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Evaluating the Implementation of a Chronic Obstructive Pulmonary Disease Management Program Using the Consolidated Framework for Implementation Research: A Case Study

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A thesis submitted in partial fulfillment of the requirements for the Master of Science degree in Health Promotion

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Abstract

Chronic obstructive pulmonary disease (COPD) is a prevalent chronic disease that requires comprehensive approaches to manage. Interprofessional teams are effective at providing chronic disease management and care that meets the needs of patients. As part of an ongoing spread, an interprofessional primary care COPD management program was implemented at a family health team in Ontario. A qualitative case study was performed to determine the supporting and hindering factors to the implementation of the program. Data collected was deductively analyzed using the Consolidated Framework for Implementation Research. Eleven constructs were determined to meaningfully affect implementation. Cosmopolitanism, networks and communication, engaging, design quality and packaging, and reflecting and evaluating were identified as the most influential. This study provides a clearer understanding of the factors related to program implementation. These factors will be useful in informing the continued spread of the program as well as the implementation of future chronic care programs.

Keywords

Chronic Obstructive Pulmonary Disease, Implementation Science, Implementation Evaluation, Consolidated Framework for Implementation Research, Case Study, Chronic Disease Management, Primary Healthcare, Interprofessional Teams.

Summary for Lay Audience

Chronic obstructive pulmonary disease (COPD) is a common chronic disease. COPD patient care accounts for a significant portion of Canada's annual healthcare spending. Because of the complexity of the disease, it often requires coordinated approaches to manage. Teams, specifically involving the coordination of multiple fields of healthcare providers, are effective at providing care that meets the needs of patients with COPD. In Ontario, these types of teams are typically referred to as family health teams (FHT). A new model of primary care for COPD management based in FHTs was successful in one Ontario region, resulting in spread and implementation in another region. The objectives of this research were to determine the site-specific factors supporting or impeding implementation of this program in a new setting, while evaluating the implementation strategy used. This study involved the use of interviews, focus groups, and observations with providers at the FHT along with patients receiving care within the program. An analysis of documents relevant to program implementation was also performed. The Consolidated Framework for Implementation Research (CFIR), a framework comprised of different factors proven to affect program implementation was used as an evaluation guide. Data analysis using CFIR assisted in assessing the extent to which each of its factors affected the implementation at this FHT. Data collected revealed that 11 CFIR factors meaningfully affected this program's implementation. Five factors stood out as the most influential including: the FHT's partnerships with other organizations, networks and communication amongst program providers, engaging key individuals to participate in program implementation, the design quality and packaging of the program, and reflecting and evaluating throughout the implementation process. This study provides a clearer understanding of the various factors positively and negatively influencing the implementation of the COPD management program. Our research will be useful in informing the continued spread of the program as well as the implementation of other chronic care programs.

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Chapter 1

1 Introduction

1.1 Chronic Disease Management

The prevalence of chronic disease in Canada has increased dramatically within the last few decades (Davy et al., 2015; Yeoh et al., 2018). As an example, the number of individuals with chronic obstructive pulmonary disease (COPD) has almost doubled since 2000-2001 (Public Health Agency of Canada, 2019). COPD is a debilitating chronic respiratory disease mainly caused by smoking and is responsible for the greatest number of hospital admissions due to chronic illness in Canada (Benady, 2010).

The use of team-based primary care has been explored to manage and combat the rise of chronic illness (Katon et al., 2010). As a method of delivering interprofessional care, the government of Ontario implemented the family health team (FHT), a primary care delivery model consisting of providers from multiple disciplines collaborating on patient care (Ministry of Health and Long-Term Care, 2016). Using FHTs to deliver interprofessional team-based primary care is an effective way to manage chronic disease (Nisbet et al., 2016). Since their implementation in 2005, FHTs have resulted in improved health outcomes and increased access to interprofessional care for patients in Ontario (Nisbet et al., 2016). A popular technique FHTs have been using in practice is patient-centered care. The goal of this type of care is to involve the patient in a decision-making capacity and to consult them on their treatment (Patients First Act, 2016; The People's Healthcare Act, 2019). Although this technique has been increasing in popularity, there remains little discussion about its role in implementation (Fix et al., 2017). Chronic disease management programs have been successful at mitigating the effects of chronic diseases such as diabetes (Stellefson et al., 2013), chronic kidney disease (Armstrong et al., 2016) and others (Bodenheimer et al., 2002). As a result, they have been implemented for use around the world with much success (discussed more in chapter two) (Garland-Baird & Fraser, 2018). Implementing team-based chronic disease

management programs within primary care has shown to improve patient outcomes and compliance with treatment, while reducing user burden on the healthcare system (Yeoh et al., 2018).

1.2 Implementation of Chronic Disease Management Programs

In order to support the success of chronic disease management programs within different contexts, the implementation of said programs must be evaluated (Armstrong et al., 2016). This field of study is referred to as implementation science. Studying program implementation allows researchers to gain a better understanding of the underlying factors that allow a program to be successful in one setting over another (Wensing, 2015). The implementation of a chronic disease management program into a new setting requires a rich understanding of local context. This understanding includes an analysis of various factors and stakeholders at the provider, organization, and system levels (Davy et al., 2015). Using an evidence-based implementation framework during the evaluation process is one way to allow theory to dictate if implementation is successful or not (Nilsen, 2015). Frameworks used for evaluating program implementation, such as the Consolidated Framework for Implementation Research (CFIR) (Damschroder et al., 2009), Theoretical Domains Framework (Cane et al., 2012), and Promoting Action on Research Implementation in health Services (Kitson et al., 1998), all to be discussed more in chapter two, are amalgamations of multiple different implementation theories that consider a myriad of factors affecting implementation (Damschroder et al., 2009). These factors include but are not limited to 1) intervention characteristics, 2) outer setting, 3) inner setting, 4) characteristics of individuals, and 5) process (Keith et al., 2017). Once a framework is used, researchers may gain a better understanding of the ways in which each factor affects program implementation in a new setting. This knowledge can then be used to optimally tailor the implementation of the program into the local context (Kadu & Stolee, 2015).

1.3 Research Purpose and Questions

In Ontario, a team-based COPD management program focusing on patient self-management through education (Ferrone et al., 2019) was spread from the region where it was originally developed and implemented, to a neighbouring region. The new FHT site where the program was implemented was chosen by the program's Founding Organization due to the high prevalence of patients with COPD, with the goal of exploring if the program could be successfully spread. This program was spread using a peer-to-peer implementation approach. The purpose of this research was to evaluate the implementation of the COPD management program at the new region's clinical site.

The current study aimed to answer the following question: What are the facilitators and barriers to the implementation of a chronic care model for chronic obstructive pulmonary disease management? To accomplish this, two research objectives guided this study.

- 1) Determine enabling factors of implementation and spread of an interprofessional team-based model of care, and
- 2) Explore the processes associated with the peer-to-peer approach to implementing a team-based model of care.

1.4 Significance of Research

COPD has become a substantial problem in Canada today, accounting for the majority of hospitalizations and death due to chronic disease (Benady, 2010). The human and economic burden of COPD has been significant, currently affecting over 2 million Canadians (PHAC, 2019). Lessons learned from this research will contribute to the growing body of literature assisting in Canada's move towards team-based chronic disease management. It is my hope that when programs such as the one evaluated in this research are effectively implemented throughout the country, patients will have access to better chronic disease management and education. This will, in turn, allow individuals to self-manage their chronic conditions, leading to a reduction in the burden of COPD in Canada.

Being born and raised in Northern Ontario, I have witnessed the challenges to delivering services that rural healthcare faces, and therefore I am familiar with the various cultural and geographical barriers associated with the implementation of programs into these settings. Northern Ontario's limited resources combined with its geographically low population density makes healthcare difficult to deliver at the right time, at the right place, to those who need it. This research was significant to me because it involved working with local healthcare organizations to understand what factors facilitate implementation in their specific setting. From my understanding, this is not often done in Northern Ontario, leading to the failed implementation of programs because they do not align with the culture of local communities. I believe that if more studies can conduct implementation evaluation, then, over time, we may be able to understand which factors facilitate the spread of these types of chronic disease management programs to underserved populations such as those in Northern Ontario.

