a descriptive summary of the study features and concludes with implications of results on future research, policy and practice.

General overview of the results

The search resulted in only a few studies, the 7 studies describe in table 1. This supports the findings of a systematic review conducted in 2011, that concluded that there was a significant lack of studies on organisational culture change interventions.[1] The review sought to answer a similar question with an inclusion criteria that excluded qualitative studies and only found two studies.[1] 6 out of the 7 studies included in this review are qualitative in nature and would have been excluded if a similar approach to Parmelli[29] was followed. From the seven studies

reviewed only one was from a LMIC, South Africa, and the rest were from high income countries, 1 from Australia, 1 from Canada, 1 from the UK and 3 from the USA. The period of intervention ranged from three months to 4 years, with only two of the interventions implemented for over a period of 2 years. All the intervention were different and targeted different concepts of culture, but teamwork and leadership were the common elements in all of them.

What were the reasons the culture change interventions were implemented?

Health system in developed countries particularly in the USA and the UK have highlighted the need for organisational culture change after high profile reports such as the Francis inquiry in the UK and Crossing the Quality Chasm report in USA documented gross medical errors.[7, 11] Similarly, the evidence from the studies reviewed confirm that a crisis is usually a precursor to the implementation of organisational culture change initiatives rather than a spontaneous desire to improve the quality of patient care. The reasons for implementation ranged amongst others from high levels of ICU infections,[22] a culture of disrespect,[24] gross miss-management of patients[28] and low staff morale.[23] In the USA study by Kusy and Holloway,[24] the researchers reported that the organisation management was pushed to implement an intervention after the executive director overheard a patient in a shop speaking about a culture of disrespect they had experienced at their clinic and that they would not use that clinic again.[24] Only in the case study of an initiative to change culture in a low-secure service from the UK, the call for a culture change initiative was a pro-active move from management to prevent a negative organisational culture from developing even though there was no organisational crises.[26] In two of the studies, the crisis situation attracted scrutiny from the national[28] and regional[25] health departments, who then called for some form of action to improve the performance of the poorly performing health organisations.[25, 28] However senior management of organisations without

any external push also initiate culture change activities.[18, 26] There was no evidence that demonstrated patients or front-line workers having called for the implementation of such initiatives.

Who drove the culture change interventions?

There was evidence of the following five main groups that were involved as drivers of the interventions: external facilitators; organisational leaders; organisational champions; front-line workers; and patients.

Organisational Leaders as drivers of change

The role of organisational leaders was identified in most of the studies as a critical element of the culture change initiatives. In some instances, only senior management was involved,[22, 28] and in others[18, 24, 25] all levels of leadership from top to front-line management were involved. A common feature of the cultural change interventions which were reported to be successful was the organisational leaders such as a facility manager, seeing the need for and then implementing an intervention without any prompting from the regional or national health government.[18, 24, 25] However even when the culture change initiative was implemented in a top-down approach from the government, if the organisational leaders had a strong impetus to change the intervention was reported to be successful.[25] Success was mentioned to be a change from a previous undesirable culture to a new desired organisational culture in the studies, but was however only objectively measured in the South African PAR study[18] and the Canadian quasi experimental study[23] in which a pre and post intervention culture assessment was performed to measure the change in culture. In Mash and colleagues,[18] leadership development was the main element of the change initiative, participants in this study reported that engagement of three key leaders and the broader leadership, including change in leadership

style were the key factors that contributed to successful cultural transformation in that particular health care facility.[18]

In contrast, the researchers in the Australian study found that lack of action from the senior managers can dampen the enthusiasm of the middle managers in moving forward with a change programme.[28] Young and colleagues[28] reported that failing to engage with staff and middle management early in the intervention limited the culture change to just top management.[28] Engagement of the middle management teams provided important linkages with other managers which helped to resolve barriers and facilitated cultural change throughout the organization in the USA study by Lukas and colleagues.[25] In comparing the instances where broader staff engagement was reported,[18, 24, 25] to those where it was not,[28] it seems that the success of strategies focused on developing leadership as a vehicle for culture change lies in ensuring leaders are not engaged in isolation but that other staff and middle management are involved in changing the leadership style.

The findings of these studies supports Schein's[9] assertion that leadership determines the culture of an organisation.[9] All of Schein's[9] three main arguments around the relationship between culture and leadership: firstly that leaders are the main architects of organisational cultures; secondly that once an organisational culture is established it determines how the leader leads and lastly that it is the responsibility of leaders to speed up change in elements of organisational culture that become dysfunctional, were evident in all the studies reviewed.

External facilitators as drivers of change

The employment of external facilitators was evident in 6 of the 7 studies and in three of these studies researchers as part of participatory action research facilitated the process.[18, 28] The researchers in Young and colleagues[28] were highly reflective and explained in detail their involvement in the culture change process.[28] In Mash[18], it was difficult to decipher the role that

the researchers played in implementing the change programme. In Young and colleagues[28] the participants did not take ownership of the programme and did not want the responsibility of implementation, in contrast in Mash and colleagues[18] the participants took ownership of the process.[18, 28] The main difference between these organisations was that the motivation to change came from the organisation itself in Mash and colleagues[18] and in Young and colleagues[28] it was imposed externally.[18, 28] In other instances, it was reported that refresher lectures or presentation from the external consultants were needed to keep momentum going most probably because they offered a culture change programme that was specific to and developed by their consultancies.[23-25] The goal of all the external facilitators was to eventually leave each organisation to take ownership of the process, but only one of the studies[25] reported on what happened after the external facilitation ended.

Front-line workers as drivers of change

The concept of front-line worker involvement and ownership was listed as an important element to sustain the change after intervention in all the studies. In most of the studies the change programme had already been pre-conceived by management or the implementing team of external consultant without the involvement of front-line workers in developing the intervention. In Kusy and Holloway,[24] as part of the intervention, health services were shut down for some hours during which all the staff members came together, were all engaged by change consultants, and as an organisation came up with their own strategies of how to and what to change about their organisational culture.[24] This was the only study where front-line workers were part of developing the change strategy. The Kusy and Holloway[24] approach is in line with Zimmerman and colleagues'[30] approach, who in a theoretical piece on front-line ownership argue that, buy-in and ownership are opposite concepts.[24,30] They define ownership as a process involving those doing the work developing the ideas, making the decisions,

designing and acting on the plans, and buy-in as a process involving agreeing to follow practices that have been externally imposed.[30]

In view of Zimmerman's argument, the other four studies[18, 22, 23, 25] that engaged front-line worker's latter on in the implementation could be said to have sought front-line buy-in and not ownership. In the other two studies, the idea of involving front-line workers was strongly opposed by senior management.[26, 28] Some managers felt they would no longer have control in how staff would respond if the staff had been given an opportunity to express their feelings.[28] In both studies[26, 28] front-line workers felt side-lined by management and felt that the interventions were further worsening a culture of oppression where they are not heard and they had a negative attitude towards the intervention.[26, 28] In the study where there was wide-spread ownership of the organisational culture change initiative ,the patients were reported to notice the changes, as proven by the positive patient satisfaction survey results the organisation in Kusy and Holloway[24] had, after 12 months of implementing the culture change programme.[24]

Patients as drivers of change

There was only one study that involved the patients in the change of organisational culture, where a self-advocacy group made up of a group of mental health patients was used as the driver of culture change in a low-secure mental institution.[26] However, this group was largely linked to the senior management of the organization and the group seems to have been used as a quality of service assessment mechanism, for senior management to assess if patients were being treated well rather than an organisational culture change initiative. Interestingly front-line workers were completely excluded throughout the whole process of the initiative and their responses in the interviews were that the initiative had brought no change to the organisation.[26] Even though it seems that there could be a role for patients in changing the organisational culture of the institutions that serve them, Greig,[10] in a commentary on the study by Miller[26]

suggests that, there is a need to conduct further research in exploring the role of the patients as agents of culture change in health care organisations, and perhaps how they can best partner with front-line workers in this, as front-line workers were not involved in the study by Miller and colleagues.[10]

Champions as drivers of change

Even though most of the studies did not refer to the group driving the implementation of the culture change initiatives as champions, there was an identifiable group in each study that championed the implementation process. Furthermore, lacking in most of these groups was the representativeness of the wider workforce. In most instances these groups were mainly made up of top and middle management.[18, 22, 28] However some also included front-line workers as members of the guiding coalitions.[18, 31] Edwards and colleagues[32] in an opinion piece about how the UK NHS can change organisational culture proposed that the phenomenon of diffusion of innovation, which was first described by Rogers and further developed in the health care industry by Greenhalgh and colleagues[33] is an important process to adopt in spreading organisational culture change initiatives across health systems, health organisations and across individuals that make up the healthcare sector workforce.[32-34] They further elaborate that if one identifies a group of organisational champions representative of the wider workforce, who reflect the cultural model that needs to be promoted, who have the capacity to lead through collaboration and who can engage with change, there is a great likelihood that the culture change message will diffuse.[32] Kusy and Holloway,[24] however, backed by the successful results of their intervention argue that the reason why most other culture change interventions hardly have a lasting impact beyond the intervention is because they do not engage enough critical mass of multi-levels and multi-disciplines of staff early on.[24] Thus, rather than a group of

selected champions, Kusy and Holloway[24] found that training all the staff members where possible to champion the intervention at an individual level had greater impact.[24]

The role of organisational culture tools in organisational culture change initiatives. Why and how was organisational culture change measured?

In a literature review by Jung and colleagues[35], three distinct reasons for using a tool to explore organisational culture are described as either, formative, summative or diagnostic. A summative exploration is mainly used for the understanding of organisational culture from a general perspective. In contrast diagnostic and formative explorations are used by those interested in managing and developing organizational culture. Diagnostic exploration involves the identification of strength and weaknesses of the existing organisational culture. Similarly, formative explorations offer feedback on the cultural elements of performance and change to inform organisational development and learning.[35]

The study by Mash and colleagues[18] demonstrates well how organisational culture tools can be used for both diagnostic and formative exploration, as they used the results of a validated tool called the Barret's culture assessment, to inform and drive change in the health facility where the study was conducted.[18] The assessment showed an improvement in the culture after the intervention, the only shortfall was that there was no measure of organisational performance to see if this change in culture resulted in any improvement in the quality of patient care.[18] In Kinjerski and Skrypnek[23] organisational culture was also measured before and after the intervention, and showed an improvement in culture in the intervention group when compared to the comparison group.[23] In the studies where no specific tools, but in-depth interviews were used, it was still possible for the researchers to report on observed culture changes as the participants could reflect on their experiences before and after the intervention. However, the

change reported was more generalised and not specific to a particular value such as accountability and respect that could easily be identified where specific tools were used. This shows that there might be value in doing cultural assessment before and after any organisational culture change intervention is implemented. Furthermore, the assessment of the organisational culture of a health care organisation is said to be a useful tool for predicting potential obstacles prior to implementing a change process.[36]

Two important questions to consider before doing a cultural assessment are: what is the purpose of the assessment? and what will be done with the information resulting from the assessment? Considering these questions is helpful as it helps to avoid inappropriate use of cultural assessments, which can then be disadvantageous to an organisation.[35, 37] In the case of Mash and colleagues[18] the cultural assessment was a starting point to solve problems, but in the same study, they reported that the assessment was used in six other health facilities in which there was no follow-up plan to respond to the results. In these kind of circumstances, cultural assessments can also be a way to create problems[38] and it is important that when a diagnostic assessment is done, there should be a follow-up plan to ensure that organisations are not just given negative results without any support provided for them to remedy the negative aspects of their organisational culture.

What role do sub-cultural boundaries play in the implementation of organisational change interventions?

Change that threatens traditional intra-organisational professional boundaries is likely to be resisted by employees.[28] In organisation where the planning and implementation of the initiatives involved different cadre of staff, organisational boundaries were bridged in the process.[18, 25, 31] An element of attempting to bring different professional groups together was a common feature in the culture change interventions implemented. Where there was successful

integration it resulted in a positive change in the culture, particularly around team-work and communication.[24, 25, 39] Participants reported that without collaboration it was difficult to ensure that any change that was initiated was sustained even in other initiatives, with challenges such as difficulties in getting commitment of resources or co-operation from the different departments that were essential to bringing about change.[25]

The differences in sub-organisational cultures were also reflected in the different groups assessment of the impact of the culture change intervention. In some of the studies there were great disparities in how the leadership and the rest of the organisation viewed the success of organisational change intervention. Staff members in these studies reported that there was no change it the culture, whereas management reported that they felt the interventions were very successful.[26, 28]

Conclusion

The evidence on effective strategies to implement organisational culture change in the health care sector is scattered and very scarce, particularly from low-middle income countries. Many questions such as what kind of interventions work and where they can work remain unanswered. The little evidence emerging from the South African Study, in Cape Town shows that it is possible to successfully implement a culture change intervention in LMICs.[18] However, lacking from all the evidence reviewed is what happens when the facilitators assisting with, and/or implementing the culture change initiatives leave? None of the studies reported on the sustainability of the changes at least 6 months post the implementation and there is no evidence from all the studies on the impact of the culture change initiatives on patient outcomes. Such evidence is needed to motivate for the scale up of some of these interventions that showed improvements in the organisational culture.

The way in which intra-organisational boundaries were addressed determined the spread of the interventions. This highlights the contested nature of organisational culture within an organisation and suggest that those planning to implement culture change initiatives need to understand and address the inter-play between the different sub-cultures in an organisation.

External consultant played a pivotal role in the implementation of the initiatives and the findings from this review might suggest that change consultants are also needed in the sustaining of culture change initiatives. Therefore, if the initiatives are to be sustained in the long-term, health ministries that wish to implement culture change initiatives could benefit from developing and hiring change management specialists to save the cost of external consultants.

An important element for researchers involved in PAR to consider before implementing culture change interventions that was evident in the studies is whether the motivation to change comes from within the concerned organisation. This would aid them in developing strategic approaches to the resistant organisations.

Considering the paucity of organisational culture change intervention studies outside of safety culture, perhaps a review comparing the findings of the different culture change initiatives is needed to find out whether they are any significant differences.

The interventions reviewed were all complex in nature and most had multiple elements not specific to culture which makes it difficult to decide which elements contributed to the success. Further studies are needed to substantiate this evidently important topic of organisational culture change in health system reforms.