1.5 Structure of Thesis

This chapter provided a brief introduction to the topics this thesis is based on; chronic disease management and program implementation. Chapter two will provide more depth into those two topics by describing the impact of COPD, how teams have been used to effectively manage it in patients, exploring chronic disease management models and their effectiveness, and examining implementation frameworks, the factors affecting the implementation of chronic disease management models, and the peer-to-peer implementation process. Chapter three will provide a breakdown of the methodology and methods used to conduct my research. In Chapter four, I present its findings organized using CFIR. Chapter five will provide a discussion of the findings, the study's limitations, and add an element of reflexivity. Chapter six will conclude my thesis by discussing the implications of my research and providing a summary.

Chapter 2

2 Literature Review

The purpose of this chapter is to present the literature surrounding the research question “What are the facilitators and barriers to the implementation of a chronic care model for chronic obstructive pulmonary disease management?”. This chapter will examine sources of literature using a variety of databases, find gaps, and give the contextual background for this study. Part one will explain the background and impact of COPD as well as the use and benefit of primary care models tailored for use in chronic care. Part two will describe the field of implementation science and the implementation of chronic disease management models in primary healthcare settings.

2.1 Chronic Care

2.1.1 Primary Care in Ontario

In Ontario, primary care is delivered by several different approaches or models. This includes but is not limited to solo practitioners, community health centres, and nurse practitioner led clinics (Marchildon & Hutchinson, 2016). In 2005, the Ministry of Health and Long-Term Care in Ontario shifted patients and providers to more interprofessional team-based care models called FHTs (Ontario Medical Association, 2015). These are teams comprised of multiple healthcare providers including, (but not limited to) physicians, nurse practitioners, social workers, respiratory therapists (RT), educators, and others. FHTs have been implemented in five separate waves throughout Ontario, with the latest wave in 2011/2012, bringing the total up to 184 (MOHLTC, 2016).

Team-based care has a wide range of applications. It allows providers with experience from various disciplines to work collaboratively to treat patients. As such, it has been targeted as a new popular model of care by the government of Ontario, especially in supporting chronic disease management (Nisbet et al., 2016). A review of the literature by Gocan et al. (2014) argues that although the transition into interprofessional care has

been challenging, the outcomes of implementing FHTs have “generated improvements to healthcare access and outcomes” (p. 1). In Gocan et al. (2014)’s review of eight studies evaluating FHTs, all reported an increase in access to care for patients. Providers were able to collaborate with patients and focus on care instead of worrying about professional boundaries and convenience. This increased collaboration resulted in better clinical outcomes for patients in health promoting behaviours as well as caring for and managing chronic disease (Doran & O’Brien-Pallas, 2009; Kates et al., 2011; Mulvale et al., 2008; Stalker, 2010).

2.1.2 Chronic Obstructive Pulmonary Disease

Chronic diseases take a significant toll on individuals, with 44% of Canadians 20 years and over having at least one of 10 major chronic conditions (PHAC, 2019) and 10% of Canadians 35 years and older being diagnosed with COPD (Government of Canada, 2018). This accounts for almost one quarter of hospital admissions at a cost between \$650 to \$700 million per year (Canadian Foundation for Healthcare Improvement, 2015). Due to the physical burdens of living with chronic conditions, patients are less likely to be able to access appropriate resources when needed (CFHI, 2015).

COPD is a chronic lung disease that is increasing in prevalence around the world. It is mainly caused by smoking, genetic predisposition (an Alpha-1 Antitrypsin deficiency), second-hand smoke, and exposure to air pollution (Lung Health Foundation, 2019). COPD is a blanket term for chronic bronchitis, emphysema, and other related respiratory conditions that partially block the lungs, causing difficulty breathing (The Lung Association, 2019). Although COPD cannot be cured, it can be managed through education, smoking cessation, medication, and supplemental oxygen (The Lung Association, 2019). COPD is currently responsible for a large portion of disease and deaths in Canada with a national estimate of 4% among the population (Evans et al., 2014). Patients with COPD often have additional disability due to frailty and struggle with managing their disease, leading to a higher rate of rehospitalization than any other chronic condition (Benady, 2010).

2.1.3 Interprofessional Team-based Models used for Chronic Disease Management

Canada may not be doing the best job it can when organizing care for the chronically ill. The healthcare system is fragmented and reactive (CFHI, 2015) instead of taking the initiative to be proactive. However, we have made significant strides in delaying death from chronic disease by improving healthcare through knowledge translation and integration of healthcare services (Omran, 2005). When caring for patients who have chronic diseases, a notable importance has been placed on interprofessional team-based approaches involving providers from different healthcare fields (Nisbet et al., 2016). Interprofessional care services have been shown to provide significant benefit to patients dealing with chronic conditions (Katon et al., 2010).

Some benefits that team-based models offer to providers and patients are sharing patient data using electronic medical records (EMR), sharing of specialist services without referral, and increased access to primary care for patients (Rosser et al., 2011). Sharing patient data between different providers allows for continuity of care, bridging the fragmented care gap. For patients with chronic illnesses who often struggle to navigate our fragmented health system due to morbidity, team-based care can be an attractive alternative to going to the emergency department for an acute exacerbation (Rosser et al., 2011).

Team-based chronic care models are often successfully used in the management of diabetes in patients (Stellefson et al., 2013). In a systematic review published by Stellefson et al. (2013), diabetes management interventions in team-based care using chronic care models were evaluated. This review included 16 studies and found that team-based chronic care interventions are effective at managing diabetes in patients. One area, however, where there is not a lot of literature involving the use of chronic care models is in primary care for patients with COPD (Clini et al., 2017). The study by Clini and colleagues argues that patients with COPD are prime candidates to be the recipients of a team-based program which uses chronic care specific interventions. They mention

that due to the burden of self-managing the disease, using a team-based approach would significantly help patients with COPD (Kaptein et al., 2014). In the past, using education in combination with self-management techniques has been effective (Bourbeau et al., 2003; Siebeling et al., 2009). We must remember that each chronic illness is unique and requires specialized care for treatment and prevention. However due to the high success of these models in illnesses such as diabetes, it can be assumed that patients with COPD would benefit strongly from it as well; a point Clini et al. (2017) make in their paper.

Healthcare models treating chronic illness using a collaborative approach are a very effective option in primary care. They use a patient-centered approach to care, involving the patient as part of the healthcare team. Woltmann et al. (2012) reported that patients with various chronic illnesses have improved outcome measures in quality of life and emergency department readmission as a result.

2.1.4 Patient-Centered Care

When providing healthcare as part of an interprofessional team, it has become more common practice over the last decade to include patients in the decision-making process (Abelson et al., 2015; Constand et al., 2014). Patient-centered care has become increasingly important within the healthcare context, being described by many as a preferred approach to caring for patients (Bertakis & Azari, 2011). Since the Patient's First Act (2016) and The People's Healthcare Act (2019), healthcare organizations have been under pressure to deliver patient-centered care (Patients First Act, 2016; The People's Healthcare Act, 2019). Involving patients in the healthcare decision-making process is an effective way to accomplish this (Snyder and Engström, 2016). Involving patients in the decision-making process is a broad statement that can be interpreted in many different ways, including involving them in their own care, involving them in organizational decisions, and consulting them in policy decisions that affect healthcare (Vahdat et al., 2014). Although some providers see involving patients as a waste of time and resources, understanding healthcare from a patient's perspective has value (Baker et al., 2016). When patients are a part of the team and involved in decision-making around

their care, we see improved outcomes from treatment, better communication between patients and providers, better treatment adherence and recovery, and higher patient satisfaction, all leading to improved health outcomes (Schottenfeld et al., 2016).