Table 3. Studies excluded

Author/year	Country	Why excluded	Study type
1. (Brazil et al. 2010)[40]	Canada	Relationship of organizational culture to provider job satisfaction was investigated not an intervention to change culture. [40]	Cross-sectional Survey
2. (Carlström and Ekman 2012)[41]	Sweden	A connection between organisational cultures and the employee's resistance to change was investigated not a culture change intervention. [41]	Cross-sectional survey
3. (Carlstrom and Olsson 2014)[36]	Sweden	Different subcultures and the employees' preparedness for change was explored and a culture change intervention was not implemented yet. [36]	Cross-sectional Survey
4. (Greig 2015)[10]	USA	Commentary on a culture change intervention.[10]	Commentary
5. (Hamilton et al. 2008)[42]	USA	The authors proposed a model for accomplishing joint optimization of culture change and evidence-based facility design. [42]	Theoretical framework
6. (Hendy and Barlow 2012)[43]	UK	More about the role of champions in implementing a new intervention not a culture change intervention. [43]	Ethnographic study

7. (Jung et al. 2009) [35]	UK	This article documents the findings of a literature review of existing qualitative and quantitative instruments for the exploration of organizational culture. [35]	literature review
8. (Edwards et al. 2014)[32]	UK	Opinion piece addressing the complexity of culture change within the NHS.[32]	Opinion Piece
(B. J. Mash et al. 2008)[39]	South Africa	This paper is based on experience of both unsuccessful and successful attempts to introduce practice teams and reports on their learning regarding structural organisational change and culture not the focus. [39]	Participatory action research
9. (Parmelli et al. 2011)[1]	USA	The objective of this review was to determine the effectiveness of strategies to change organisational culture to improve healthcare performance. It was used to search for more studies. [1]	Systematic literature review
10. (Scott et al. 2003b)[7]	UK	A review of some of the key debates relating to the nature of organizational culture and culture change in health care organizations and systems. [7]	Literature review
11. (Smits et al. 2016)[44]	USA	This paper explored the leadership role of the physician in transforming the present culture of healthcare to restore,	literature review

		refine and preserve its traditional care components.[44]	
12. (Zastocki 2015)[45]	Canada	Opinion piece	opinion piece
13. (Zimmerman et al. 2013)[30]	Canada	Theoretical piece	Essay

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PART C: JOURNAL ARTICLE MANUSCRIPT
Exploring the introduction of a complex intervention in primary health care facilities in the Western Cape: A single site exploratory case study of the C^2AIR^2 club challenge

Abstract

Policy points

- Contextual issues particularly those related to resources play an important role in determining the spread of a complex organisational culture intervention within a healthcare organisation and must be well assessed by implementers.
- Involvement of not only top leadership but of all other multi-levels and multi-disciplines in a health care organisation facilitates the spread of an organisational culture change intervention.
- Sufficiently trained champions can successfully spread an organisational change intervention without onsite external change consultants' facilitation in resource limited settings.
- Caution should be taken not to evaluate organisational culture change interventions too early.

Context: The Western Cape Province's Department of Health, South Africa, implemented a complex intervention aimed at changing organisational culture across health facilities in the province called the C^2AIR^2 club challenge, in phases starting from August 2013 and was still ongoing in 2016 at the time of the research. A group of front-line staff from each participating health facility called C^2AIR^2 club champions were capacitated to implement the intervention in their respective facilities. This study aimed to explored the process of introduction, diffusion, adoption and implementation of the C^2AIR^2 club challenge in one of the primary health facilities where the challenge was implemented, using a diffusion of innovation lens.

Methods: We examined the process of implementing the C^2AIR^2 club and the contextual and other factors that constrained and enabled this process. Working in one primary health care facility selected as a representative case, we explored the experiences of the champions and other staff members of the C^2AIR^2 club. Our methods included 21 in-depth interviews, informal conversations, document review, and non-participant observation.

Results: Innovation-fit, leadership, champions, adopters' characteristics, and contextual issues were the main factors that influenced the spread of the C2AIR2 club. Contextual issues particularly those related to resource constraints played a central role in determining the successful spread of the complex organisational culture change intervention. Sufficiently trained champions could successfully spread the intervention without onsite external change consultants' facilitation, however this took time and caution should be taken not to evaluate implementation success too early. Involvement of not only top leadership but of all other multi-levels and multi-disciplines facilitated the spread of the intervention.

Conclusions: When introducing an innovation like the C^2AIR^2 club challenge the impact of which is not immediate neither tangible, in an organisation where there are tangible problems such as lack of working space, staff shortages and shortages in working equipment, it is important that efforts are made to address these immediate challenges and where they cannot be addressed that this is openly acknowledged by the implementers and management. If this is not considered, organisational members are likely to acknowledge the innovation as a good initiative but one that they would not actively rally around as it does not speak to their problems.

Key words: Organisational culture change intervention, complex intervention/innovation, diffusion, spread, organisational champions, LMICs

Introduction

In current international health system debates, there is increased recognition that the 'software' of health systems has a vital influence over their performance,[1-3] but there are still few studies that have explicitly examined key dimensions of this 'software' or their influence.[4, 5] A key dimension of this 'software' is organisational culture (OC), commonly defined as 'the way we do things around here'[6] or by some, 'the way we think we do things around here'.[7] Formally, Schein[6] defines the culture of a group as "a pattern of shared basic assumptions, learned by a group as it solved its problems of external adaptation and internal integration, which has worked well enough to be considered valid and therefore to be taught to new members as the correct way to perceive, think, and feel in relation to those problems."[6(p18)]

Experience in high income countries (HIC) has highlighted the need for OC change within health systems as a critical strategy for improving quality of care - after high profile investigations into gross medical errors, such as the Francis inquiry in the UK and Crossing the Quality Chasm report in the USA.[8, 9] However most of the studies responding to this call have focused specifically on safety culture and not on the broader OC. As such, OC change and interventions to change organizational culture in the health sector remain understudied.[10] Most HIC studies on OC in health care systems have focused on the relationship between OC and different elements of the health system such as leadership, clinical governance and evidence based practice, rather than on interventions to change culture.[9] These studies merely highlight the potential of OC change interventions to improve a particular element of a health care organisation.[8, 11-14] Meanwhile, in LMIC health system literature, although OC is sometimes mentioned as a factor that influences critical components of health system performance, such as health worker motivation, [3, 15, 16] very few studies have focused on how to change OC. Indeed, health reforms in LMICs have mainly addressed hardware issues such as financing, organisational restructuring and introduction of new technologies and drugs, rather than

addressing software issues like organizational culture.[1] Yet there is a little emerging evidence from LMICs that OC change initiatives or interventions that focus on software issues can be successfully implemented in these poorly resourced environments.[4, 17]

This study aimed to contribute to this limited body of literature on organizational culture (OC) and OC change interventions in LMICs, and explored the process of introduction, adoption, implementation and routinization of a complex innovation aimed at changing OC in a health care organization. The study mainly drew from a conceptual model grounded in diffusion of innovation theory developed through a systematic review of empirical literature by Greenhalgh and colleagues[18] and other models of diffusion of innovation by Atun[19, 20] specific to a LMIC setting. Diffusion of innovation was a concept first developed by Rogers[21] and in general considers how innovations work their way through or spread in organisations.[21] The model has been further developed and adapted for the health sector by Greenhalgh and colleagues[18] and Atun[19] amongst others. The body of literature on diffusion of innovations within the health sector is well established, however most of this research has been concentrated in high income countries.[19] It is not well understood how complex innovations can be effectively introduced and diffused in LMICs health systems and this has been identified as a challenge to health systems strengthening interventions.[20, 22] According to Greenhalgh and colleagues,[18] the concept of diffusion can be understood by considering these four aspects: the diffusion; dissemination; implementation and routinisation of an innovation. Where diffusion can be seen as the passive spread of an innovation, dissemination as the planned and direct efforts to influence others to adopt the innovation, implementation as planned and directed efforts to mainstream an innovation in an organisation, and routinisation as the sustainable integration of the innovation in the daily routines of the receiving organisation.[18] In this study, given the duration of the overall process of implementation, we focused mostly on the diffusion, dissemination and implementation components, and only slightly on the

routinization components of the process. The overall process is referred to as the 'spread' of the innovation in this article.

Background to the C²AIR² club challenge

The innovation of interest in this study was the C²AIR² club challenge, a complex intervention aimed at changing OC to support improved quality of care, that was implemented across a range of public health facilities in the Western Cape Province of South Africa. The province has a vision of providing person-centred quality care, as outlined in their latest strategic plan called Health Care 2030.[23] Health Care 2030 calls for a fundamental change in the way things are done in the department pointing to a change in OC.[24] Staff wellbeing and engagement are represented as key aspects to achieving the goal of person-centred quality care throughout the health care 2030 document.[23] In 2013 a survey of the culture in five community health centres in the province was done, the results of which showed that the existing OC was characterized by poor communication, poor service delivery, poor staff engagement and bureaucracy, highlighting the need to shift to an OC characterised by open communication, shared decision-making, accountability, staff recognition, leadership development and professionalism.[24, 25] The survey results were part of the motivation for implementing the C²AIR² club challenge.

The C²AIR² club challenge was aimed at changing OC in the health facilities by reinforcing the values upheld by the Western Cape Department of Health (WCDoH), that is: caring; competence; accountability; integrity; innovation, respect and responsiveness (C²AIR² is the acronym of these values). Ultimately the goal of the C²AIR² club challenge was to stimulate homegrown quality innovations and strengthen management performance in order to create an empowered workforce, able to perform optimally and thus provide high quality care to engaged patients.[23] The initiative was developed and implemented by Ernst and Young (EY), a management consultancy group, working on contract, and with guidance, from the

Department of Health with the goal of handing over the running of the initiative back to the department once well established. EY capacitated a mixture of middle management and front-line workers to be the drivers of the C^2AIR^2 club challenge in their health facilities, who were referred to as champions. The initiative was being implemented in phases, see the implementation time-line in table 3. Phase 1, the pilot phase, ran from August 2013 to March 2015 and phase 2, from May 2015 to May 2016. At the time of this study, the initiative was nearing the end of phase 2 and the study focused on both phases of the implementation. A central element of the C^2AIR^2 club challenge was a league competition and participating facilities were categorised into four leagues according their type. There were four leagues in phase 1 for: community day centres (CDCs), including 12 facilities; community health centres(CHCs), including 9 facilities; metro district hospitals, including 7 hospitals; and rural district hospitals, including 10 rural hospitals. These facilities were selected out of a total number of the 479 facilities in the province, and selected based on their size, diversity and ability to compete. Phase 2 included the initial 38 facilities together with an additional 44 new facilities of mainly the same types as in phase 1, the main difference being the addition of 4 specialist hospitals and the inclusion of a substructure/district level league in which substructures competed against each other on their strength of collaboration with and support of the facilities under their administration. Table 1. shows the 15 different indicators aligned to each value on which the PHC facilities were measured on, where innovation was a bonus indicator. A facility could earn up to 10 points each month for each indicator based on a formula to determine how the points were assigned for each indicator. The points were displayed monthly on a C^2AIR^2 club scoreboard, where each facility could view its performance against other facilities and each month the facility with the highest points received a certificate of recognition. The facility in each league with the highest cumulative score at the end of each

phase then won the award, with prizes also given to the first and second runner-up facilities. (See Annexure 1. for a full breakdown of how each measure was scored.)

Table 1. C^2AIR^2 club measures for CHCs and CDCs (adapted from C^2AIR^2 club score sheet in Annexure 1.)

Value	Competence				Caring			Accountability
Indicator	Effective employee planning (to compile staff-rosters so that staff allocations meet patient numbers)	Patient appointment (managing patient load through booking system)	Patient forecasting	Daily duty roster on display	Morale meetings attendance (encourage managers to engage with employees)	Patient and employee feedback (displaying positive feedback for employees and patients to see, by management)	Golden C^2AIR^2 club recognition rewards (golden slips to encourage managers to recognise employees)	Collaboration between district/sub-structure and facilities with regards to performance
How are points awarded	Submission of duty roster for the following month	Number of appointments made using booking system for the month	Forecast per department submitted for the following month	Having duty roster on display for patients which is updated daily	Percentage of employees who attend morale meetings for the month	Evidence of tools that shows positive feedback was displayed	Number of slips submitted	Number of golden slips submitted to the facilities
Value	Integrity			Innovation	Respect		Responsiveness	
Indicator	Manager requesting constructive feedback from her subordinates	Patient complaints resolved	Promote patient feedback about the facility	Sharing best practices through innovation summits	Cervical smears	Antenatal screening	Unplanned absenteeism	Waiting time approximation
How are points awarded	Number of slips completed per month per 100 employees	Percentage patient complaints resolved	Number of patients who submit complaints or compliment per 100 patients	Winning at the innovation summit	The percentage of women over 30years who received a smear	Percentage of first time antenatal visit before 20 weeks into pregnancy	Number of days of unplanned leave taken per employee	Improvement in waiting times from previous month

Methods

Study design: This was a single exploratory case study.[26, 27] Exploratory case studies are especially useful for studying interventions like the C^2AIR^2 club about which little is understood.[26, 28] The primary research question was: How has the C^2AIR^2 club challenge, a complex OC change intervention aimed at empowering frontline workers, spread in primary health care facilities in the Western Cape Province, which were included in Phase 1 and 2 of the challenge, and what has enabled or constrained this process?

Setting: The case in this study was a Community Health Centre within the Cape Town Metro, which participated in both phases of the challenge. Health service delivery in South Africa is primarily offered to the population through Primary Health Care (PHC) facilities which are usually the entry point for the population into the broader public health system. PHC facilities in the Western Cape are divided into clinics, Community Day Centres (CDCs) and Community Health Centres (CHCs). CHCs are the largest type of PHC facilities, they run for 24 hours and are mostly situated within the business district of the townships they serve. Historically within South African metropolises, CHCs have employed a doctor-led model of care, however they are managed by professional nurses as in many other LMICs. Each CHC manager oversees approximately 200 staff members representing different occupational groups each with its own sub-OC. The occupational groups include the following: the managerial staff; doctors; nurses; pharmacists; allied health professional; administrative staff and general staff members. This facility was one of the 9 competing CHCs and a good performer that received an award in phase 1 but for anonymity its exact performance position will not be mentioned. However, in terms of structure and resources the facility is typical of all other CHCs in the

Metro, the facility was chosen as a representative case of CHCs in the Metro. In addition, it was also selected because the facility manager was willing to allow the research to be undertaken in her facility. Figure 1. indicates the trend of total points the study facility scored each month in phase 1 and 2. Figure 2. and 3. show the break-down of the monthly score, and shows points for each indicator per month in phase 2.