Although healthcare organizations are mandated to increase instances of patient-centered care since the introduction of the Patient's First Act (2016) and The People's Healthcare Act (2019), there remains very little information on its role in implementation practices (Fix et al., 2017). While there are articles that exist such as Beres et al. (2019) and Lutz and Bowers (2000) which discuss techniques that improve the implementation of patient-centered care, there is less information surrounding patient-centered care as a factor during implementation. Fix et al. (2017) suggested that a reason for this is providers often do not know how to conceptualize the programs that they are implementing. In section 2.2.2 I will mention how different determinant implementation frameworks often do not consider the patient as part of the implementation process. Models such as CFIR describe the patient as a need for implementation to occur but do little to account for their active role in the process.

2.1.5 “The” Chronic Care Model

In the early 1990s Edward H. Wagner and colleagues realized that change in four categories of practice lead to a significant change in health outcomes for patients with chronic illness. They used these categories to form the building blocks of the chronic care model (Coleman et al., 2009). The chronic care model's focus is to use a proactive approach to chronic illness and emphasize prevention and management instead of only treatment (Wagner et al., 2001). The model provides a good framework to build chronic care approaches around and is widely applicable in different healthcare contexts for many different diseases (Wagner et al., 2001). Wagner believed that because most of the care being delivered to patients with chronic illnesses was by primary care providers, that they were the ones who could best use their time to focus on prevention (Bodenheimer et al., 2002).

The model that Wagner and colleagues originally created was based on six elements. In 2003, the growing body of research called for an expansion of the chronic care model, and five additional elements were added (Bodenheimer et al., 2002, Part 2; Garland-Baird & Fraser, 2018; MacColl Center for Health Care Innovation, 2003). The anticipated outcomes in releasing five more elements for the model was to help adapt it to the direction of evolving healthcare. Themes such as cultural competency and care coordination have become very popular in research and practice. With these advancements, healthcare organizations were able to use the chronic care model as a base to improve their care and prepare themselves to include things such as cultural competency into their service (Schim et al., 2005).

2.1.6 Chronic Disease Management

Chronic disease management models looked at primary care providers as the optimal agents to deliver proactive chronic care (Bodenheimer et al., 2002). Using primary care resources to manage chronic diseases has become a successful part of care since its inception. They have become a standard for chronic disease care around the world. Garland-Baird and Fraser (2018) report that many different organizations have attempted to implement programs based on chronic disease management. Some have seen success, while some have failed to implement on a permanent basis. In 2009, worldwide, chronic disease models were used successfully in over 1500 physician practices (Coleman et al., 2009).

Chronic disease management has been used in primary care clinics treating chronic kidney disease (Armstrong et al., 2016; Llewellyn, 2019), cardiometabolic risk factors (Beauregard et al., 2018), HIV (Pasricha et al., 2012), depression (Holm & Severinsson, 2012), and largely diabetes (Bodenheimer et al., 2002; Frei et al., 2014; Siminerio et al., 2009; Stellefson et al., 2013; Stock et al., 2014). Beyond these diseases, it has been used to treat a wide spectrum of patients such as pediatric (Adams & Wisk, 2017), youth and adolescent (Adams & Woods, 2016), and home care (Garland-Baird & Fraser, 2018; Suter et al., 2011).

2.1.7 Effectiveness of Chronic Disease Management Models

Systematic reviews have examined the effectiveness of chronic disease models in different contexts. Bodenheimer et al. (2002) reported several evaluations that ruled these programs a success, however, many of these studies were performed poorly containing weak research methods. In order to fill this gap, they conducted their own systematic review of diabetes care programs that used chronic disease management to change practices. In 32 of the 39 studies, the program had components aligned with chronic disease models and saw improved outcomes.

Coleman et al. (2009) reviewed evaluations of chronic disease interventions published between 2000 and 2008 and found that patients who participated in interventions that used chronic disease management received improved care, visited the emergency department less, and had improved quality of life compared to those that did not. No negative effects were reported within the studies. A study by Homer et al. (2005) reported no difference in patients who received care from chronic disease management interventions. However, this study had a low-participation rate, short follow-up times, and potential contamination between intervention and control practices, all possibly contributing to the nonsignificant results.

Stellefson et al. (2013) sought to understand whether chronic disease management was a viable option for diabetes care. Although chronic disease management has had success worldwide, this particular systematic review narrowed its scope to primary care settings in the United States. One critique that the authors had about chronic disease management was that the studies did not accurately represent diverse patient needs in populations with diabetes. On the other hand, the review did conclude that interventions in the United States which used chronic disease management as their base were generally effective at managing the diabetes of their patients.

Davy et al. (2015) amalgamated information on international use of chronic disease management and its effectiveness at improving the outcomes of patients. This was a

large-scale paper, including 77 studies, where all but two showed significant improvement in patients who were involved in these programs. Similar to Bodenheimer et al. (2002), they could not pinpoint the combination of elements that worked most effectively in improving health outcomes with chronic care models. As long as at least one was present, the effects were noticeable.

Yeoh et al. (2018) conducted a systematic review in an attempt to understand the benefits and limitations of implementing chronic disease management in primary care programs used to manage cardiovascular disease. Like other studies, this one also reported improved outcomes, patient compliance with treatment, and reduced burden on the healthcare system as a result of fewer visits to the emergency department. The review showed that interventions using chronic disease management are effective at reducing risk of heart failure and other cardiovascular diseases. This follows suit with other systematic reviews, which showed improved patient results (Coleman et al., 2009; Davy et al., 2015). Lastly, Yeoh et al. (2018) discussed how the current context of primary healthcare needs improvements, including higher collaboration between providers and increased financial support for programs that manage chronic illness to function more optimally and spread efficiently.

2.2 Implementation

2.2.1 Implementation Science

When implementing an intervention that is successful in one context, it is a common assumption of implementers that they can simply copy and paste their model from that context into another and have it remain successful. In reality, a program that is very successful in one context may not take in another (Armstrong et al., 2016). This is why individuals use implementation science and theory to help guide their implementation proceedings. “Implementation science is the scientific study of methods used to promote the uptake of research findings in routine healthcare, clinical, organizational, or policy contexts” (Wensing, 2015, p. 98).

Once available, evidence-based practice does not automatically get used by providers, it takes a very specifically targeted effort to do so. On average, it takes 17 years for interventions to transition from research to practice (Bauer et al., 2015). Without these efforts, filling the know-do gap between research and practice would take even longer (Boaz et al., 2011). Implementation science as a form of knowledge translation expands beyond the field of clinical research and into the provider, patient, and organizational levels. Implementation science takes new evidence-based practice and attempts to implement them to fill identifiable gaps (Bauer et al., 2015). Reports show that because implementation science is focused in a practice or policy specific context, it is concerned with the users of the information, and not only the production of information (Peters et al., 2013). Another goal of implementation science is to create generalizable findings for other similar contexts (Boaz et al., 2011).

Considering specific contexts and using theory when deciding whether to implement or not is important because each setting varies depending on the people, resources, and community involved (Peters et al., 2013). If we have a better understanding of how local context informs how a program runs, then we can better prepare for implementation (Armstrong et al., 2016). In order to do this, we need to engage with stakeholders and tailor the intervention to their recommendations and experience (Pearson et al., 2005). Overall, implementation science is meant to understand how to embed a new practice or program in an established setting. This shows how important a consideration of context is when implementing programs.

2.2.2 Determinant Implementation Frameworks

Nilsen (2015) defines a theory as “a set of analytical principles or statements designed to structure our observation, understanding, and explanation of the world” (p. 2). Theory works with determinant frameworks help to guide implementation research by allowing researchers to see why an implementation effort is successful or not. Determinant implementation frameworks are frameworks that “have a descriptive purpose by pointing to factors believed or found to influence implementation outcomes” (Nilsen &

Bernhardsson, 2019, p. 2). Frameworks have constructs, which Nilsen (2015) describes as factors that have an effect on implementation outcomes. Each construct can have many determinants characterizing implementation. Data collected from an implementation effort can be placed into constructs in a determinant framework. This helps researchers organize and make sense of data. When this is done, we gain knowledge about the factors that allow implementation efforts to succeed or fail (Nilsen, 2015).

There exist many different effective frameworks used to evaluate implementation. Three commonly used are in health services research are:

1. Promoting Action on Research Implementation in Health Services (PARIHS),
2. The Theoretical Domains Framework,
3. and The Consolidated Framework for Implementation Research.

Promoting Action on Research Implementation in Health Services

PARIHS was created in 1998 by Kitson et al. (1998) with edits by Rycroft-Malone (2004) and was based on the observation that healthcare research was implemented successfully when three key determinants were considered: evidence, context, and facilitation (Nilsen, 2015). It is used as a framework in health services research for knowledge translation and to implement evidence into practice. The main themes that PARIHS encompasses in its framework are implementation as an organizational issue, evidence being implemented must be robust, strategies for implementing the evidence must be carefully considered in the context of the setting, and agreement of evaluation criteria before implementation occurs (Kitson et al., 1998).

The formula $SI = f(E, C, F)$ is used to represent this framework, where SI = successful implementation, f = function of, E = evidence, C = context, and F = facilitation. Each factor in the formula has a variety of sub-elements which can be rated. The higher the rating of these sub-elements, the more likely successful implementation is to occur (Kitson et al., 1998).

PARIHS is flexible and applicable to a variety of contexts with good content validity, making it a useful tool to integrate into many studies (Rycroft-Malone & Bucknall, 2010). Although evidence, context, and facilitation are important, one critique of the framework is that it does not specifically have a spot for the individual provider. Some say that the provider is included within the facilitation factor, however these three factors are broad, and the role of the individual is not explicitly stated (Rycroft-Malone & Bucknall, 2010). In her book *Models and Frameworks for Implementing Evidence Based Practice*, Rycroft-Malone, one of the creators of the modern PARIHS framework, mentions that due to process-oriented and contextually dependent nature of using evidence into practice, these questions may not even be answerable. Since mentioning these concerns, Rycroft-Malone has begun research on the role of the individual within the framework, however until this is addressed fully it leaves the question whether the framework is comprehensive enough to be useful to researchers and implementers.

Theoretical Domains Framework

The theoretical domains framework is a combination of 128 constructs originating from 33 theories used in the field of behaviour change and social cognition (Cane et al., 2012). In the designing of this framework, these constructs were put into 14 different domains, however it does not explicitly describe causal relations between constructs from their original theories and therefore shares many constructs with other frameworks (Nilsen, 2015). The theoretical domains framework was originally developed to determine what factors influenced health professional behaviour in health services implementation efforts. However, since then, the framework has been applied beyond the scope of implementation research. It can also be used to identify patient's influences for health promoting behaviours, systematic intervention design used with providers to improve practice, process evaluations to better understand evidence related to implementation, and guidance for identifying behaviour change techniques (Atkins et al., 2017).

When considering the use of the theoretical domains framework, literature draws one main concern: that within the 14 domains, there are very few considerations about the

context that an individual is attempting to embed an intervention in. When using the theoretical domains framework, the focus is mostly on the actor and their behaviour (Francis et al., 2012). Only the domains of environmental context and resources and social influences consider factors beyond the individual and their social networks (Atkins et al., 2017). Francis et al. (2012) discussed how in this way, the framework does an excellent job at using an individual's behaviour to predict implementation in healthcare settings, however it may be too restricting when data collection tools such as interview guides are developed, focusing too much on the individual.

The Consolidated Framework for Implementation Research

CFIR is a meta-theoretical framework (Kirk et al., 2016) created in 2009 for the purpose of evaluating the implementation efforts or plans of programs (Keith et al., 2017). Table 2.1 presents the framework's five different categories which have been shown to affect implementation, along with their definitions.

Table 2.1: CFIR Categories and Definitions

<u>CFIR Category</u>	<u>Definition</u>
Intervention Characteristics	The features of an intervention that might influence implementation. Eight constructs are included in intervention characteristics
Outer Setting	The features of the external context or environment that might influence implementation. Four constructs are included in outer setting
Inner Setting	The features of the implementing organization that might influence implementation. Twelve constructs are included in inner setting
Characteristics of Individuals	Characteristics of individuals who are involved in implementation that might influence the implementation. Five constructs are related to this category

Process	Strategies or tactics that might influence implementation. Eight constructs are related to implementation process
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(Keith et al., 2017)

These broad categories are broken down into 26 constructs and 13 sub-constructs, all containing a description about the factors that fall under them. See Appendix A for the full CFIR. In order to create these constructs, 19 different sources and theories focusing on implementation were used (Kirk et al., 2016). Most of these 19 separately published implementation theories were useful in their own regard, but none of them were exhaustive and many overlapped using different terminology (Breimaier et al., 2015). CFIR is meant to provide a comprehensive standard for implementation evaluation, using common language that can be applied to many different contexts or phases of implementation (Kirk et al., 2016). Although CFIR was developed to be used in many different implementation settings, it has a strong tie to health services research. The researchers who developed it were involved in Veterans Affairs Diabetes Quality Enhancement, and since its creation, has been used in many other chronic disease and health service research efforts (Damschroder et al., 2009; Damschroder & Lowery, 2013; Kirk et al., 2016; Sopcak et al., 2016).

Kirk et al. (2016) conducted a systematic review which aggregated instances of the meaningful use of CFIR. Their search was limited to studies published in English, therefore potentially excluding international usage of the framework. Still, they managed to find 429 articles that cited the use of CFIR. The search results were narrowed down to 26 empirical studies that used the framework in a meaningful way. They discussed how CFIR was applicable to use in a variety of different implementation stages and interventions. They stated that CFIR's main use in studies was as a data analysis tool and that it was not being used to its full potential. Kirk et al. (2016) recommended that it be used in other stages of research, as soon as research question development. Overall, the number of times CFIR has been used in a meaningful way is limited, but Kirk et al.

(2016) explained that this is understandable given the amount of time it takes to truly use the model and publish findings. Lastly, they reported that the development of CFIR has made an advancement in the field of implementation science.

2.2.3 Facilitators and Barriers to Implementation

When discussing the implementation of evidence-based interventions, Bach-Mortensen et al. (2018) defined facilitators as “the factors that enable the implementation of evidence-based interventions” (p. 3). When defining facilitators, Bach-Mortensen et al. (2018) are not specifically referring to healthcare organizations as the implementing organizations, however the definition of a facilitator is broad and applicable to the context of this thesis study. Therefore, this definition will be used to represent a facilitator to implementation.

Bach-Mortensen et al. (2018) defined barriers as “any factors that obstruct the capacity... to implement evidence-based interventions” (p. 3). Similarly, in their article, Bach-Mortensen et al. (2018) are not referring specifically to healthcare organizations as the implementing organizations. The definition of a barrier is also broad and remains applicable to the context of this study. Therefore, this definition will be used to represent a barrier to implementation.

2.2.4 Implementing Chronic Disease Management Models

There are different factors to consider when implementing a chronic disease management model in a new setting. Because these models are complex interventions, we must carefully plan and consider factors at the levels of the provider, organization, and system (Davy et al., 2015). In order to capture which specific factors affect the implementation of chronic disease management-based healthcare programs, two systematic reviews have been completed.

Davy et al. (2015) examined studies between 1998 and 2013 which evaluated the implementation of chronic disease models. The outcome was a list of synthesized findings shown below (Table 2.3). This list compiled outcomes that were common to many different situations and proven to influence implementation. The findings of

acceptability and support for patients showed that if providers believed that the intervention would have a positive impact on patients, they would be more likely to accept it and would lead to increased job satisfaction (Davy et al., 2015). Davy et al. (2015) also discussed how healthcare providers were more likely to accept the intervention if they were given sufficient information ahead of time as well as resources to ensure sustainability. Preparation was facilitated by giving the providers information (a reason to change), resources (trained staff and adequate time to prepare), and a driven leader that would act as a champion to the implementation effort. Resources for implementation and sustainability were important because the providers were more likely to buy-in if they knew that the program was going to have longevity in their organization (Davy et al., 2015).

Davy et al. (2015) also consider the importance of context and patient and provider factors. Their systematic review was methodologically sound and conducted properly. This was determined through an examination using Tracy (2010)'s *Eight "Big Tent" Criteria for Excellent Qualitative Research* as a guide. One area I believe that they could have improved on however was to use a framework to categorize their findings. Using inductive coding, they were able to identify facilitators and barriers, however when the results are compared with another systematic review, it may be difficult to replicate or add on to these findings due to the possible inconsistency of themes.