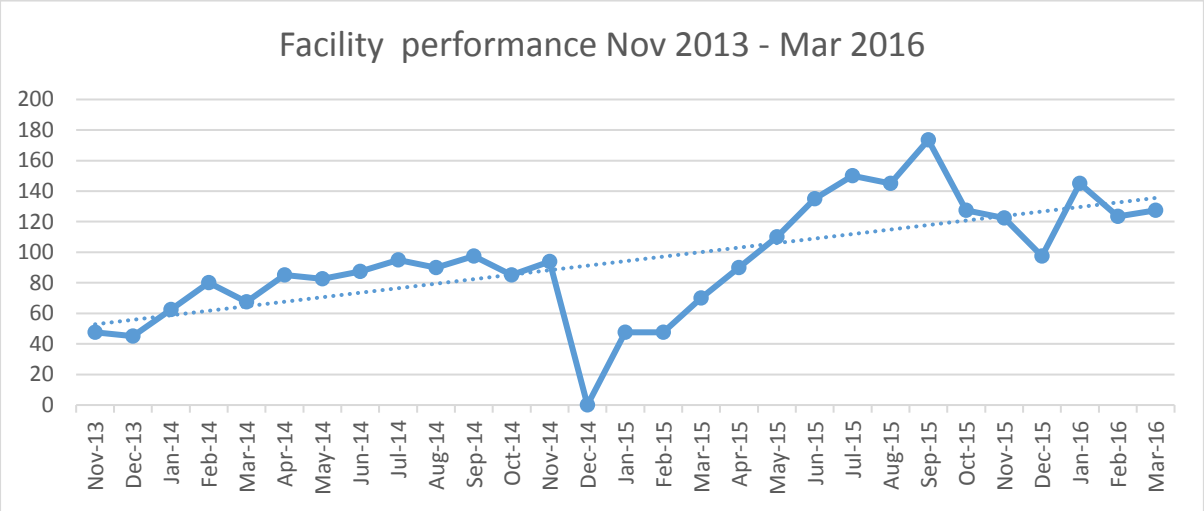

FIGURE 1. TREND OF MONTHLY PERFOMENCE OF STUDY FACILITY

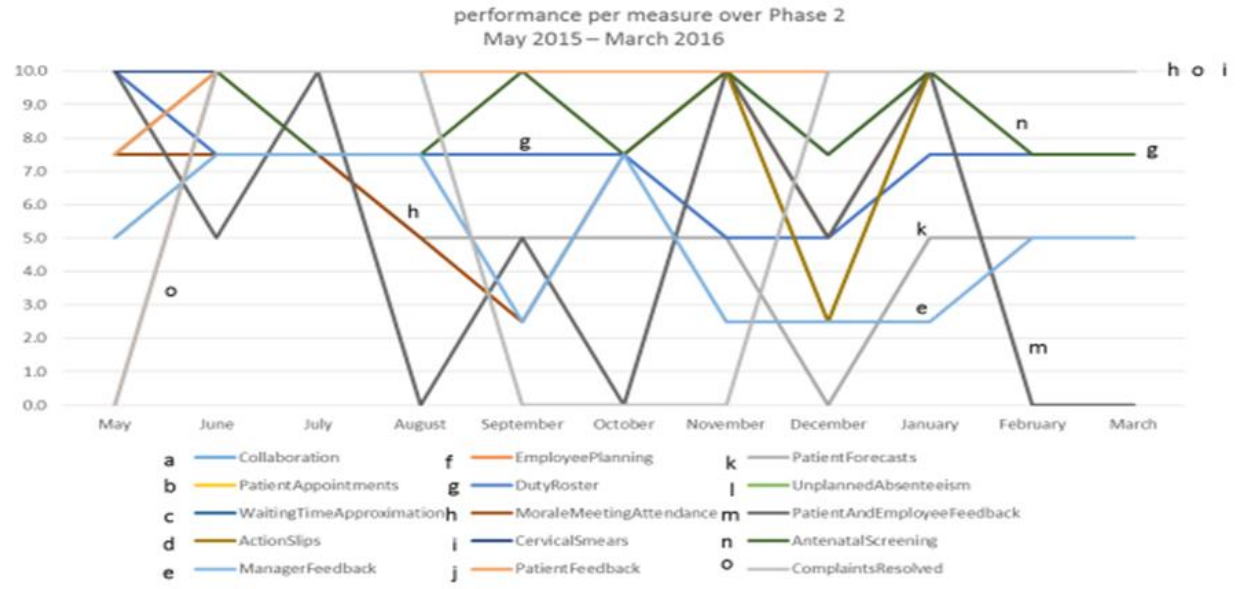

FIGURE 2 GRAPH SHOWING THE TREND OF STUDY FACILITY PERFOMENCE IN PHASE 2 FOR EACH PERFOMENCE MEASURE

Facility data per measure per month Phase 2															
	Collaboration	Employee Planning	Patient Forecasts	Patient Appointments	Duty Roster	Unplanned Absenteeism	Waiting Time Approximation	Morale Meeting Attendance	Patient And Employee Feedback	Action Slips	Cervical Smears	Antenatal screening	Manager Feedback	Patient Feedback	Complaints Resolved
May	10.0	0.0	5.0	10.0	10.0	10.0	10.0	7.5	10.0	10.0	10.0	7.5	5.0	7.5	0.0
Jun	10.0	10.0	7.5	10.0	7.5	10.0	10.0	7.5	5.0	10.0	10.0	10	7.5	10.0	10.0
Jul	10.0	10.0	7.5	10.0	7.5	10.0	10.0	7.5	10.0	10.0	10.0	7.5	7.5	10.0	10.0
Aug	10.0	10.0	5.0	10.0	7.5	10.0	10.0	5.0	0.0	10.0	10.0	7.5	7.5	10.0	10.0
Sep	10.0	10.0	5.0	10.0	7.5	10.0	10.0	2.5	5.0	10.0	10.0	10	2.5	10.0	0.0
Oct	10.0	10.0	5.0	10.0	7.5	10.0	10.0	7.5	0.0	10.0	10.0	7.5	7.5	10.0	0.0
Nov	10.0	10.0	5.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10	2.5	10.0	0.0
Dec	7.5	10.0	0.0	10.0	5.0	10.0	10.0	5.0	5.0	2.5	10.0	7.5	2.5	10.0	10.0
Jan	10.0	10.0	5.0	10.0	7.5	10.0	10.0	10.0	10.0	10.0	10.0	10	2.5	10.0	10.0
Feb	10.0	10.0	5.0	10.0	7.5	10.0	10.0	10.0	0.0	10.0	10.0	7.5	5.0	10.0	10.0
Mar	10.0	10.0	5.0	10.0	7.5	10.0	10.0	10.0	0.0	10.0	10.0	7.5	5.0	10.0	10.0

FIGURE 3 TABLE SHOWING STUDY FACILITY PERFORMANCE SCORES IN PHASE 2 FOR EACH MEASURE

Data collection: During a 4 weeks' intensive period of data collection in the CHC, multiple qualitative methods were used to collect data, including document reviews, informal

conversations, non-participant observation and in-depth interviews. Documents which were reviewed included information brochures, posters and graphs on performance from C^2AIR^2 club score board. Available monthly reports for the facility on the C^2AIR^2 club challenge and the facility performance over the duration of the C^2AIR^2 club were also reviewed. Findings from the document review were used as a common reference point when asking staff about certain aspects of the challenge. The in-depth interview allowed the researcher to explore broadly various factors such as reasons, beliefs and feelings underlying the respondent's answers.[29] In total, 21 in-depth- interviews(see table. 2) were conducted, 8 of which were with C^2AIR^2 club Champions who are referred to as 'champions'. The other 13 interviews were with a range of other non-champion staff who are referred to as 'general staff" who were purposively selected, to represent as many occupational groups as possible, with data saturation reached after interviewing 21 participants. Engagement with different cadres of staff gave a cross-cutting perspective on the experience and data collected from each method was used to inform the other methods during the data collection process.[30] The in-depth interview guide was partly based on the conceptual models of Greenhalgh and colleagues[18] and by Atun[19] by drawing on key headings from the models.[18, 19] The interviews for the champions focused on their role as champions of the initiative, how they were equipped to carry out their role, and the contextual and individual issues that made it easy or difficult for them to spread the C^2AIR^2 club. Whereas the interview for the general staff members focused on how, if at all the initiative was spread to them and their experience of the champions and the C^2AIR^2 club in general.

Since this was an exploratory case study it was important to collect a wide range of data to contribute to answering the study question.[26] Due to time limitations, some staff members were only able to interact with the researcher briefly during their tea breaks, but these informal conversations allowed the researcher access to the diverse range of views of the different cadre of staff and social networks that existed in the facility. Some staff, particularly the cleaners,

felt more comfortable chatting to the researcher in informal conversations as a group rather than in individual in-depth interviews.

Table 2. In-depth interview participants

General staff participants (non-champions)				**Champion participants**			
Gender	**Age group**	**Duration of employment at facility**	**C²AIR² club challenge phase experienced**	**Gender**	**Age group**	**Duration of employment at facility**	**Duration as champion**
M	50-54	1 year 6months	Phase 1 and 2	Female	35-39	10 years	Phase 1 and 2
M	25-29	1 year 4months	Phase 1 and 2	Female	30-34	2 years	Phase 2
F	25-29	2 years 4 months	Phase 1 and 2	Female	35-39	9 years	Phase 1 and 2
F	45-49	6 years	Phase 1 and 2	Female	40-45	9 years	Phase 1 and 2
F	50-54	30 years	Phase 1 and 2	Female	40-45	3 years	Phase 2
F	40-44	11 years	Phase 1 and 2	Female	40-45	7 years	Phase 1 and 2
M	50-54	1 year 2months	Phase 2	Male	55-59	10 years	Phase 1 and 2
F	40-44	8 years	Phase 1 and 2	Female	20-25	3 years	Phase 1 and 2
F	50-54	2years	Phase 1 and 2	**Breakdown according to cadre:** 1 pharmacist; 1 Radiographer 5 Professional nurses; 4 Assistant nurses; 6 Management level staff; 4 Administrative staff/receptionists			
F	35-39	2 years	Phase 1 and 2				
F	40-44	3 years	Phase 1 and 2				
M	50-55	22 years	Phase 1 and 2				
F	50-54	30 years	Phase 1 and 2				

Non-Participant observation conducted included, first, consideration of the overall physical and social environment of the facility as the researcher moved around the different areas in the

facility. The researcher also observed two staff meetings, a management monthly meeting and the departmental daily, morning staff meetings; and spent time in the tea room, and clinic subsections of the facility (such as ARV clinic, pharmacy and reception). Observations were made of how the staff interacted with each other and the champions, and attention was paid to whether the C^2AIR^2 club values were represented in these interactions. The observations were documented as journal notes.

Data analysis: Data analysis started in the field while collecting data and was an iterative process throughout the entire study.[30] All of the interviews were taped and then transcribed and inductive analysis allowed identification of the themes emerging from the interviews and the other data sources. In addition, analysis considered the deductive themes included in the interview guide and drawn from the diffusion of innovations literature, allowing comparison between inductive and deductive themes.[30] A comparison of interviews between men and women, across cadres and between black African and coloured staff was done as these differences emerged during the interviews. Three steps of data triangulation (across individual interviews, and specifically between champions and non-champions, across the different data sources and with relevant theoretical frameworks) sought to improve analytic credibility and produce an analysis of common themes and critical differences.[31] The Greenhalgh and colleagues[18] and Atun[19] models specifically supported consideration of the determinants of the diffusion, dissemination and implementation of the C^2AIR^2 club.[18, 19]

Ethics: Ethics approval was granted by the UCT ethics committee and permission from the Western Cape Department of Health was also granted. Permission to work in the site was granted by the facility manager. To ensure anonymity participants roles and position are not mentioned. Champion participants are referred as C1 to C8 and non-champions participants are referred to as GS1 to GS13 in the quotes. There is no link between the order in table 1 and the

coding of the participants for quotes. Written informed consent was obtained from all the participants of the in-depth interview and verbal permission from participants in the informal conversations. The researcher was formally introduced to most staff members in various departments by the departmental heads.

Findings

The presentation of the finding starts with a time line of C^2AIR^2 club events and a description of key activities that provide a context for understanding the other results. The findings that follow are then reported under six headings, reflecting the study objectives and adapted from a framework for analysing adoption and diffusion of innovations in health systems developed by Atun.[19] The facility manager is identified in the text because s/he was judged to play a key and positive role by all, however s/he is not quoted because it would be a breach of confidentiality/anonymity as the quotes will be easily traceable to her.

Time-line of the C^2AIR^2 club main events

Table 3. The C^2AIR^2 club challenge implementation time line

Aug-2013	Launch of C^2AIR^2 club
Sep-2013	Induction phase 1
Oct & Nov 2013	Champions' induction work-shops phase 1
Feb-2014	Golden C^2AIR^2 club actions finalized phase 1
Mar-2014	Measures work-shop phase 1
Mar-2014	Leadership behaviors chatter phase 1
May-2014	1st Innovation summit phase 1
May-2014	1st Champions' training phase 1
Aug-2014	2nd Innovation summit phase 1
Aug & Sep-2014	2nd Champions' training phase 1
Mar-2015	Phase 2 induction workshop
Mar-2015	Phase 2Technical Advisor workshop
Mar 2015	C^2AIR^2 club award ceremony phase 1
Mar-2015	C^2AIR^2 club award ceremony phase 1
Jul-2015	1st phase 2 innovation summit
Jul-2015	1st phase 2 leadership development

Description of some key C^2AIR^2 club terminology referred to in the findings:

Champions: Champions acted as ambassadors of the initiative and were responsible for the spread of the ideals and values that the initiative was meant to reinforce. The champions were tasked with ensuring that all the supporting data for the indicators in table 1. were collected and reported to the external consultants for scoring. They were also tasked with spearheading various innovations to address challenges in their facilities in collaboration with other staff members that they could showcase at the innovation summit.

Induction work-shops (see time line): Before the C^2AIR^2 club was introduced to the wider staff in the facility in phase 1, the chosen champions and facility managers from all participating facilities attended a two-day induction training conducted by EY. The induction was repeated before the beginning of phase 2. The researcher was given the permission to attend and observe the induction for phase 2. The induction event focused on the background, aims and objectives of the C^2AIR^2 club, the content and technicalities of what the challenge entailed and feedback from facilities on their experience of phase 1.

Innovation summits (see time-line): The innovation summit was a competition within the C^2AIR^2 club which encouraged facilities to come-up with home-grown innovations such as improved patient booking processes, and to embed a culture of innovation in the facilities. All the facilities competing in the C^2AIR^2 club showcased innovations they had developed and implemented in their facilities at the summit. This acted as a platform for sharing ideas and best practices across the different facilities. The facilities voted for the best innovation and a winner was awarded at the event. This facility performed well in these.

Leadership workshops (see time-line): Facilities' management from all participating facilities went through a one-day leadership development workshop focusing on soft skill development such as listening and dealing with difficult clients and employees.