The systematic review performed by Kadu & Stolee (2015) took a more specific approach, looking at facilitators and barriers of implementing chronic care management models in primary care settings. Kadu and Stolee's review used a framework, CFIR, to organize the data within the articles it reviewed, and presented their findings using the framework's constructs. The results of this study found that facilitators include: networks and communication (regular group meetings), culture (promoting patient-centered care), implementation climate (realizing change is needed/wanted), structural characteristics (operating within scope of practice), engaging leadership, and knowledge and beliefs about the intervention (belief that the intervention was effective and necessary). Barriers

were identified as executing (additional responsibilities left individuals struggling to deliver care), structural characteristics (high staff turnover rate), readiness for implementation (lack of interest by individuals), engaging (no leadership support), and knowledge and beliefs about the intervention (belief that the intervention is unnecessary). In their discussion, Kadu and Stolee (2015) argued that each implementing healthcare organization has a very unique context and as such, it is difficult to implement without considering multiple factors. These factors range from the individual to the greater systemic and political external factors that affect healthcare (Kadu & Stolee, 2015).

Due to the fact that this study used a specified deductive framework to organize their findings, it is easier to compare with other studies that do the same. Having specific categories to compare results against will be important when seeing if the implementation evaluated in this thesis project had similar factors to the systematic reviews. Table 2.2 lists the relevant CFIR constructs from Kadu and Stolee (2015)'s analysis which used CFIR. Table 2.3 was developed by comparing the inductive findings of Davy et al. (2015)'s study to CFIR constructs.

Table 2.2: Kadu and Stolee (2015) CFIR Constructs

<u>Kadu and Stolee (2015) Finding*</u>	<u>Example: 1. Facilitator, 2. Barrier</u>
Networks and Communication	1. Strong networks and communication were fostered through collaborative practice between providers (ex. group meetings to discuss implementation concerns)
Culture	1. Organizational culture that promotes collaborative and patient-centered care
Implementation Climate	1. Influenced by commitment and recognition of the need for change in the organization
Structural Characteristics	1. Operations required providers to expand their scopes of practice, requiring the changing of policies and care teams to meet implementation goals

	2. Characteristics such as low flexibility in reorganizing care and high staff turnover meant increase burden of responsibilities
Engaging	1. Strong, committed, and engaged leadership in the form of supportive administration and a supervisor with clear goals 2. Low support and accountability from senior leadership
Knowledge and Beliefs about the Intervention	1. Belief fostered about the effectiveness of the intervention, and benefit to patients 2. Misconceptions about the effectiveness of the intervention
Executing	2. Additional responsibilities for staff created time constraints
Readiness for Implementation	2. Impacted by lack of organizational interest from leaders and unavailability of resources

* In their study, Kadu and Stolee (2015) used CFIR to code their findings

Table 2.3: Davy et al. (2015) CFIR Comparison

<u>Davy et al. (2015)</u> <u>Synthesized Finding</u>	<u>Example: 1. Facilitator, 2. Barrier</u>	<u>Comparable</u> <u>CFIR Construct</u>
#1 Acceptability of Chronic Care Model	1. Considered acceptable from the point of view of healthcare providers and patients (satisfaction) 2. Considered intrusive and disruptive by providers and ineffective by patients	Knowledge and Beliefs about the Intervention
#2 Preparing Healthcare Providers for a Chronic Care Model <i>A) Information about the change</i>	1. Clearly articulated concepts and examples about how the implementation was expected to occur 2. Implementation is performed without any preparation	Complexity
<i>B) A reason to change</i>	1. Well thought out and articulated argument for change with clearly defined benefits to prepare healthcare providers	Patient Needs and Resources

	2. Unclear goals or outcomes for the intervention with an uncoordinated approach	
<i>C) Appropriately qualified and experienced chronic care staff</i>	<p>1. Skills and experiences relevant to chronic care, physicians essential in advising and supporting other healthcare providers</p> <p>2. Unsuitable or insufficient staffing (ex. lack of nurses dedicated to chronic care) and high staff turnover</p>	Self-Efficacy
<i>D) Leaders and champions for success</i>	<p>1. Need for supportive leadership who are committed to the implementation and sustainability of the new model</p> <p>2. Leaders who are not willing to participate or support in the implementation of the program</p>	Engaging
<p>#3 Supporting Patients</p> <p><i>A) Patients are supported and encouraged to engage with care</i></p>	<p>1. Patients need to be supported to fully engage with their healthcare by taking some responsibility for their own care, called self-management support</p> <p>2. Some patients are not ready or able to take a greater role in their healthcare</p>	n/a
<i>B) Acknowledging patient differences</i>	<p>1. Personalizing care to patient values, culture, and needs</p> <p>2. Care that is rigidly applied to all patients with no regard for individualism</p>	Adaptability
<p>#4 Resources for Implementation and Sustainability</p> <p><i>A) Time needed to implement and sustain chronic care models</i></p>	<p>1. Time and effort needed to implement the intervention and maintaining realistic expectations regarding time required to implement</p> <p>2. Attempting to make too many simultaneous changes too quickly can lead to discouraged staff</p>	Readiness for Implementation – Available Resources

<i>B) Information and communication</i>	<ol style="list-style-type: none"> 1. Systems in place to enhance communication about implementation and patients 2. Systems inappropriately designed or do not exist 	Networks and Communication
<i>C) Sufficient funding</i>	<ol style="list-style-type: none"> 1. Enough funding is necessary to keep an intervention sustainable 2. Funding does not exist to support the sustainability of the intervention 	Cost
<i>D) Collaboration with other healthcare services</i>	<ol style="list-style-type: none"> 1. Partnering with other healthcare services such as hospitals and specialist services 2. Organization takes on too wide of a scope of practice and is overwhelmed 	Cosmopolitanism
<i>E) Monitoring and evaluating</i>	<ol style="list-style-type: none"> 1. Systems for monitoring progress and providing actionable feedback are necessary to gather useful data 2. No system in place or perception is that the system adds no value 	Reflecting and Evaluating

Within these two systematic reviews, only three articles discuss the implementation evaluation of COPD management programs (Lemmens et al., 2009; Meulepas et al., 2007; Wellingham et al., 2003). These three articles evaluate the implementation of programs international to the Canadian context. My study is unique and attempted to fill this gap in literature by understanding the facilitators and barriers of implementing a chronic disease management intervention for COPD in an interprofessional primary care context in Canada using FHTs. Additionally, my study examines a peer-to-peer approach to implementation, which these two systematic reviews do not discuss.

2.2.5 Peer to Peer Implementation

An objective of this thesis is to explore the processes associated with the use of a peer-to-peer approach to implementation. The peer-to-peer approach was the method used to implement the COPD management program into the FHT examined in this study.

Through searching the literature, no one clear definition or name for peer-to-peer implementation exists. In general terms, peer-to-peer involves using peer-led education and peer assessment as a method of learning (Aimola et al., 2016; Pronovost & Hudson, 2012; Walpola et al., 2018). The studies listed above mainly show peer-to-peer approaches used in safety and quality improvement interventions. Other studies have shown it used in professional-led implementation involving peers in the healthcare setting (Kim & Free, 2008). This involved healthcare providers educating students, who then pass this knowledge on to their peers and other medical trainees. Kim and Free (2008) mentioned that the peers which are educated through peer-to-peer approaches involve those who are of a similar age or status groups. Many of the definitions found in the literature surrounding what a peer is are similar to this view (Eltringham et al., 2014; Reidlinger et al., 2017; Swarbrick et al., 2016). Results assembled from studies evaluating peer-to-peer learning and implementation found that although more research needs to be conducted on this form of implementation, initial findings support that if done properly it can be reliable (Aimola et al., 2016; Bennett et al., 2015; Pronovost & Hudson, 2012; Walpola et al., 2018) and can facilitate improved clinical education (Roberts, 2009).

2.3 Summary

The purpose of this chapter was to provide background on the topics relevant to this research study. Part one explained the prevalence and impact of chronic conditions, specifically COPD and how a shift to interprofessional team-based care has been shown to improve outcome measures for patients with chronic conditions. The primary care context in Ontario was outlined, and the creation of FHTs along with the benefits of their use was discussed. An abundance of literature outlining the efficacy of chronic disease management and its application in various environments was shown. Models focusing on chronic care are an important step in treating chronic illness in Canada.

Part two explored implementation science and its use in practices of knowledge translation. PARIHS, the theoretical domains framework and CFIR as evaluation tools

for this study were evaluated. There were many studies showing that CFIR is comprehensive and useful in primary care contexts. Facilitators and barriers to implementation were defined. Factors affecting the implementation of chronic care models in primary care were summarized using two systematic reviews. They showed many facilitators and barriers which should be considered when deciding to implement a chronic disease model in a primary healthcare setting. Lastly, peer-to-peer implementation was explained.

In the next chapter, I will be discussing Stake (1995) case-study methodology, which I used to inform the creation and execution of my study. I will outline in detail the rationale behind this important choice. CFIR and the role of incorporating descriptive theory into the study will be explained. Additionally, I will describe the participant selection, data collection, and data analysis processes I used and provide justification for each. The chapter will conclude with a discussion about the ethical implications of my study.

Chapter 3

3 Methodology and Methods

This chapter explains the methodology and accompanying methods chosen to facilitate my research. The purpose of this project is to answer the research question: what are the facilitators and barriers to the implementation of a chronic care model for chronic obstructive pulmonary disease management? The chapter will begin with a description and rationale behind the selection of qualitative case study using Stake (1995) methodology. After this, the importance of incorporating descriptive theory into case study using CFIR is discussed, along with participant selection and recruitment methods. The processes and rationale behind the data collection methods chosen such as focus groups, interviews, observation, and document analysis are explained, as well as the techniques used to analyze the data collected. To conclude this chapter, the ethical concerns surrounding this study will be discussed along with methods used to maintain rigour and quality.

3.1 Methodology

3.1.1 Choosing a Qualitative Methodology

This study used a qualitative methodology in order to achieve its objectives, which are to:

1. Determine enabling factors of implementation and spread of an interprofessional team-based model of care.
2. Explore the processes associated with the peer-to-peer approach to implementing a team-based model of care.

When selecting a qualitative methodology, it was important to consider many commonly used options including phenomenology, grounded theory, ethnography, (Holloway & Todres, 2003), narrative inquiry (Smythe & Murray, 2000), and case study (Merriam, 1998; Stake, 1995; Yin, 2002). Phenomenology is used to describe the experiences of participants in regard to certain phenomena (Holloway & Todres, 2003). Although

participant experiences during the implementation of the program are useful in gathering data, the goal of this research was not to describe the phenomenon of implementation. Grounded theory is used when a researcher wants to develop a theory about a given process or event that has occurred (Holloway & Todres, 2003). It was also determined that this approach did not fit with the goals of the research. The use of ethnography has evolved to be applicable in a variety of situations, however the main goal of this type of research methodology is to capture the culture of a group (Holloway & Todres, 2003). Although culture plays a role in implementation (Damschroder et al., 2009), it was not the primary focus of the research and thus was not selected. Narrative inquiry uses in-depth interviewing to gather story data from participants. This story data is used to understand how participant's lived experiences affect their life in relation to the research goal (Smyth & Murray, 2000). This study was not focused on gathering stories from participants, but rather, on identifying factors related to implementation. Therefore, it was decided that narrative inquiry was not appropriate in this case.

Case study methodology allows a deep understanding of a single selected entity or case. It has also begun to be selected for use more frequently in health science research (Abma & Stake, 2014). Cases are often programs (Yazan, 2015), corporations, clinics or people (Abma & Stake, 2014). This case exists within certain boundaries and can be studied in various different ways depending on the researcher's ontological and epistemological points of view. Case study methodology was seen as the most appropriate qualitative methodology to use in this study because the goal was to examine the implementation in its specific context, not divorced from it, and case study allows us to do this. Additionally, case study was appropriate due to the uniqueness of the FHT where the COPD management program is being implemented. The structure of a FHT, with its providers, patients, and designated geographical area made it an optimal candidate for case study research.

3.1.2 Types of Case Study

There have been three main authors who have contributed to the field of case study research: Merriam (1998), Stake (1995), and Yin (2002), each aligning themselves with a different ontological viewpoint as well as expectations about what a case is and how case study should be conducted. Due to the variation in technique, no one agreed upon way of designing and executing this methodology has been decided upon (Yazan, 2015). Yin takes a post-positivist view on case study describing the researcher's duty to minimize their disruption of the case and to capture it in its natural form by using propositions and removing themselves from the construction of knowledge (Yin, 2012). Stake and Merriam oppose this by aligning themselves with a more constructivist view of case study research (Yazan, 2015). Stake shares his epistemological views very clearly and advocates for the researcher's active involvement in the case. He believes that it is within the researcher's interactions with the participants that knowledge is constructed (Stake, 1995). Merriam agrees with Stake, stating that there are multiple different interpretations of reality that are formed when the researcher is involved (Merriam, 1998).

As a researcher conducting a case study, I align myself ontologically with the constructivist point of view. When approaching a unique case such as this, I believe that there are a variety of factors which may influence not only the way the program is implemented, but the way that it is perceived by those involved. Following this, I see multiple different realities formed by each individual who is affected by the program based on their background and expectations (Denzin & Lincoln, 1994). For my study, taking a constructivist point of view was meant to understand those different realities of implementation as they were constructed along with myself, the researcher. It is for these reasons that I selected Stake (1995)'s interpretation of case study theory and methodology.

3.1.3 The Stake Method

Robert E. Stake advocates for a disciplined qualitative approach to case study research. (Stake, 1995; Yazan, 2015), This study will be using a strictly qualitative approach,

including focus groups, interviews, document analysis, observational field notes, and member checking.

There are three different types of studies that Stake describes: intrinsic, instrumental, and collective. Intrinsic case study occurs when the researcher has intrinsic interest in a case and studies it for personal interest. Instrumental case study occurs when the researcher has a question and a need for study that goes beyond simply understanding it. Lastly, collective case study is used when multiple cases are essential in answering the research question (Stake, 1995). For this research we conducted an instrumental case study. The goal of this study was not to simply understand the implementation, but to evaluate and provide recommendations for the FHT it is being implemented at, and for future FHTs considering the model. This additional knowledge translation approach allowed a step beyond understanding and into action.

Lastly, Stake gives insight into data validation, discussing four different methods: data source triangulation, investigator triangulation, theory triangulation, and methodological triangulation. This study took steps to maintain rigour and establish triangulation, discussed later in this chapter.

3.1.4 Incorporating Descriptive Theory into Case Study

In his version of case study theory, Stake (1995) discusses how researchers interpret data. He explains that when researchers encounter new data, it is often difficult to classify. In order to overcome this, we rely on protocols and previous knowledge. This knowledge, coming in the form of previously known patterns can help us to make sense of new data we have gathered. He explains how performing theory triangulation can assist in this. In order to bring a sense of category into the research, CFIR was used as a theoretical background to analyze the data.

CFIR is a meta-theoretical explanatory framework formed through the combination of 19 different published implementation theories. It has been used extensively in implementation and evaluation by allowing those using it to become aware of influential

factors, facilitate analysis of processes and outcomes, and organize the findings of an implementation process (Breimaier et al., 2015). Due to the widespread use of the framework, its potential to advance implementation research (Kirk et al., 2016), its consolidation of many other successful published implementation frameworks, and its high applicability to the case my study is evaluating, it was decided as the most appropriate framework to use for data analysis.

Theory is used to guide implementation research and assist researchers in understanding why implementation is effective in one setting over another for the same program. If not guided by a theory, then factors may be identified that are affecting implementation in their specific setting, but because of their uniqueness, do not apply anywhere else (Kirk et al., 2016). CFIR is an explanatory framework which helps users to understand why an implementation was successful or not. It has been used for many different purposes including explanation and description of research findings, evaluating the framework itself, identifying points of interest within implementation (Breimaier et al., 2015), and producing actionable findings (Keith et al., 2017).