The champions' experience of the C^2AIR^2 club and their role in its spread

The facility manager introduced the C^2AIR^2 club challenge to the staff in November 2013 and initially asked for staff to volunteer themselves to be champions, only one person volunteered and the other seven champions were nominated by their departments. The reluctance to volunteer was because staff had preconceived ideas of how the training would pan out based on their previous experiences of other trainings *"where you just go and listen to a boring talk the whole day."* The only one who volunteered saw this not as an opportunity for learning but for getting much needed respite from the facility: "*I was one of the people who volunteered because I didn't I want to be in the office for 2 days, that's the truth!*" (C1)

Most of the champions found the C^2AIR^2 club induction work-shop to have been eye opening, however some reported that when they came back to the facility they were not quite sure what their mandate was as champions in phase 1. It took time for them to fully grasp how the C^2AIR^2 club challenge functioned and what the expectations were, and this impacted on the effectiveness of their efforts to spread the C^2AIR^2 club message to the rest of the staff. The biggest element they struggled with as a facility in Phase 1 was collecting and reporting evidence for the performance measures displayed in table 1. However, they felt phase 2 induction was a re-enforcement of what they already knew and that they were able to gain much more from the phase 2 induction they had with EY. *"for us at the beginning it was a challenge, we didn't have internet access for when it came to reporting, because we have to report every month. Staff members would not or they would do things and we would not record them, you see, and the* C^2AIR^2 *club is very much evidence based. …When we did the*

introduction to the staff with the little meetings, we didn't know we had to have evidence and quotes and summaries or whatever, so we didn't submit that, but as time went on we became a bit more efficient at providing evidence." (C1)

The relationship between the champions and the EY technical team was also credited as a facilitating factor in improved understanding of the initiative. All the champions mentioned that the relationship was characterised by support and responsiveness. In addition, they reported that they had ample support at facility level from the facility manager which gave credence to their role as champions. During the researchers' interaction with the facility manager, she spoke very passionately about the C^2AIR^2 club and the general impression from the champions was that she was the driving force behind the C^2AIR^2 club implementation in the facility. The following statement by one of the champions, which was echoed by all the champions summarises how the Champions viewed the facility manager's role: *"From the beginning she was on our case 24/7…and she really motivates us as champions overall, like she says {to all the staff}, "everybody's a champion, not just the champions, they are just the drivers but everybody is a champion. Although, you are not doing the C^2AIR^2 club paperwork and things, but you all are champions, you all are valued, you all are responsible, you all are part of this thing that's happening now." I think that made the staff feel more at ease, it came from her on top, that we are the same, that we are all champions." (C2)*

This concept of 'we are all champions', was also seen by the champions as very critical in decentralising ownership of the C^2AIR^2 club challenge to the rest of the staff and it was said to be the slogan through-out phase 2 of the challenge in the facility. *"but if one person makes the C^2AIR^2 club their own, no, it's not goanna work. Really, it's not going to work at all because the C^2AIR^2 club is a family. You treat it the way you treat your family and if you don't do it, it's goanna stumble." (C2)* The facility manager and the champions reflected that they

realised that in phase 1, the challenges they had with staff buy-in were in part related to the fact that the other staff members felt excluded. *"When I started working here, it used to be a "certain group of champions" and the others would feel left out, I mean, I used to be on the floor, I would hear others say that, but since the facility manager said we are all champions, we are all part of it."* (C3)

Most of the champions had vibrant, loud and bubbly personalities and they felt that their personalities helped them in their role as ambassadors of the challenge. In contrast the champions who had quiet personalities mentioned that they found the role of being a champion challenging but had learnt to interact better with other staff as a result of being champions. However, and when comparing one of the quiet champions to the other more extrovert champions the researcher got the sense that she had not embraced the C^2AIR^2 club like the other champions, and it was not clear if this could be attributable to her personality. Surprisingly even though she was not particularly passionate about the C^2AIR^2 club as compared to the others, she had been a champion both in phase 1 and phase 2. Her enthusiasm level was reflected in the way she spoke about the C^2AIR^2 club challenge: "*We don't really speak about it (the C^2AIR^2 club), it's not something that it is part of our day to day conversations, at least not in my conversations, maybe the other people. It's not a big topic. Only when it has to do with collecting of information for the C^2AIR^2 club." (C6)*

Nonetheless, the majority of the champions felt that the way in which the C^2AIR^2 club was designed made it easy for them to embrace the challenge. This was mostly because the values of the C^2AIR^2 club resonated with their own values. *"…when you look at integrity and all those kind of things, the morals and values for me this was just a wow! I was waiting for this for so long, so it just fell into place!" (C4)* The prevailing view about the C^2AIR^2 club amongst the champions was that it was about providing patient centred care and they all

mentioned that they identified with this element well. An eye-opening moment for them was when they realised that the C^2AIR^2 club was not only about the patients but also an instrument for staff empowerment. The competition aspect of the challenge was, however, viewed as both a negative and positive aspect in facilitating the implementation (active and planned efforts to mainstream the C^2AIR^2 club) of the C^2AIR^2 club in the facility. One of the champions was completely opposed to the competition aspect of the C^2AIR^2 club, as she felt every facility was a winner in its own right. The positive aspect was the motivation and recognition that came with being at the top of the league. This was mainly because on some few occasions when the facility had done well in the challenge, sub-district representatives came to the facility to congratulate the staff on their efforts. This they believed made the rest of the staff consider the C^2AIR^2 club as an important initiative as the sub-district representatives came to their facility just for that. However, the champions felt that because the management feedback slips and golden C^2AIR^2 club reward (gold slips) were attached to winning, the way in which some managers pushed for submissions led to staff being resistant to the C^2AIR^2 club challenge. "*So, I think we must just work with the managers, to get them more involved and for them not to demand the filling in of management feedback slips and threatening staff that if they don't fill in the slips they are not going to get a good (performance management and development systems annual reviews) PMDS!" (C5).* Furthermore, the champions felt that any facility that was good at collecting and reporting evidence, regardless of the actual facility's quality of service delivery, could win the competition. They felt that they had not won phase 1 because they were focused more on the actual work of coming up with innovations and spreading the values than on submitting the evidence. Some of the champions mentioned that most of the activities that other facilities presented as innovations were already routine activities in their facility.

Most of the Champions were front-line staff, only 2 were senior level staff. However, it seems the champions overtime as the challenge progressed, had come to be identified as a new layer of accessible informal management by the other staff members.

"What I have experienced from my personal view is we got quite a lot of staff members that started to trust us, to open up to us, share personal views with us, even if they were going through some problems, personal problems they would come and share and ask advice." (C7)

In general, the champions felt personally empowered by the C^2AIR^2 club induction and by their role as Champions, not only in their professional roles, but also in their personal lives. This statement was reflected in all but one of the champions' responses: *"But the* C^2AIR^2 *club really personally and work wise, it changed me a lot… it's really a nice experience and a nice challenge for me to be a champion and I am proud to be a champion." (C5).* Moreover, the C^2AIR^2 club empowered the champions, to break some institutional boundaries. Most of the champions mentioned that they felt that before the C^2AIR^2 club the different department were working in silos and people from different departments never greeted each other, but since the C^2AIR^2 club had been implemented this had changed. Activities like monthly staff spit braais were said to contribute to this, although certain groups like doctors and pharmacist hardly participated.

"I'm a very introverted person, for me it was very difficult just walking into the pharmacy,… But because of the C^2AIR^2 *club, it opened doors for me, just to walk in as a* C^2AIR^2 *club champion,…it also helped, with my feeling of insecurity and this notion that "we are not allowed to get in there" (C4)*

C^2AIR^2 club champions' initiatives to spread the C^2AIR^2 club

Table 4. C^2AIR^2 club innovations implemented by the champions

C^2AIR^2 club innovation/initiative	**Description of innovation**	**Departments involved**
Morning huddles	Management introduced these morning huddles where each department meets every morning for a brief period to plan the day and look at challenges from the previous day. There is also dedicated time for each staff to reflect on their morale for the day.	Most departments
Monday morning prayers	Prayer meeting each Monday morning where the facility manager introduces all the different managers for each department and informs patients of complaints process and all services offered.	All departments
Chronic club	All chronic patients with appointments form part of a chronic Club system, and are seen by a dedicated team of health care workers. Their medications are pre-packed and dispensed at the consultation room, cutting down the time they would have spent waiting at the pharmacy.	General out-patient department(OPD) and pharmacy
C^2AIR^2 club as a standing item in at the Monthly staff meetings	C^2AIR^2 club is a standing item at the monthly general staff and management meetings	All departments
Patient satisfaction slips	Each client is given a slip to comment on the services to encourage feedback.	All departments
Doctors toolbox with lock	Each doctor is given a box with lock containing, ophthalmoscope and otoscope as they usually spent time searching for these during consultations.	General OPD
Morning meeting	C^2AIR^2 club champions has a brief meeting with patients every morning informing them of services and the right ques to join and also informs them of the number of available staff in each department	All departments

Since the C^2AIR^2 club encouraged them to be innovative, the champions came up with various initiatives (see table 4. for examples of some of them) as way of embedding the C^2AIR^2 club in the facility. These initiatives were all homegrown and innovative ways to ensure they scored points on the some of the measures in table 1. Some of these initiatives were quality improvement activities targeted at the departments that they felt were most difficult to penetrate such as pharmacy and reception. The most effective method that they found in getting hard-core resistors to buy-in was to include them as champions and this seems to have worked with one of the resistors:

"The values were there but I thought they were for certain people. I didn't think they also applied to me as well. But when I started (as a champion). I really enjoyed it and I also noticed that it also improved me as well, because, sometimes, while working with patients every day, there are some things that you forget to do, like you forget to smile. But when I became a champion, discussing about these things, it reminded me of those actions. it boosted my spirit as well." (C8)

Phase 2 induction for the facility: In phase 1 of the C^2AIR^2 club, the champions introduced the C^2AIR^2 club to other staff through presentations in small group meetings and handed out pamphlets and put up posters. At the end of phase 1, the champions felt that they needed a more effective way of getting the staff to understand the C^2AIR^2 club, thus in phase 2 the champions decided to launch the C^2AIR^2 club phase 2 as a whole day facility specific induction event outside of the facility. This event was attended by over 80% of the staff. They invited EY and the sub-district representative to the event to present the theory elements of the C^2AIR^2 club. The idea was to mirror the phase 1 and 2 induction training that they as champions got from EY, which they felt helped them to understand and embrace the C^2AIR^2 club challenge. Staff got into different groups and discussed each of the C^2AIR^2 values. From the

champions' point of view this was a key event that put everyone in the facility on-board with the C^2AIR^2 club challenge and brought excitement about the club. However, excitement amongst the general staff quickly frazzled after the event, but it picked up again when the whole facility went on weekend getaway in November 2016 to a spa. The reason given for the dwindling interest was that the underlying values and intended purpose of C^2AIR^2 club were not reinforced with staff by the champions on a continuous basis after the facility induction event.

Spa getaway for all the staff members: The real game changer according to the champions and all other staff members interviewed formally and informally was a weekend getaway for all facility staff to a spa that happened four months prior to the start of the field work in the facility and 28 months after the start of C^2AIR^2 club in the facility. The facility was chosen as a pilot site by the premiers' office for another intervention unrelated to the C^2AIR^2 club. Management used the opportunity to ask the Premier's office to take her staff-out for a weekend away at a spa as an effort to improve staff morale. 90% of the staff attended this event. Different issues and challenges were addressed at this weekend getaway and the staff received coaching on soft skills such as listening and conflict resolution. This was also used as a platform to address challenges and successes around the C^2AIR^2 club challenge. *"we had a weekend getaway to a Spa that included the entire facility, all of us I think it was, I'm not sure it was 240 (staff members) that includes pharmacists, doctors, everybody. But before that weekend outing it was difficult for the others to buy-in to this* C^2AIR^2 *club challenge" (C7)*

General staff experience of the C^2AIR^2 club

In exploring the spread of the C^2AIR^2 club in the facility it was clear that, by the time of data collection for this study, at face value most the staff knew about the C^2AIR^2 club and the purpose for which it was implemented in the facility. But on probing further and deeper, it was apparent

that the awareness about the C^2AIR^2 club challenge did not translate to a meaningful engagement with the C^2AIR^2 values. The champions' experience of the C^2AIR^2 club was vastly different from that of the general staff members but it seemed after the spa getaway the general staff understood the challenge better and embraced it a bit more. There was, nonetheless, agreement in the two groups understanding of the problem which the C^2AIR^2 club was trying to address which they understood to be poor quality of patient care and poor care for them as employees. The biggest problem however that they felt they had, that the C^2AIR^2 club was not addressing was low staff morale.

The general staff seemed to be more conservative than the champions, when it came to estimating the extent to which the C^2AIR^2 club had spread in the facility and the changes in OC that could be attributed to the C^2AIR^2 club. Issues like the unity and the family feel that the champions spoke about, were not reflected in the general staff interviews. The managerial general staff seemed to have a deeper understanding of the C^2AIR^2 club compared to the other staff members, however their view on how well the C^2AIR^2 club had become mainstreamed and routinized in the facility were also conservative when compared to those of the champions. From general staff interviewed formally and informally, the HIV department was least aware and the MOU departments was the most clued up with regards to the C^2AIR^2 club. This might be explained by the fact that the manager of the HIV department was on a prolonged leave during the time that the C^2AIR^2 club was initiated.

Surprisingly, 3 of the 12 general staff members interviewed who all had been working the facility for more than 18 months only realised they knew what the C^2AIR^2 club was after the researcher described the C^2AIR^2 club in detail. Two of these participants had started work in the facility in the middle of C^2AIR^2 club phase 1 and the other one had been working the facility for more than 5 years. These staff members came from departments where there were

either no champions or which the champions had identified as resistant departments. Although many efforts were made by the champions to mainstream the C^2AIR^2 club in the facility, it had not become routinized in the facility to a point where it had become an element that new staff members were told about in their induction when they started work at the facility.

"I haven't got an idea or clue about the C^2AIR^2 club. Is it not maybe to take care of patients? Yes, I think so…And you know, in this facility, I mean there is nobody who can sit with you and explain this, really I was working that side {general OPD} it's forever busy that side, so nobody can sit with you, I was not even orientated in this clinic, to say, this is trauma, this is whatever, as soon as I arrived here, they told me there is your room, there are your patients." (GS1)

However, in general, the other staff members knew about the C^2AIR^2 club and who the champions were. The staff mentioned that the champions with vibrant personalities were most effective at spreading the C^2AIR^2 club, although it was important for the quite personalities to be represented.

"our champions are seen as clarity people. And particularly if you have got problems they address those problems. I think they are also seen as symbolic of something positive about the facility. …you know they don't represent all the negative problematic aspects of a public-sector facility …so the Champions, they represent that kind of maybe morale boosting spirit." GS2

However, this view of champions as 'clarity people' was stronger in some departments compared to others. In some departments like the MOU there was a strong C^2AIR^2 club presence and when the researcher engaged informally with staff in the unit, they all knew about the C^2AIR^2 club and mentioned their C^2AIR^2 club champion as the go to person in their department. In most of the other department the champions were known, but not described as the go to person. Furthermore, the concept that 'we are all champions, appeared to not have been well engrained in the general staff view of the C^2AIR^2 club. Only three of the non-

champions participants felt that they had taken some ownership of the C^2AIR^2 club and one of them was a senior manager. The rest described the C^2AIR^2 club as a project in the facility but not as their project.

In general, across the facility most of the staff members identified the C^2AIR^2 club with the golden tickets, the morning huddles and the champions. These were the elements of the C^2AIR^2 club that had become mainstream and to some extent routinized in the facility however, this varied across the different departments. The doctor's group had not integrated most of these elements in their department. The morning huddles had become routinized in some departments to a point where some even forgot they were a function of the C^2AIR^2 club. "*The facility manager introduced these morning huddles where each department needs to meet every morning, it doesn't have to be long just to plan the day and look at challenges from yesterday, and I think for certain departments that morning hurdles is working wonders." (GS3).* Part of these meetings was dedicated to staff member to share how their morale was, and this gave staff members a sense that they were recognised not just as workers but also as people with feelings. *"it made me feel recognized, when I come here in the morning, to be asked how is my morale before I start working with patients" (GS4).* All the participants who had morning huddles in their departments identified this as the most positive aspect of the C^2AIR^2 club challenge. However, discussing staff morale was also viewed as a point of frustration, especially because of the resource constrains in the facility, where complaints about the physical condition of the facility were heard but in most instances, did not result in any material change. "… *they want quality care, but how can we give that quality care if we don't get help? They ask about my morale every day, every time in the meeting. How do they think my morale is? I am complaining and complaining, I mean we also get sick of complaining…"* (GS4)

In keeping with some of the champions views, most of the general staff members felt that the competition aspect of the challenge had some negative implications and it in fact introduced more bureaucracy into the system.

"Because I mean there's underlying principles which are great and then there is you know feeding this bureaucratic monster, you know bringing your slips and… um… trying to come first and trying to win the money. (GS5)

Issuing of the golden tickets was a well-known aspect of the C^2AIR^2 club, however staff had different views and feelings about the golden tickets. All the female participants felt that getting a golden ticket was a positive thing as it made them feel recognised. Three out of four of the male participants felt that the golden tickets and management feedback slips were very artificial and two mentioned that they found the activity to be juvenile. One of these male participants felt that because the more you submitted the golden tickets the more points you got, many of the things written in the golden slips were untrue. He felt that the golden slips would be valuable if each and every member of staff carried their own golden ticket book and could write and give a slip to a fellow colleague when they saw fit, instead of being driven by meeting certain targets. One of the champions also felt that the giving out of tickets by only managers promoted a culture of favouritism, this view was supported by two of the general staff, one on whom had never received a golden slip and felt side-lined and another one who felt that he was undeservingly always getting a golden ticket.

"We always run last minute just to submit, so that we can win you see, so that we are submitting all the things in time…But I'm telling you if I'm giving a golden slip to someone, mostly that person, mostly say 99% of the people that I give a golden slips don't deserve them…You can take all the pack of slips and I'm telling you that things that are written about other staff members in those slips are untrue."(GS 7)

Contextual issues influencing the spread of the C^2AIR^2 club

Although the champions succeeded in mainstreaming some activities related to the C^2AIR^2 club, such as morale meetings, golden tickets, contextual issues affected the extent to which the C^2AIR^2 club values, such as caring and responsiveness, were actually practiced. The main value that seemed to have become entrenched amongst general staff members was that the C^2AIR^2 club brought an awareness that staff had the "*right to be cared for"*. As discussed below, shortage of staff and resources, poor security in the clinic, racial divisions, and the fact that most of the staff members come from the very same violent community contributed negatively to the spread of the C^2AIR^2 club. The main positive aspect was that this harsh environment forced the champions to be resourceful and to think outside the box.

No specific resources, either financial, time or human resources were allocated specifically for the C^2AIR^2 club. This lack of resources was seen as one of the major stumbling blocks in getting the staff members at large to embrace the C^2AIR^2 club.

"…We implement, we do this we do that, but where is the funding coming from? …we would like to put up nice things but then we don't have the funds for it, so what happens? as champions we will cough money out of our own pockets or we will ask fellow staff to make a contribution so we can do what we want to do, because it cost money." (C7)

However, a positive consequence of the lack of financial resources is that the Champions were forced to be resourceful and some of the most successful initiatives, such as the introduction of the chronic club, did not need extra resources as it involved a more efficient way of providing care to chronic patients. Each consultation became a one-stop shop where the client was consulted and received medication instead of having to go and wait at the pharmacy afterwards. These kinds of initiatives made staff embrace the C^2AIR^2 club. Nonetheless, all the champions found the fact that the C^2AIR^2 club activities were an added responsibility to their

official roles at the facility to be challenging. One of the champions suggested creating a specific post for someone who just deals purely with the C^2AIR^2 club challenge, who can give enough time to ensuring each staff member understood the C^2AIR^2 club values in detail and collects the relevant data and reports on it.

"…sometimes you don't always have the time, you know you've got your own work load now you have to collect this data and there are deadlines with your work and there are deadlines with the C^2AIR^2 club and sometimes some champions become despondent." C6

Furthermore, all the general staff participants felt that the C^2AIR^2 club values resonated with their own values. However, in contrast to the champions, the non-champion members felt it was difficult to live out those values. The C^2AIR^2 club values were acknowledged as the ideal, and participants all agreed that it was important for them to be reminded of the values but that in practice they remained abstract. The values for some were viewed as an unattainable goal because the work environment made it difficult to live out the values:

"integrity, accountability. All the values that are being raised, but when you come back here and see the stress level that we are in, I think all those values they get out of the window. What's the point, those are the things you know you have to do as physician, or as a nurse but if you are in an environment where the system that is created is not conducive… It's quite difficult, the fact that I need to be caring and responsive and all the stuff. I see a patient and I care about the patient and I need to show that I want to do the best for the patient and at the same time the number of patients that we see in a short space of time, I can't do all those things... You just can't live all those values. You are stressed out, you have to see flippin 45 patients in one day." (GS8)

In addition to this, the environment was said to be insecure.

"the atmosphere is not good, it's not safe…one of the staff members was assaulted here and then he got killed here and then what did they do? they didn't close the facility, they continued and it's like our safety is not important, the facility is more important than the safety of the staff." (GS8)

An important thing to note is that most of the staff members are also part of the community in which the facility is located. Therefore, they experience the violence that some of the other staff members who do not live in the area are so fearful of. These staff members come to work from a stressful environment and their work environment does not provide any respite from their home stresses. Conceivably, some did not have the energy for an idealistic initiative like the C^2AIR^2 club, with two of the participants acknowledging that they just came to work to do their work, earn a salary and go home.

One of the key elements of the C^2AIR^2 club was management of staff absenteeism, but staff felt that without a material change in staffing levels this element of the C^2AIR^2 club was redundant (although the facility planned staff leave excellently as seen by their performance on staff planning and absenteeism in figure 2 and 3.) Staffing levels affected the morale of the staff and therefore the practice of the C^2AIR^2 club values.

"Staffing is always going to be a problem because like today we are very short staffed, we have to stand in for each other…we are frustrated because we don't have enough bodies here and then they{management} say there is nothing they can do about it. So, it's a sad thing, staffing is a big problem. People are burnt out, they are drained, they are tired, so obviously, they are going to stay out of work." (GS9)

Previous experiences with other initiatives to bring change in the facility that came and went without any warning, led the general staff to have a wait and see attitude, to prevent themselves investing their energies in something that would soon pass.

"You know sometimes you doubt about things and is almost like you are waiting to hear when it will fall flat. Because of previous experiences when things have been implemented but not maintained and so with this C²AIR² club in the beginning you are, you know shaky, will it really go through and how far will it go?" (GS10)

Underlying staff relationship challenges led certain groups that felt excluded to distance themselves from the C²AIR² club. Some also mentioned that there were racial divisions that led the spread of the C²AIR² club to be concentrated amongst the colored staff members. In general, the black African participants interviewed were not well-informed about the C²AIR² club.

"If they(management) can change the mentality of working like they don't appreciate others and they appreciate the others. They are working like friends, you see… But we are all working hard!" (GS11)

The participants at managerial level all complained that the relationship between the facility and the sub-district affected how they as managers could live out the values of the C²AIR² club. Poor communication was singled out as the major challenge and those at management were happy that the sub-structure was also being evaluated in phase 2 in the C²AIR² club. *"…for me one major challenge is communication between us and our substructure office, I'm just glad that they also now being evaluated as an entity" (GS12).* One other manager echoed the same sentiments and elaborated how poor communication from the sub-district lead to staff not to trust management and for management to be seen as not practicing the values of the C²AIR² club:

"like last week they (staff) came to me and said they only had one blood pressure machines in X and you could hear from the tone of their voice that they were fed up with working with like this. I said: "guys partly it is due to the workshops, because surely they got a list of stuff to

repair…I don't know why because that's emergency equipment, it should come back very quickly and when I filled in the requisition form I marked there: Urgent! do you understand? But it always happens that way." I'm sure they imagine we (as management) do nothing about them working under these conditions…and they lose trust in the management without understanding most of how the system works. (GS13)

Some of the champions also felt that the sub-district managers, had not supported them adequately. They felt that when their facility was not performing well, the sub-structure should at least probe for the reasons why? *"What's happening? All the time you are up there, now you are nowhere to be found on the score-board. So, what was happening? …We don't say they must leave their work 24/7 but twice a month, pop in and ask us what can we do for you (to improve)?" (C4)*

Discussion

Organizational culture change initiatives need to be understood not only in terms of their impact but also in terms of what supports their successful implementation within a given organization. This study did not aim to assess the impact of the C^2AIR^2 club and but focused on considering what constrained and facilitated the spread of the C^2AIR^2 club. This study was a single exploratory case study therefore there are limitations in the generalizability of the findings as they are likely to be context specific. However, there could be important learnings for similar facilities in similar settings. Viewing the experiences presented through the lens of the Greenhalgh and colleagues[18] model, innovation-fit, leadership, champions, adopters' characteristics, and contextual issues were the main factors that influenced the spread of the C^2AIR^2 club. As discussed below, these factors have previously been identified as important

features in implementing organizational change interventions but not necessarily organizational culture change intervention.

Innovation fit: The conceptual model of Greenhalgh and colleagues[18] outlines the ten attributes of a good innovation as being: having relative advantage; being compatible to the organisational structure and values; low complexity; able to be tried out and modified, having observable benefits; potential to be modified to context; low risk, relevance to the potential user's performance and improves task performance; requiring minimal knowledge and technical support.[18, 21]

Although the C^2AIR^2 club fulfilled most of these criteria this study shows that having all the attributes was not a sure determinant of successful implementation. Instead, the experiences presented suggest that adoption was mostly based on the adopter's perception of the innovation's worth relative to other ways of achieving the same goal which supports Dearing and colleagues'[32] argument.[32] This was demonstrated in the golden tickets which some participants thought was a good way to show appreciation, but others felt that within their departments they had more advanced systems of recognition. In addition, the innovations that were easily adopted and had become sustained were the homegrown innovations such as the morning huddles. This suggests that innovations developed by an organization itself with the inclusion of front-line workers are more easily adopted and implemented and this might be an important attribute to add to the model.

Leadership: In ensuring successful implementation, support, advocacy and continued commitment from management is seen as important.[18] The role that the facility manager played in providing leadership and support was central to the spread of the C^2AIR^2 club and created an environment conducive to the spread of the challenge. This supports Schein[6] arguments around the relationship between culture and leadership that leaders are the main architects of

OCs and that it is their responsibility to speed up change in elements of OC that become dysfunctional.[6] Leadership commitment was not only important in supporting the spread of the C^2AIR^2 club but also in ensuring that the OC change that the initiative was meant to effect was supported. Furthermore, in other studies on OC change interventions, engagement of middle management including those who manage smaller units within larger departments has been shown to provide important linkages with other managers which can help to resolve barriers and facilitate cultural change throughout the organization.[33] It was therefore strategic for the facility manager to ensure that the C^2AIR^2 club was a standing item in the management meetings and that some of the middle managers were C^2AIR^2 club champions.

Champions: Edwards and coleagues[34] in an opinion piece about how to change organisation culture in the NHI in the UK proposed that if one identifies a group of organisational champions representative of the wider workforce, who reflect the cultural model that needs to be promoted, who have the capacity to lead through collaboration and who can engage with change, there is a great likelihood that the culture change message will diffuse.[34] This statement seems to suggest that if you get the right champions for an initiative, you are likely set for success. However, the findings from this study shows that even if you have the right champions with all the right characteristics, what is important for the spread of an organisational change intervention is the characteristics of the individuals in the wider organisation and the contextual issues. Champions help to translate the meaning attached to an innovation allowing other organisational members to make sense of an innovation.[35] Literature suggests that before champions can successfully spread an innovation they need to go through a period of sense-making about the innovation they are supposed to be ambassadors of.[35] The Champions struggled in translating the meaning they had attached to the C^2AIR^2 club particularly in phase 1, probably because they themselves were still making sense of the innovation. It is therefore important for implementers to take this into consideration if they plan to use champions as

drivers of an innovation including a culture change intervention. Furthermore, this suggest that if you judge the effectiveness of champions too early, you are likely to come to an inaccurate conclusion. The employment of external change management or culture change consultants is common in studies of organisational change initiatives.[17, 36] In this study the consultants were involved in the training of the champions but were not engaged in the implementation of the C^2AIR^2 club in the facility. The findings in this study suggest that effectively trained champions with time become better equipped in their ability to spread an organisational change intervention with remote expert support.

Intra-organisational boundaries: It has been shown that change that threatens traditional intra-organisational professional boundaries is likely to be resisted by employees.[36] In this study, it emerged that avoiding disruption of traditional intra-organisational professional boundaries can lead to some groups feeling left out and therefore disengaged from the wider change process. There is supporting evidence that where there is successful integration of different cadre of staff, the result is a positive change in the culture particularly around team-work and communication.[33, 37, 38] In this study having a team of champions which was representative of the different occupational groups and different levels of seniority enabled the champions as a group to be an example to the rest of the facility of how collaboration can lead to success. Within the champion group, the champions had managed to work across intra-organisational professional boundaries and this empowered them as individuals to reach out across different groups in the organisation. Furthermore, it has been demonstrated that without collaboration it is difficult to ensure that any change that is initiated is sustained even in other initiatives, with challenges such as difficulties in getting commitment of resources or co-operation from the different departments that are essential to bringing about change.[33]

Contextual issues: Contextual issues seemed to underlie all the other factors that influenced the adoption and implementation of the C^2AIR^2 club. Low staff morale, shortage of staff and resources, poor security in the clinic, racial subdivision, interdisciplinary sub-divisions and a sub-district structure that was sometimes perceived to be slow in responding to issues, all contributed negatively to the spread of the C^2AIR^2 club. Although the values of the C^2AIR^2 club were highly compatible with those of the participants, contextual challenges which are also system wide within the South African health system, diminished the extent to which the C^2AIR^2 club values could be effectively integrated in the day to day activities of the facility. However, because this study was done early in the process of implementation, over a longer period conceivably such integration might happen. Although the C^2AIR^2 club values were acknowledged to be idealistic, being reminded of them and being constrained to live out the values because of contextual issues disempowered instead of empowering some of the staff. Having dedicated time and resources set aside for the implementation of a complex intervention is said to influence how it spreads in an organisation.[18] The C^2AIR^2 club was implemented in an environment where public health facilities were experiencing budget cuts, and the was no specific budget allocated to its activities in the facility. Lack of funding for the C^2AIR^2 club might indirectly point to the fact that the Western Cape DoH, from the view of the front-line workers was not putting its money where its mouth was. This might explain the wait and see attitude when it came to perception on the endurance of the C^2AIR^2 club from general staff members. This ambivalent attitude to the C^2AIR^2 club also played a negative role in the spread of the C^2AIR^2 club. It is therefore important that when such innovations are implemented careful attention is paid to the contextual issues and where there can be addressed they are addressed before the implementation.