Each CFIR construct is defined well and is thought to encompass most of the major influential factors related to implementation. It is with these factors that creating pre-determined categories for deductive coding was used to make sense of the data. In addition to assistance in the data analysis stage, the CFIR online tool was also used to develop a set of questions to inform the focus group guide.

3.2 Methods

3.2.1 Site

The COPD management program evaluated in this study was implemented at a five-site FHT. This site was selected because it was the first location where the founding organization attempted to spread the COPD management program. Additionally, the site's implementation was at a late enough stage where the desired factors could be evaluated. If evaluation occurred too early during implementation, participants may not

have been aware of which factors were influential. Many providers working at the FHT often commute to other sites from a main location. During the data collection process, the main site was used as a meeting point. Focus groups as well as interviews were conducted at that location. Any providers who were not able to join the focus group from one of the other four sites, joined via video conference. This occurred during Provider Focus Group #2 only.

3.2.2 Participant Selection

Purposeful sampling was used for this study to recruit participants. When using purposeful sampling, participants are selected because they possess particular characteristics or experiences that are necessary to answer the research question (Wright-St Clair, 2015). Other types of sampling such as random sampling could not be used, because individuals who were not involved in the implementation would not have the specific knowledge we are seeking (Emerson, 2015). In this case all participants were involved in the implementation of the COPD management program, and as such had relevant experience from which we were able to gather information.

For this study, participants included individuals working at the FHT and additional individuals referring to the COPD management program in practice (which we are referring to as providers and additional primary care providers respectively) and patients who were treated any number of times for COPD using the program. Many different types of participants were included to gather a broad understanding of the case being studied. Exclusion criteria limited participants if they were not 18 years of age or if they could not speak English or understand the letter of information and consent form. Patients with COPD are often frail and elderly individuals, and therefore are considered a vulnerable population (Katon et al., 2010). As such, recruitment of patient participants was also limited if their provider advised them not to participate for reasons that do not pertain to the importance of this study but protect the well-being of the participant.

3.2.3 Recruitment of Participants

Recruitment of participants proceeded through the study's principal investigator. Access to participants was granted through the executive director of the FHT. To recruit providers, the executive director informed all staff who were involved in the implementation of the program of the opportunity to be a participant, as well as the potential benefits of participating. Additionally, any additional primary care providers working tangential to the program were recruited using a mass email, distributed by the executive director, inviting them to participate in a phone interview. Recruitment remained ongoing throughout the course of data collection and analysis in the event more individuals became interested. Refusing to participate in the study was not met with any repercussions, work-related or otherwise. Recruitment of patients was also executed through the executive director with assistance from RTs. The executive director and RT invited patients to participate in the study that they deemed healthy enough and willing to participate. As explained earlier, patients with COPD are often fragile and considered a vulnerable population (Katon et al., 2010). It was for this reason that patients were first assessed by the RT and only those deemed healthy enough were eligible to participate. Participation in the study did not affect a patient's ongoing treatment at the clinic. Focus groups were organized for both providers and patients who agreed to participate. Additional primary care providers recruited were scheduled for a one-on-one 15-minute phone call. Consent for participation in the study was collected at the outset of every focus group and interview.

3.3 Data Collection

Stake (1995) explains that when case study methodology is used in healthcare it should strictly use qualitative research methods. As such, data was collected from a variety of qualitative sources including focus groups with providers and patients, field notes taken during focus groups and observational visits, document analysis, and individual interviews with additional primary care providers and key informants. These measures

worked together to ensure that the individual, collective, and documented experiences of participants was obtained.

3.3.1 Focus Groups

Focus groups are used in qualitative research to gather the collective experience of a group of individuals (Kitzinger, 1995; Litosseliti, 2003). They were used in this study in order to explore the providers and patient's general thoughts and collective experience about the implementation of the program. As a part of interprofessional team-based care, patients should be considered as part of their healthcare team. This allows the team to practice a more patient-centered approach by including patients in the decision-making process surrounding treatment. The patient focus group provided an additional data source on how patients, as members of the team viewed the implementation of the program.

Preparation for the focus groups began with the development of a focus group guide, informed by the online CFIR interview guide. Questions explored aspects related to the implementation such as team preparation, adaption to the new program, evaluation of program effectiveness, peer-to-peer implementation, and sustainability. Probe questions were prepared in order to facilitate additional information related to the research question (Appendices B and C). After its creation, the focus group guide was distributed to a team of researchers and providers that the principal investigator worked closely with. The individuals on this team practice and research in areas pertaining to the subject matter of the focus group and as such were deemed appropriate to review the data collection material. They reviewed and provided feedback that was taken into account when creating the final version. The majority of the feedback given was regarding the level of language used in the guide. In response to these concerns, jargon was removed and replaced with lay language.

Provider and patient focus groups were conducted separately during a site visit in April 2019. Upon entering the focus group setting, the participants were handed a letter of

information/consent. During this time, they had the opportunity to read the letter and have it explained to them. They were then given the opportunity to ask any outstanding questions before signing the letter. The participants sat around a table with the lead interviewer and were taken through the focus group guide in order to facilitate a semi-structured conversation. The principal investigator acted as the lead interviewer for Provider Focus Group #1. I took over as the lead interviewer during Patient Focus Group #1 and Provider Focus Group #2. The researchers both took field notes during this time.

3.3.2 Site Visits and Observational Field Notes

Constructivist methodology dictates that the researcher's interpretations of the collected data should be used to help create the reality within which the case is situated (Merriam, 1998). It allows for substantiation of the data through triangulation, as well as provides an element of reflexivity (Finlay, 2002). Therefore, the use of observational field notes was decided to be an important data collection tool. Both researchers who were involved in data collection examined Pacheco-Vega (2019)'s work to gain insight on how to write effective field notes. During the April visit, field notes were taken in focus groups by both researchers. The interviewer conducting focus group took brief notes, while the researcher observing took more detailed notes. That evening, both researchers reviewed notes and provided thoughts based on their interpretation of the focus groups. A follow-up visit during December 2019 took place, where I was able to observe a formal team meeting and conduct a key informant interview and second provider focus group. During this time, observational field notes were taken in the same manner as the April visit.

3.3.3 Reflexive Notes

Throughout the entire research process, reflexive notes were created by me in order to ensure that my thoughts and assumptions could be considered during data collection and analysis. These assumptions will be discussed in chapter five. During this time, once a week I documented my thoughts concerning thesis writing, data collection and analysis, and anything else that piqued my interest over the course of the week regarding the

research process as a whole. These notes were taken in written format at the conclusion of each week and were each about a paragraph long.

3.3.4 Member Checking

Member checking was used during the December visit as part of the data collection and analysis process. It is a technique used in qualitative research to explore if the results from data collection are consistent with participants experiences (Birt et al., 2016). As part of member checking, in December 2019 another site visit occurred. During this visit, a key informant interview and a second provider focus group took place where the priority was to facilitate discussion surrounding the preliminary findings. Once the data was collected and analyzed, it was important that we returned to ensure that the interim findings were representative of the thoughts of the providers. During the second focus group, the providers had the opportunity to discuss the implementation further as well as provide useful information in regard to our original findings. In addition to the second provider focus group, member checking was also performed with a key informant. The key informant was an individual who was in a senior position during the implementation and possessed unique knowledge and perspective that we were keen to include in our analysis.

3.3.5 Document Analysis

In order to gain the best possible understanding of the context specific environment that this program is being implemented in, we performed a document analysis (Bowen, 2009). This allowed us to get a sense of the program's day-to-day activities, protocols, and environment from an organizational standpoint. Additionally, it will help in situating the site within its community context as well as the broader context of interprofessional primary care and FHTs. This included an extensive review of documents the site had available. Document analysis also assisted the researcher in understanding how the team was formed and was expected to operate within the new program. The data collected from document analysis was crucial, being primarily used to support the focus group and interview data collected.