Conclusion

Contextual issues particularly those related to resource constraints and failure to provide adequate funding for club implementation in the facility played a central role in determining the successful spread of the C^2AIR^2 club. When introducing an innovation like the C^2AIR^2 club the impact of which is neither immediate nor tangible, in an organisation where there are tangible problems such as lack of working space, staff shortages and shortages in working equipment, it is important that efforts are made to address these immediate challenges and where they cannot be addressed, that this is openly acknowledged by the implementers and management. If this is not considered, organisational members are likely to acknowledge the innovation as a good initiative but one that they would not actively rally around as it does not speak to their problems. However more studies are needed to determine if similar studies in similar settings will support this claim. Furthermore, the findings in this study suggest that effectively trained champions can to some extent spread an organisational change intervention without direct expert support, which is an important factor to note for others in resource limited settings wishing to implement a similar programme. However, champions have to go through a period of sense-making before they can effectively spread an innovation and therefore premature evaluations where champions are the drivers are likely to come to an inaccurate conclusion. Leadership is important, but in addition, having a team of champions which is representative of the different occupational groups and different levels of management enables champions to navigate intra-organisational professional boundaries and allows for greater collaboration in the implementation of an innovation. Innovations that encourage frontline workers to come up with their own innovations to address their organisational challenges are important. Home-grown innovations seem to be implemented and become routinized with less difficulty than externally developed interventions. The reasons as to why this happened were

not clear and further studies that address this question can provide important learnings. The diffusion of innovation model was found to be relevant in investigation of the adoption and implementation of complex innovations in a health care organisations in a resource limited setting.

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Appendices

Appendix A

Invitation to participate in a study
University of Cape Town
School of Public Health and Family Medicine

Exploring the introduction of an organisational culture change intervention in primary health care facilities: A single site case study of the C^2AIR^2 club challenge

Dear facility manager,

1. Invitation and purpose

You and your facility are invited to participate in this study which aims to find out how the staff in this facility have experienced the C^2AIR^2 club challenge and how the C^2AIR^2 club challenge has spread in the facility amongst the staff. I am a master's student and this research is undertaken to fulfil the conditions of being awarded with my master's degree.

2. Procedures

- If you agree for your facility to participate in this study I will interview you and your staff on how you have experienced the C^2AIR^2 club challenge phase 1. I will ask you about how you found out about the C^2AIR^2 club challenge, your understanding of the challenge and what you think facilitated or inhibited the spread of the C^2AIR^2 club challenge in Phase 1 in your facility. The information I wish to find will help me in understanding how the C^2AIR^2 club challenge has spread and might be helpful in improving the C^2AIR^2 club or the implementation of future projects in your facility.
- The study will include in-depth interviews with as many staff members as possible who were part of the facilities C^2AIR^2 team in Phase 1 and approximately 10 staff members who were not part of the team in phase 1. These interviews are anticipated to last for 45 to 60 minutes.
- The other part of the research will include document reviews of C^2AIR^2 club related material at your facility that you allow me access to.
- I also wish to undertake ethnographic observation at your facility which will include me attending staff meetings relevant to C^2AIR^2 club, spending time in different areas of the clinic, having informal conversation about the C^2AIR^2 with all staff members who are willing to engage with me. Observations will be made of interactions between staff and staff members focusing on observing for C^2AIR^2 club golden actions.
- Your participation in this study is completely voluntary.
- Should you agree to participate you are free to terminate the study at any time should you feel it is harmful to you or your staff.

- There will be no consequences to you should you wish not to participate.

3. Risks & inconveniences

- This study poses low risk to you and your staff as participants
- There will time demands on your staff and I apologise beforehand for any inconvenience caused.
- Sensitive issues might be potentially brought up during the planned interviews, but no participant is obliged to discuss things that are not pleasant to them
  Should anyone need referral for counselling a list of counselling services offered by staff wellness will be given to them.
- There will be no financial reimbursement for time of staff who are interviewed
- Light refreshment might be offered during the interviews especially if it they are during the lunch break

4. Privacy and confidentiality

- Since this research is a single case study the site of the research will not be mentioned in any part of the study and certain elements that might lead to easy identification of the facility will be left out in all reporting and publishing.
- A quiet room that can be locked and is slightly removed from the clinical areas is requested to ensure the privacy of interviews.
- All data collected will be anonymised. All identifying information will be removed from the data and where necessary pseudonyms will be used.
- Data will be kept for an indefinite period in soft copy in password protected sky drive with only the researcher and supervisor having access to it.

5. Dissemination of study findings

- The findings of this study will be shared with the facility, district, provincial department of health facility.
- The findings of this study might be published in an academic journal, newspaper article and other forms of mass media.

6. Contact details

Should you have any concerns, queries or complaints related to this study please contact
1. Dr Edzani Mphaphuli, cell: 0829534726, email address: mphedz001@myuct.ac.za
2. Prof Lucy Gilson, tel: 021-406-6272 Email address: lucy.gilson@uct.ac.za
3. University of Cape Town, Faculty of Health Sciences, Human Research Ethics Committee, tel: 0214066492-Fax:0214066411- Email address: sumayah.ariefdien@uct.ac.za

Thank you for your time

Appendix B

INVITATION FOR IN-DEPTH INTERVIEWS

University of Cape Town

School of Public Health and Family Medicine

Exploring the introduction of an organisational culture change intervention in primary health care facilities: A single site case study of the C^2AIR^2 club challenge

Dear participant,

1. Invitation and purpose

You are invited to participate in this study which aims to find out how the staff in this facility have experienced the C^2AIR^2 club challenge and how the C^2AIR^2 club challenge has spread in the facility amongst the staff. I am a master's student and this research is undertaken to fulfil the conditions of being awarded with my master's degree.

2. Procedures

- If you agree to participate in this study I will interview you on how you have experienced the C^2AIR^2 club challenge phase 1. I will ask you about how you found out about the C^2AIR^2 club challenge, your understanding of the challenge and what you think facilitated or inhibited the spread of the C^2AIR^2 club challenge in Phase 1 in your facility. The information I wish to find will help me in understanding how the C^2AIR^2 club challenge has spread and might be helpful in improving the C^2AIR^2 club or the implementation of future projects in your facility.
- The interview is anticipated to last for 45 to 60 minutes, but depending on your responses can be longer or shorter
- Your participation in this study is completely voluntary.
- Should you agree to be interviewed you are free to not answer some questions even though your comprehensive responses will be highly appreciated.

- During the course of the interview you are free to terminate the interview at any point.
- There will be no consequences to you should you wish not to participate.

3. Risks & inconveniences

- This study poses low risk to you as a participant
- Sensitive issues might be potentially brought up during the interview, should this occur please inform me during the interview. You are not obliged to discuss things that are not pleasant to you.
- Should you need referral for counselling a list of counselling services offered by staff wellness will be given to you
- 45 minutes to 60 minutes of your time is a significant amount of time and I apologise beforehand for any inconvenience caused.
- There will be no financial reimbursement for your time
- Light refreshment might be offered during the interview especially if it during the lunch break

4. Privacy and confidentiality

- All data collected will be anonymised. All identifying information will be removed from the data and where necessary pseudonyms will be used.
- The interview will be audio-recorded and anonymity will be ensured, at no point in the interview will your name be mentioned unless you mention it yourselves, should it happen, this will be anonymized during transcribing.
- The recording is to ensure that the interview is transcribed accurately for the purposes of data analysis.
- If there are parts of the interview that the participants does not wish to be audio recorded they are free to tell the researcher to stop the recording.
- All audio taped interviews will be transcribed and the audio recordings destroyed to protect your identity.
- A quiet room that can be locked and is slightly removed from the clinical areas will be used to ensure your privacy.
- Data will be kept for an indefinite period in soft copy in password protected sky drive with only the researcher and supervisor having access to it.

5. Dissemination of study findings

- The findings of this study will be shared with the facility, district, and provincial department of health facility.
- The findings of this study might be published in an academic journal, newspaper article and other forms of mass media.

6. Contact details

Should you have any concerns, queries or complaints related to this study please contact

1. Dr Edzani Mphaphuli, cell: 0829534726, email address: mphedz001@myuct.ac.za

2. Prof Lucy Gilson, tel: _021-406-6272 Email address: lucy.gilson@uct.ac.za

3. University of Cape Town, Health Science Faculty, Human Research Ethics Committee, tel: 0214066492-Fax: 0214066411 Email address: sumayah.ariefdien@uct.ac.za

Thank you for your time

Appendix C

INFORMED CONSENT FORM FOR OBSERVATION AND OVERALL APPROVAL

University of Cape Town

School of Public Health and Family Medicine

Exploring the introduction of an organisational culture change intervention in primary health care facilities: A single site case study of the C^2AIR^2 club challenge

Signatures

{Facility Manager}_____ has been informed of the nature and purpose of the procedures entailed in this study including anticipated risks. He or she has been given time to ask any

questions and these questions have been answered to the best of the investigator's ability. A signed copy of this consent form has been made available to the participant.

_____ _____

Investigator's Signature Date

I have been informed about this research study and understand its purpose, possible benefits, risks, and discomforts. I agree to allow this research to be undertaken in my facility. I know that I am free to withdraw this consent and leave this project at any time, and that doing so will not cause me and my facility any penalty or loss of benefits that we would otherwise be entitled to enjoy. I am aware that the research will be written up in the form of a master's research project and may be published in an academic journal.

_____ _____

Facility Manager's Signature Date

Appendix D

INFORMED CONSENT FORM FOR IN-DEPTH INTERVIEWS

University of Cape Town

School of Public Health and Family Medicine

Exploring the introduction of an organisational culture change intervention in primary health care facilities: A single site case study of the C^{2}AIR^2 club challenge

Signatures

{Interviewee's name}_____ has been informed of the nature and purpose of the procedures entailed in this study including anticipated risks. He or she has been given time to ask any questions and these questions have been answered to the best of the investigator's ability. A signed copy of this consent form has been made available to the participant.

_____ _____

Investigator's Signature Date

I have been informed about this research study and understand its purpose, possible benefits, risks, and discomforts. I agree to take part in this research as a subject. I know that I am free to withdraw this consent and leave this project at any time, and that doing so will not cause me any penalty or loss of benefits that I would otherwise be entitled to enjoy. I am aware that the interview will be audio recorded and that I can ask for the audio recording device to be switched off at any given time of the duration of the interview. I am further aware that the research will be written up in the form of a master's research project and may be published in an academic journal.

_____ _____

Interviewee's Signature Date

Appendix E

Interview guide

1. Tell me about the C^2AIR^2 Club phase 1 and 2, that is, the activities of last year (2014), what was your experience of it?
2. Thinking back to your experience of the C^2AIR^2 club phase 1, how did you first hear about the initiative, what did you think of it, how did you understand it? How was the C^2AIR^2 club phase 1 communicated to you?
3. What do you think the C^2AIR^2 club phase 1 and 2 aimed to achieve?
4. Do you think the C^2AIR^2 club is working well in your facility? How do you judge this? Do you know how you did in phase 1?
5. Did you personally get involved in activities around the C^2AIR^2 club in this facility, did you welcome the concept or not? Why? Why not?

6. Do you think the C^2AIR^2 club challenge introduce new ways of doing things in this facility? If so, were those new procedures easy to adopt or not? Why/why not? Do you personally feel empowered by the C^2AIR^2 club? Do you think the patient experience has changed?
7. Have any negative things have resulted from the C^2AIR^2 club in your facility? If So, Why is this so?
8. The programme was aiming to address the following 4 areas: Communication, Engagement, Service and Bureaucracy (share brochure and refer to it if needed, to remind interviewee of the detailed elements of the programme) – Do you feel these are the problems in your facility?
9. What made it easy or difficult for you as an individual to get involved or interested in C^2AIR^2 club phase 1 and 2?
10. What role did the C^2AIR^2 club champions and facility play in your understanding of C^2AIR^2 club and its aims and objectives? Are they important?
11. Did previous experiences with other initiatives that have been introduced in the facility influence your interaction with the C^2AIR^2 club?
12. What other factors – unrelated to C^2AIR^2 Club – might have contributed to the spreading or not of Phase 1 and 2 of the C^2AIR^2 club activities in this facility (eg: management issues, stability of staff complement, staff relationships, occupational groups, other departmental and institutional factors that affect the facility's functioning)
13. How do you think the C^2AIR^2 club challenge spread among the particular group of staff you represent compared to others? Is there any particular group which was highly receptive or highly opposed?

Appendix F

Author Instructions for Manuscript Submissions

All potential authors submitting articles to the Quarterly must familiarize themselves with and agree to follow the recommendations for the conduct, reporting, editing, and publication of scholarly work in medical journals as delineated by the International Committee of Medical Journal Editors (ICMJE). See www.icmje.org. Submissions should be sent electronically to the Quarterly and include a cover letter. Please email Word files of the manuscript to quarterly@milbank.org. You will receive a confirmation of receipt. If you do not recieve a confirmation within a few days, please email Tara Strome, assistant managing editor, at tstrome@milbank.org.

The editor-in-chief, Howard Markel, will make an initial determination about the suitability of the manuscript for the Quarterly. Manuscripts that are potentially suitable will be subject to blind peer review regarding scholarly soundness and substantive significance. When the manuscript is submitted, the corresponding author must submit two forms signed by each author indicating that he or she has read and complied with the Quarterly's publication policies. The corresponding author is the person to whom correspondence will be sent and the author responsible for the accuracy and completeness of the manuscript's acknowledgments, for communication with the other author(s) about changes made during copyediting and production, and for final approval of proofs. Upon acceptance of an article,

the corresponding author will be directed to sign a copyright transfer form on behalf of his or her coauthor(s) before the article can be published.

Questions about the submission process may be directed to Tara Strome, assistant managing editor, at tstrome@milbank.org.

Specifications for Manuscripts

Before submitting your manuscript, please be sure you have prepared it according to the following instructions.

Length

The length of submitted text ordinarily should not exceed thirty pages, excluding abstract, acknowledgments, figures, tables, and references. Longer papers will be considered on occasion, but additional length must be justified by the corresponding author.

Formatting

All text must be typed double-spaced using Times New Roman 12-point font, with tabs to indicate new paragraphs. All pages must be paginated consecutively and include line numbers.

Title Pages

On the title page list the names of each author in the order the names should appear if the manuscript is published, including academic degrees and affiliations, as well as the complete address, telephone number, and email address of the corresponding author. Also provide the number of pages for text only as well as any necessary acknowledgments as described in the Quarterly‘s publication policies.

To facilitate blind review, include a second title page with only the manuscript title. In addition, please eliminate any internal information (including acknowledgment of funding sources and self-identifications in citations) that reveals authorship.

Policy Points

Manuscripts must include “policy points,” a two-to-three bullet point synopsis (fewer than 100 words) of the article’s import on explicating or advancing a particular set of health policies. As the abstract presents, in an abbreviated form, the scholarly design and results of a study, the policy points will serve as your “elevator pitch” to alert policymakers and policy implementers about the ramifications of the study.

Structured Abstract

Manuscripts must include a structured abstract of 250 to 300 words using the following headings:

Context: The abstract should begin by explaining the article’s background, objectives, and salience for policy and research.

Methods: Describe the procedures used to obtain and analyze data and/or research materials.

Findings: Summarize the results of your analyses.

Conclusions: Summarize the implications of the findings for policy, practice, and further research.

Keywords

The structured abstract must be accompanied by up to four keywords for indexing. Keywords used by MEDLINE/PubMed's MeSH system are preferred because they facilitate searches (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=mesh), but terms not in MeSH may be used when MeSH terminology is not adequate.

Op-Eds

The Quarterly op-ed section consists of essays from a panel of contributing writers. We currently do not accept unsolicited op-ed submissions, though on occasion will invite individuals to contribute a piece at the editor-in-chief's discretion.

Systematic Reviews

For the convenience of reviewers, manuscripts that are systematic reviews should be accompanied by the protocol used by the authors to conduct the review unless that information is provided in the body of the manuscript.

Artwork

Tables and figures should be explicitly mentioned in text and be numbered consecutively with arabic numerals in the order they are cited in the text (e.g., Table 1, Table 2, Figure 1, Figure 2). Tables and figures should be self-explanatory and include a title; each figure should have a separate legend. For both tables and figures use superscript lowercase letters in alphabetical order (a-z) to identify any footnotes. Any references cited for information used in the tables or figures should be numbered in sequence with references cited in the text (e.g., a Data from the US Census Bureau.5). Submitted artwork should be in printer-ready format, in black and white, and sized to fit within the Quarterly's page space of 4.3 by 6.9 inches, using Times New Roman for text. If you use data from another published or unpublished source, obtain written permission and acknowledge that source fully (e.g., a Reproduced with permission from the American Medical Association.41).

Notes

The Quarterly does not use footnotes, except in tables and figures, nor does it use endnotes. Such explanatory material should be incorporated into the text.

References

All sources used in preparing your manuscript must be properly acknowledged. Please be sure that all references are complete and accurate and cited correctly in text. References should be numbered consecutively in the order in which they are first cited in the text and should be identified in text, tables, and figures with superscript arabic numerals, inserted outside periods and commas, insidecolons and semicolons. A reference first or only cited in a table or figure should be numbered so that it is in sequence with references cited in the text at the first text mention of the particular table or figure. When formatting references, follow the AMA Manual of Style, 10th edition, and abbreviate journal names according to their listing in PubMed. List all authors unless there are more than six, in which case list only the first three authors followed by "et al." The following are sample references:

Cawley J, Meyerhoefer C. The medical care costs of obesity: an instrumental variables approach. J Health Econ. 2012;31(1):219-230. www.sciencedirect.com/science/article/pii/S0167629611001366. Accessed February 12, 2012.

Sweeney P, Gardner LI, Buchacz K, et al. Shifting the paradigm: using HIV surveillance data as a foundation for improving HIV care and preventing HIV infection. Milbank Q. 2013;91(3):558-603. doi:10.1111/milq.12018.

World Health Organization. The World Health Report: Health Systems Financing: The Path to Universal Coverage. Geneva, Switzerland: World Health Organization; 2010. whqlibdoc.who.int/whr/2010/9789241564021_eng.pdf. Accessed September 9, 2012.

Bosk CL. Forgive and Remember: Managing Medical Failure. 2nd ed. Chicago, IL: University of Chicago Press; 2003.

Glanz K, Rimer BK. Perspectives on using theory: past, present, and future. In: Glanz K, Rimer BK, Viswanath K, eds. Health Behavior and Health Education: Theory, Research, and Practice. San Francisco, CA: Jossey-Bass; 2008:509-518.

Ellis J, Luther M. Restaurants want a piece of food stamp pie. USA Today. September 7, 2011. usatoday30.usatoday.com/money/industries/food/2011-09-05-food-stamps-restaurants-Yum-Brands_n.htm. Accessed November 15, 2011.

Appleby J. California law likely resulted in lower bills, free care for uninsured. Kaiser Health News website. capsules.kaiserhealthnews.org/index.php/2013/06/california-law-likely-resulted-in-lower-bills-free-care-for-uninsured. Published June 3, 2013. Accessed July 25, 2013.

Pioneering applied scientific research in healthcare. ECRI Institute website. www.ecri.org/About/Pages/default.aspx. Accessed August 7, 2013.

Patient Protection and Affordable Care Act, Pub L No. 111–148, 124 Stat 119 (2010).

Arnett P. Local Health Department Changes Over the Past Twenty Years [dissertation]. Lexington: University of Kentucky; 2011.

Durie M. An indigenous model of health promotion. Paper presented at: 18th World Conference on Health Promotion and Health Education; April 27, 2004; Melbourne, Australia.

Chapman BP, Hampson SH, Clarkin J. Personality-based interventions for healthy aging: results from a National Institute on Aging workgroup. Dev Psychol. In press.

References to material not yet accepted for publication or to personal communications are not acceptable as listed references and instead should be cited parenthetically in the text, e.g., "Similar findings have been noted by Johnson6 and by P.J. Martin, MD (written communication, August 2013)." Written permission should be obtained from the person whose unpublished data or personal communication is thus cited.

Publication Policies on Authorship, Conflict of Interest, Prior Dissemination, Assignment of Copyright, and Author Rights

All potential authors submitting articles to the Quarterly must familiarize themselves with and agree to follow the recommendations for the conduct, reporting, editing, and publication of scholarly work in medical journals as delineated by the International Committee of Medical Journal Editors (ICMJE). See www.icmje.org. When the manuscript is submitted, the corresponding author must submit two forms signed by each author indicating that he or she has read and complied with the Quarterly's policies regarding (1) authorship; (2) financial support and potential conflicts of interest; (3)

transparency, openness and credibility; and (4) prior dissemination. The corresponding author is the person to whom correspondence will be sent and the author responsible for the accuracy and completeness of the manuscript's acknowledgments, for communication with the other author(s) about changes made during copyediting and production, and for final approval of proofs. Upon acceptance of an article, the corresponding author will be directed to sign a copyright transfer form on behalf of his or her coauthor(s) before the article can be published. The policies are described below.

Forms may be sent by mail, fax, or email to:

Tara Strome

Assistant Managing Editor

Milbank Memorial Fund

645 Madison Avenue

15th Floor

New York, NY 10022

Phone: 212-355-8400

Fax: 212-355-8599

Email: quarterly@milbank.org

Questions about the submission process may be directed to Tara Strome, assistant managing editor, at tstrome@milbank.org. Click here for instructions for preparing your manuscript.

Authorship

Each author of a manuscript submitted to The Milbank Quarterly must meet the following authorship criteria set forth by the ICMJE, certifying that he or she has (1) made substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; and (2) made substantial contributions to the drafting of, or critical revisions to, the work for important intellectual content; and (3) given final approval of the version to be published; and (4) agreed to be accountable for all aspects of the work.

Accepted manuscripts are copyedited according to Quarterly style and returned to the corresponding author for approval. Authors are responsible for all statements made in their work, including changes made during copyediting and production that are authorized by the corresponding author.

All other persons who have contributed substantially to the work reported in the manuscript (e.g., who provided assistance with study design, data collection or analysis, or manuscript preparation) but who do not fulfill the authorship criteria must be named in the manuscript's acknowledgments, including their specific contributions. The corresponding author must obtain written permission to include the names of all individuals in the acknowledgments as readers may infer their endorsement of the work's data and conclusions. The corresponding author must submit this documentation if requested by the editorial office.

Financial Support and Potential Conflicts of Interest

When a manuscript is submitted, all authors of the manuscript must complete the ICMJE Form for Disclosure of Potential Conflicts of Interest. In addition, the manuscript's acknowledgments must include any potential conflicts of interest or situations that could give the appearance of a conflict of interest, as disclosed in the ICMJE Form, resulting from authors' financial, personal, or professional affiliations as well as any financial and material support for the work reported in the manuscript. This information will be published in conjunction with the manuscript. The corresponding author is responsible for ensuring that the disclosures reported in the manuscript's acknowledgments are accurate, current, and consistent with the information provided in each author's ICMJE Form.

A potential conflict of interest exists when an author has relationships with organizations or involvements in activities that could inappropriately influence his or her research or presentation of results and conclusions, whether or not such influence occurs. The most important potential conflicts of interest are financial relationships of an author and/or a member of his or her immediate family or household with organizations that have a pecuniary interest in any data or findings reported in the manuscript. Such relationships include, but are not limited to, a role in the governance of an organization, employment, paid or voluntary consultation or expert testimony, stock ownership, and receipt of honoraria or other financial support. (Persons invited to review manuscripts submitted to the Quarterly must also disclose to the editor-in-chief any conflicts of interest that could bias their evaluation of the manuscript.)

Statement of Transparency, Openness, and Credibility (and, where appropriate, Reproducibility) Regarding Availability of Data and Methods

A condition of publication of a paper in The Milbank Quarterly is the requirement that authors make all their materials (including, but not limited to, primary data and secondary sources, and, if applicable, open source or proprietary software, as well as pertinent information about the paper's methodology) promptly available to readers upon request without undue qualifications (such as a reasonable payment to cover out-of-pocket costs of distribution).

Any restrictions on the availability of data or information about the paper must be disclosed to the editors at the time of submission. Such restrictions must also be disclosed in the submitted manuscript and may be a factor in editorial decisions to reject or accept a manuscript. We acknowledge that there may be situations that do not permit full disclosure (eg, interviewing subjects for qualitative studies while preserving anonymity of sources) and will discuss these issues with each author on a case-by-case basis. The editors reserve the right to review the materials during the review process and at any time thereafter.

After publication, readers who encounter refusal or delay of responses from the authors for more than one month (or who receive partial or incomplete responses) or other noncompliance with these policies should contact the editor-in- chief of The Milbank Quarterly.

In those cases in which the editor-in-chief is unable to resolve a complaint, the journal may refer the matter to the author's employing institution and/or funding institution. The journal may also initiate an escalating series of remedial actions, beginning with a "Statement of Correction" (attached online to the publication stating that readers have been unable to obtain the necessary materials to replicate the findings) up to and including full retraction and removal of the article from The Milbank Quarterly's website (with a detailed explanation).

Prior Dissemination

The policy of The Milbank Quarterly is to consider for publication only original work that has not previously been published and is not being considered for publication elsewhere. Below is guidance on this issue.

There are legitimate reasons why research may be disseminated before submission to a journal. Active communication among researchers about preliminary findings or the circulation of draft reports for discussion and critique contributes to the eventual quality of published work. In addition, organizations that support or carry out research have an understandable interest in disseminating their work. These reasons for dissemination must be balanced against two considerations. The first is the value of the peer-review process. The rule against prior publication is intended to increase the credibility of published research. Papers are often improved during the peer-review process, with findings, conclusions, and recommendations sometimes changed in response to reviewers' comments. The public and policymakers might be confused or misled if there are multiple versions of a paper in the public domain. Second, journal space is limited, and both time and expense are involved in the evaluation, publication, and distribution of journal articles. The Milbank Quarterly must make difficult choices about what to include; there is less value in publishing papers that have already been disseminated to their target audiences.

Below, we discuss several types of dissemination and provide guidelines with respect to the prior publication question. This discussion is essentially an elaboration of two rules, the first emphasizing previous dissemination of the material, the second stressing disclosure.

Rule One: If the material in a paper has already been disseminated to the Quarterly's audience, particularly in a format that appears to be a final product, then it is unlikely that a second version will be worth publishing in the journal.

Rule Two: It is the responsibility of authors to let the editor-in-chief know at the time of submission if a paper's contents have been previously disseminated in any manner so that the editor-in-chief can determine whether to proceed with the review process.

Previous Presentation at Meetings. Presentation of a paper at conferences or seminars does not constitute prior publication and does not jeopardize the possibility of publication.

Working Papers. Dissemination of "working papers" to a limited audience will not ordinarily jeopardize publication. Working paper series are used by many organizations as a means of enabling researchers to obtain critiques from fellow researchers. Working papers covered by this policy are those that are released by the author or an organization rather than by a publisher, are not advertised to the public, and are marked as drafts that are subject to future revision.

Internet Postings. Release via the Internet may jeopardize journal publication under some circumstances. Presentation of the work as a final report is a marker of an attempt to reach a wide audience, particularly when combined with efforts to direct traffic to the work (e.g., via links on other sites) and efforts to attract attention (e.g., press releases). In contrast, if a document is posted on the Internet only to facilitate communication among colleagues with the aim of getting feedback, and if there has been no attempt to otherwise attract the attention of journalists, the public, or the broader research community to the document, then this is unlikely to preclude journal publication.

In general, when posting on the Internet serves similar functions as presentation at professional meetings—facilitating the development of papers and the improvement of the research, influencing future revisions, and not constituting a "finished" product—it would not be considered prior publication. However, when the website posting functions as a virtual version of a conventional publication, which may even be copyrighted by the posting organization, the benefit of an additional publication in the journal will be scrutinized carefully.

In cases where there has been little to no exposure at the time that a paper is submitted to the journal, but the circumstances surrounding the posting make it likely that a high level of exposure (press coverage, etc.) might occur, then the author should remove a posting as a condition for further consideration of the manuscript.

Authors who post a paper on a website and do not want it to constitute prior publication should also post a disclosure statement such as: "This draft paper is intended for review and comments only. It is not intended for citation, quotation, or other use in any form." This statement should be kept on the website throughout the review process and until the paper is actually accepted for publication in the journal. Once accepted, authors must amend this statement as follows: "This is a preprint of an Article accepted for publication in The Milbank Quarterly © (year) The Milbank Memorial Fund."

Formal Reports from Foundations, Academic Institutions, Institutes, Trade Associations, and Government Agencies. The dissemination efforts of foundations, government agencies, research institutes, and other organizations that support or carry out research can complement publication in peer-reviewed journals. If publication in The Milbank Quarterly is desired, organizational publications should be timed to coincide with or follow publication of the article in The Milbank Quarterly, with appropriate copyright permissions having been obtained. This sequence ensures that any deficiencies of method or presentation noted during the peer-review process will be able to be corrected.

Formal, published reports that have gone through an editorial process, that have been intended to reach a wide audience, and that are publicized and available to any interested party (whether free or not) usually will not be considered for journal publication. A paper that is based on such a report might be considered for publication if it were sufficiently different in emphasis or intent. In such instances, the author should explain at the time of submission (or before) how the paper differs from the previously released report and why its publication would represent a distinct and important contribution beyond that version.

Media Publicity. If results reported in a working paper have become widely known as a result of media exposure (or even if the potential for widespread exposure remains during review), and that working paper is readily available to interested readers (e.g., through a website), an editorial judgment will be made whether journal publication would be appropriate. Authors can help protect their work from unwanted media exposure by making clear on working drafts, copies presented at conferences, and other versions that it is a draft that has not yet undergone peer review for publication and that findings and conclusions are subject to change. Authors should also request that any "stories" derived from interviews with the media be embargoed until the article has been published or released by the publisher (see, for example, P.B. Fontanarosa and C.D. DeAngelis, "The Importance of the Journal Embargo," 2002;288(6):748-750. doi:10.1001/jama.288.6.748). Any accepted manuscript released to the media must contain the statement: "This is a preprint of an Article accepted for publication in The Milbank Quarterly © (year) The Milbank Memorial Fund." Authors should check with the editor-in-chief before speaking with or distributing papers to members of the media.

Importance of Disclosure. Prior to, or at the time of, submission of a paper that has been disseminated in any of the ways discussed above, authors must bring this to the attention of the editor-in-chief so a determination can be made whether the paper has been disseminated too widely for publication in The Milbank Quarterly. In so doing, authors should describe in what form and how the work was previously disseminated and how the submitted manuscript differs from previously disseminated versions. The editor-in-chief might be receptive to a modified version of a paper that has been widely disseminated if the submitted version has a different focus (e.g., more emphasis on methods, more

sophisticated analytic approach, or a discussion of developments that have transpired since the initial dissemination). The key point is to let the editor-in-chief know about any dissemination that will have, or is likely to have, occurred before the article goes through the Quarterly's peer-review and editorial processes. Authors should also include copies of other related papers that might be seen as covering the same material.

Failure to disclose prior dissemination could preclude publication in The Milbank Quarterly or, if already published, could result in a notice in the journal about the failure and may result in a retraction of the article.

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The Milbank Quarterly requires the corresponding author of an article accepted for publication to transfer copyright to the Milbank Memorial Fund on behalf of his or her coauthor(s), except for authors who cannot transfer copyright because they were employees of the U.S. federal government when the work described in the manuscript was conducted.

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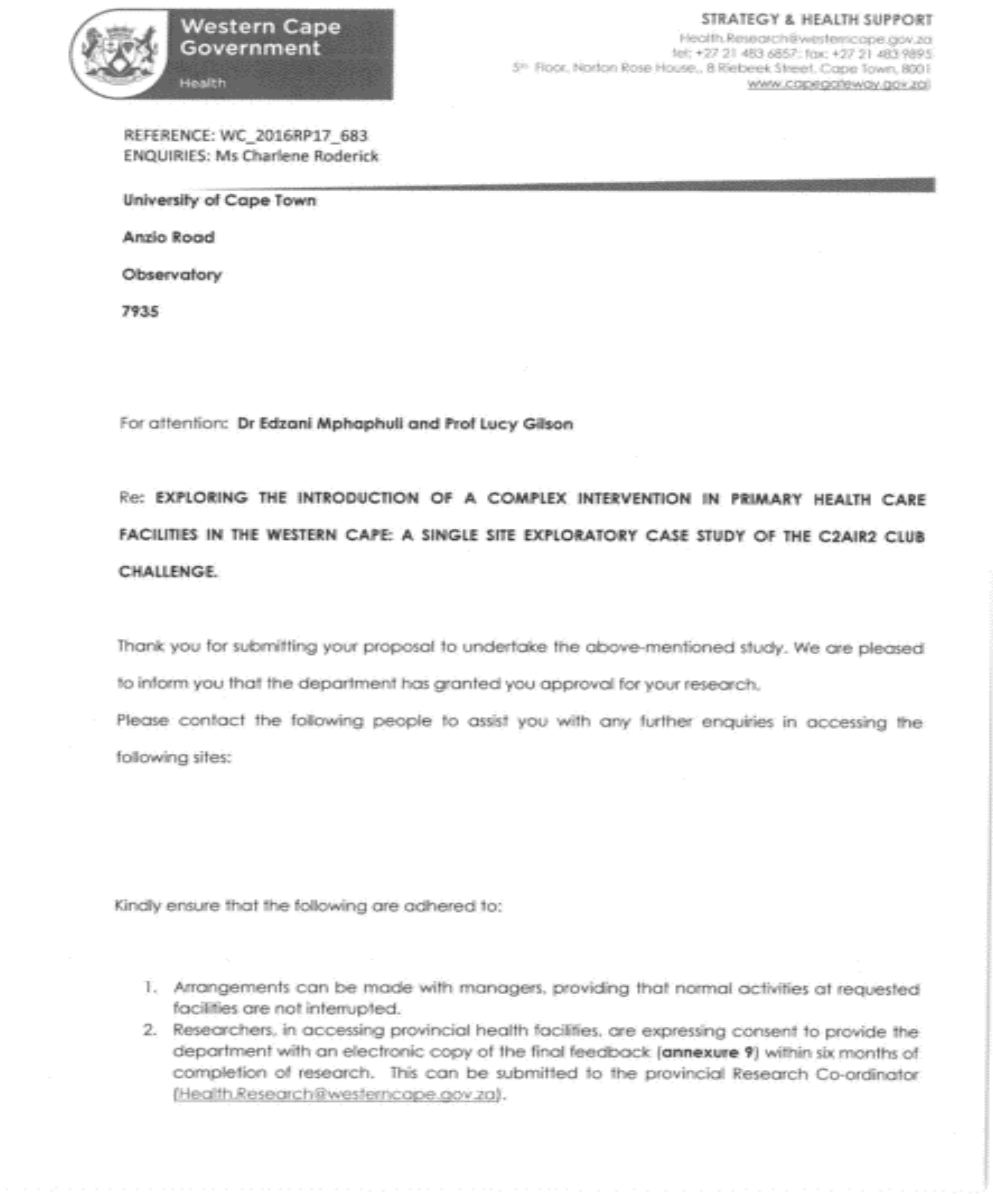
Author Forms

When submitting a manuscript to The Milbank Quarterly, the corresponding author must submit an MQ Author Form and an ICMJE Form for Disclosure of Potential Conflicts of Interest signed by each author indicating that he or she has read and complied with the Quarterly's publication policies. Please note that both the MQ Author Form and the ICMJE Form are PDFs made to be filled out with the Adobe Acrobat Reader. Do not open the form with third-party PDF readers (this includes the Apple Preview app) and do not open the form in your browser. Instead, download the form to your

desktop by right-clicking the link and choosing the Save Target As…or Save Link as…command from the popup menu. Save the file to your desktop, and then open it with Adobe Acrobat Reader.

Appendix G



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REFERENCE: WC_2016RP17_683
ENQUIRIES: Ms Charlene Roderick

University of Cape Town

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Observatory

7935

For attention: **Dr Edzani Mphaphuli and Prof Lucy Gilson**

Re: **EXPLORING THE INTRODUCTION OF A COMPLEX INTERVENTION IN PRIMARY HEALTH CARE FACILITIES IN THE WESTERN CAPE: A SINGLE SITE EXPLORATORY CASE STUDY OF THE C2AIR2 CLUB CHALLENGE.**

Thank you for submitting your proposal to undertake the above-mentioned study. We are pleased to inform you that the department has granted you approval for your research.

Please contact the following people to assist you with any further enquiries in accessing the following sites:

Kindly ensure that the following are adhered to:

1. Arrangements can be made with managers, providing that normal activities at requested facilities are not interrupted.
2. Researchers, in accessing provincial health facilities, are expressing consent to provide the department with an electronic copy of the final feedback (**annexure 9**) within six months of completion of research. This can be submitted to the provincial Research Co-ordinator (Health.Research@westerncape.gov.za).

3. In the event where the research project goes beyond the *estimated completion* date which was submitted, researchers are expected to complete and submit a progress report (**Annexure 8**) to the provincial Research Co-ordinator (Health.Research@westerncape.gov.za).

4. The reference number above should be quoted in all future correspondence.

Yours sincerely

DR A HAWKRIDGE
DIRECTOR: HEALTH IMPACT ASSESSMENT
DATE: 04/02/2016.
CC: **P OLCKERS** **DIRECTOR:MITCHELL'S PLAIN / KLIPFONTEIN**

Appendix H

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee

Room E52-24 Old Main Building
Groote Schuur Hospital
Observatory 7925
Telephone [021] 406 6338 • **Facsimile** [021] 406 6411
Email: shuretta.thomas@uct.ac.za
Website: www.health.uct.ac.za/fhs/research/humanethics/forms

19 January 2016

HREC REF: 843/2015

Prof L Gilson
Public Health & Family Medicine
Health Economics Unit
Falmouth Building

Dear Prof Gilson

PROJECT TITLE: EXPLORING THE INTRODUCTION OF A COMPLEX INTERVENTION IN PRIMARY HEALTH CARE FACILITIES IN THE WESTERN CAPE: A SINGLE SITE EXPLORATORY CASE STUDY OF THE C2A1R2 CLUB CHALLENGE (Master-candidate-Dr E Mphaphuli)

Thank you for your response to the Faculty of Health Sciences Human Research Ethics Committee dated 14 January 2016.

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

Approval is granted for one year until the 30th January 2017.

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.
(Forms can be found on our website: www.health.uct.ac.za/fhs/research/humanethics/forms)

Please quote the HREC REF in all your correspondence.

We acknowledge that the student, Dr Edzani Mphaphuli will also be involved in this study.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, FHS HUMAN RESEARCH ETHICS COMMITTEE
Federal Wide Assurance Number: FWA00001637.
Institutional Review Board (IRB) number: IRB00001938
This serves to confirm that the University of Cape Town Human Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medical Research Council (MRC-SA), Food and Drug Administration (FDA-USA), International Convention on Harmonisation Good Clinical Practice (ICH GCP), South African Good Clinical Practice Guidelines (DoH

Annexure 1.

Annexure 1. C^2AIR^2 club measures for CHCs and CDCs (adapted from C^2AIR^2 club score sheet)								
Value	**Competence**				**Caring**			**Accountability**
Measures	Effective employee planning (to compile staff-rosters so that staff allocations meet patient numbers)	Patient appointment (managing patient load through a booking system)	Patient forecasting	Daily duty roster on display	Morale meetings attendance (encourage managers to engage with employees)	Patient and employee feedback (displaying positive feedback for employees and patients to see, by management)	Golden C^2AIR^2 club recognition rewards (golden slips to encourage managers to recognise employees)	Collaboration between district/sub-structure and facilities with regards to performance
How are points awarded	Submission of duty roster for following month	Number of appointments made using booking system for the month	Forecast per department submitted for the following month	Having duty roster on display for patients which is updated daily	Percentage of employees who attend morale meetings for the month	Evidence of tool that shows positive feedback was displayed	Number of slips submitted	Number of golden slips submitted to the facilities
Formula	None	% of patient visits for which there was an appointment made	None	None	Percentage of employees who attend morale meetings for the month as a proportion of all the staff	None	% employee with golden slips	None

10 points	Duty roster submitted with all hods signatures	60% and above of the total patients' visits are pre-booked appointments	Forecast submitted with expected forecast numbers of patients for each day of the month, differentiated by employee category, and including assumptions made for seasonal trends and reference the work-force plan	Duty roster submitted is of good quality displaying all categories on duty for each day. Roster helpful to patients. Patients know who is on duty, who to direct complaints and compliments to and where to find information. Rosters are of a similar consistent quality throughout the facility	100% Employees attend all or more than 1 meeting where morale is discussed	Patient and employee feedback board shows evidence of relevant and positive feedback from patients and employees. The board is updated regularly	20 slips and above per 100 employees	4 or more slips
7.5 points	None	50 to below 60% of the total patients' visits are pre-booked appointments	Patient numbers are differentiated by category and forecasts reference external factors around the facility	Duty roster submitted is of good quality helpful to patients. Rosters are of a similar consistent quality throughout the facility	80 to under 100% employees attend a meeting where morale is discussed	None	1 5 slips to under 20 slips Per 100 employees	3 slips
5 points	Submission time with missing data	40% to below 50% of the total patients' visits are pre-booked appointments	Forecast submitted with expected patient numbers for each day of the month, including assumptions made for seasonal trends	Duty roster submitted but quality could be improved. Displaying all categories on duty for each day. Rosters are not of a similar consistent quality throughout the facility	60% to under 80% Employees attend meeting where morale is discussed	Patient and employee feedback board submitted but could be improved	10 slips to under 15 slips Per 100 employees.	2 slips

2.5 points	None	30% to below 40% of the total patients' visits are pre-booked appointments	Forecast submitted with expected patient numbers for each day	Duty roster submitted but quality could be improved displaying all categories on duty for each day. Confusing to patients	40% to under 60% employees attend meeting where morale is discussed		. . 5 slips to under 10 slips Per 100 employees. .	1 slip
0 points	No submission 1 week before end of month	0 to under 30% of the total patients' visits are pre-booked appointments	No submission	No evidence submitted	under 40% employees attend meeting where morale is discussed	No evidence submitted	No slips issued to under 5 slips issued per 100 Employees	No slips submitted
Value	Integrity			Innovation	Respect		Responsiveness	
Measures	Manager requesting constructive feedback from her subordinates	Patient complaints resolved	Promote patient feedback about the facility	Sharing best practices through innovation summits	Cervical smears	Antenatal screening	Unplanned absenteeism	Waiting time approximation

How are points awarded	Number of slips completed per month per 100 employees		Number of patients who submit complaints or compliment per 100 patients based on sinjani.	Winning at the innovation summit	Based on number of cervical smears conducted with respect to the facility target	Percentage of first time antenatal visit before 20 weeks into pregnancy	Number of days of unplanned leave taken per employee	Improvement in waiting times from previous month
Formula	Number of management feedback slips completed per manager	Percentage patient complaints resolved	Number of patients who submit complaints or compliment per 10000 patients		The percentage of women 30years and older received a smear	Percentage of first time antenatal visit before 20 weeks into pregnancy	Number of days of unplanned leave taken per employees	No formula
10	7 feedback slips and above	90% and above of compliments resolved	25 complaints or compliments and above per 10000 patients and there are more compliments than complaints		85% and above of women 30years and older received a smear	100% of all women book before 20 weeks into pregnancy	No to 2days of days of unplanned leave taken per 10 employees	Waiting time for all functional units submitted on time and there is improved from previous month
7.5	5 to under 7 feedback slips	80% to under 90% of compliments resolved	20 to under 25 complaints or compliments per 10000 patients and there are more compliments than complaints		65% to under 85% above of women 30years and older received a smear	80% to under 100% of all women book before 20 weeks into pregnancy	More than 2 days to 3.5days of days of unplanned leave taken per 10 employees	Waiting time for all functional units submitted on time but not improved from previous month

5	3 to under 5 feedback slips	70% to under 80% of compliments resolved	1 to under 25 complaints or compliments per 10000 patients there are more complaints than compliments		45% to under 65% above of women 30years and older received a smear	60% to under 80% of all women book before 20 weeks into pregnancy	More than 3.5 days to 5 days of days of unplanned leave taken per 10 employees	Waiting time for all functional units submitted on time
2.5	1 to under 3 feedback slips	60% to under 70% of compliments resolved	1 to under 15 complaints or compliments per 10000 patients and there are more compliments than complaints		25% to under 45% above of women 30years and older received a smear	40% to under 60% of all women book before 20 weeks into pregnancy	More than 5 days to 6.5days of days of unplanned leave taken per 10 employees	Waiting time submitted with missing data
0	No feedback slips submitted	Under 60% of compliments resolved	1 to under 15 complaints or compliments per 10000 patients and there are more complaints		Under 25% of women 30 years and older received a smear	Less than 40% of all women book before 20 weeks into pregnancy	More than 6.5days of days of unplanned leave taken per 10 employees	No waiting time submitted