Documents were accessed through the executive director of the site. During our various correspondences, we frequently requested she forward any documents that may be of relevance to our study. A total of four documents were collected. A memorandum of understanding (n=1), a software license agreement (n=1), a data sharing agreement (n=1), and a report on the spread of the intervention to the FHT (n=1).

3.3.6 Phone Interviews

One-on-one phone interviews with additional primary care providers referring to the COPD management program were conducted. The goal of performing interviews was to gather information about the implementation of the program, thoughts about the quality of care the program delivered to patients, any mediating factors that may have influenced the implementation of the program, and how the program affected their daily practice working tangential to the FHT. The provider interview guide can be found in Appendix D. The individual interview was important because it gave primary care providers the opportunity to discuss anything they might be apprehensive about sharing in the presence of other colleagues or program directors. One phone interview was conducted with a physician working tangential to the program. The phone interview lasted about 15-minutes.

3.4 Data Analysis

In order to ensure the data was understood within the context of the site, an ongoing deductive and iterative analysis involving member checking was used. Once the initial set of data from the interview and the focus groups were gathered, they were analyzed alongside subsequent data collection. Transcription of the focus group and interview audio-recorded data was performed in part by a transcription service called TranscriptHeros, and in part by me in order to become familiar with the data. A deductive coding strategy involving CFIR was used during analysis. CFIR has been used in the past for data analysis involving implementation of chronic care models in primary care settings (Kadu & Stolee, 2015). Coding was performed in multiple steps using the qualitative data management software NVivo. Due to the small staff size of the FHT,

during the identifier removing process, we were not able to identify which comments were collected from senior management. Senior management's comments are very important in the analysis of the data. Individuals' roles, although not disclosed, were considered in the analysis. Those with a more impactful role in the implementation process would most likely have deeper insight into the factors affecting the implementation. Therefore, data collected from these individuals was assigned more importance.

The first step of coding was to familiarize myself with the data; I read the transcripts multiple times and made brief analytical notes about which general constructs I believed fit with particular sets of data segments. After this, I used NVivo to code the data into the five CFIR categories. During the next two passes, I coded the data further into its related constructs and sub-constructs. The principal investigator then repeated this process and we compared coding by discussing discrepancies until agreement was reached. In addition, we presented the preliminary first round of coding to an arm's length physician on the research team. He was able to provide his interpretations of how he thought the data were coded and made suggestions for alternative coding. The physician's notes were analyzed by the principal investigator and myself. Discrepancies were discussed and many pieces of data were double coded as two separate constructs if it was found that there were multiple agreeable codes.

After this was completed, we obtained results in each of the five categories, including 32 of the constructs. Stake (1995) discusses two data analysis processes, direct interpretation and categorical aggregation. Direct interpretation focuses on the researcher's impressions as the main method of data analysis (Yazan, 2015). When Stakian researchers analyze data, we use our own experiences to interpret each piece. Then, we collect similar pieces of data together in a method referred to as categorical aggregation. These processes can be used together to analyze data collected in case studies (Stake 1995). The 11 constructs included in the results section were seen as the most important after the direct interpretation and categorical aggregation into CFIR constructs were complete.

Although CFIR constructs used in the deductive coding process are said to be comprehensive in determining program and implementer (in this case, provider) factors that affect implementation, patients are scarcely represented past the construct of patient needs and resources (Damschroder et al., 2009). This construct represents patients as a need in the community and not as full members of the implementation process. During data collection, we conducted a patient focus group in order to gather their perspectives on the implementation and execution of the COPD management program. Because CFIR was not designed for patients, in order to interpret these results more effectively, inductive coding was performed in addition to deductive. The data analysis process involving myself and the principal investigator was then repeated for the inductively coded data.

The field notes and documents collected were analyzed using similar methods. They were coded deductively using CFIR as well as Stake's methods of direct interpretation and categorical aggregation. After this was complete, they were discussed to locate any discrepancies. After all of the data was analyzed individually, it was looked at together by the principal investigator and myself and triangulated using an integrated analysis with focus group data, interview data, field notes, document analysis, and member checking. After analysis, a report highlighting the facilitators and barriers to implementation was created for the FHT and the Founding Organization to facilitate further implementation efforts.

3.5 Ethics

All focus groups and interviews were audio-recorded with proper informed consent from all participants. A full explanation of the potential costs and benefits of the study was explained to each person participating before an informed consent form was signed. No participants refused to participate in the study once reading the letter of information/consent (Appendices E and F).

The Western University Ethics and Review Board granted ethics approval for this study (Project Number: 108415) before any data collection or recruitment occurred. The ethics approval letter can be found in Appendix G. Additionally, because Lawson Research funded this project, we were also required to submit a Research Database Application (ReDA ID: 6416), which was also approved.

3.6 Rigour and Quality

In order to maximize the rigour in this study and to follow Stake (1995)'s constructivist methodology, the following actions were performed. A framework developed by Houghton et al. (2013) was used in order to ensure the study was rigorous. In their framework, Houghton et al. (2013) discussed four criteria qualitative research must meet to be considered rigorous: credibility, dependability, transferability, and confirmability.

Credibility refers to the "value and believability of the findings" (Houghton et al., 2013, p. 13). This study met this criterion in multiple ways through triangulation of data and member checking. The results were triangulated using multiple sources of data including field notes, document analysis, member checking, and interview and focus group data. An interim report describing the data we had collected as well as the interim findings from analysis was prepared for the executive director of the site to distribute. Feedback on this report was requested from participants and all feedback was taken into account during data analysis.

Houghton et al. (2013) mentioned that concerns about the dependability (how stable the data is) of the data are reportedly ameliorated by reflexivity as well as an audit trail. All findings were coded multiple times by me, as well as the principal investigator. After this, the data was checked over and discussed with a physician who was part of the research team. Throughout this process, reflexive notes were taken and consulted. A clear plan of data collection and analysis was formed prior to any action being taken. All new data collection materials were given to a variety of members of the research team for inspection prior to submission to the Western University Ethics and Review Board.

Transferability “refers to whether or not a particular finding can be transferred to another context or situation” (Houghton et al., 2013, p. 13). In order to ensure transferability, Houghton et al. (2013) mention that a thick description of process and context of the research is needed. A clear and in-depth description of all methods and methodologies was produced in this chapter. Additionally, researcher’s assumptions will be given in a reflexivity section included in Chapter five in order to align with the constructivist view of the study. A rich description of the case was given within the confines of maintaining anonymity.

Confirmability (neutrality and accuracy of the data) was not considered to be a major issue due to the constructivist nature of the study. Since the data in a constructivist study is created by both the participants and the researcher (Stake, 1995) it is likely to be unique, therefore neutrality and accuracy need not be heavily considered. However, accuracy of the data was confirmed with participants using member checking.

3.7 Summary

This chapter began by discussing the rationale behind the selection of qualitative Stake (1995) case study methodology. An explanation of the inclusion of CFIR as a deductive framework was then given. Participant selection and recruitment at the site was discussed. Following this, data collection techniques including focus groups, interviews, observation, document analysis, and member checking were rationalized as methods. In conclusion, this chapter discussed ethical considerations in the development of this study along with techniques used to ensure rigour and quality in qualitative research by following the framework by Houghton et al. (2013).

The next chapter will present the findings from the data collection and analysis. It will begin by providing demographics about the participant in my study. Following this, a description of the context surrounding the FHT, the COPD management program, and the program’s Founding Organization. Lastly, results from data analysis will be presented according to CFIR while including a section on patient perspectives.

Chapter 4

4 Results

This chapter presents the results of my study, determined from a primarily deductive analysis of the data using CFIR. The data was gathered through focus groups, interviews, observational field notes, and document analysis. This chapter is divided into five sections. To begin, I will report on participant demographics in my study as well as the documents collected for analysis. Next, I will provide a rich case description and context to give a background on the implementation site, program implemented, and the program's founding organization. Then, I will report on the results, going into detail about the constructs as they apply to the site. The results will be separated into facilitators and barriers. Lastly, patient's views gleaned from the data will be discussed as they relate to the findings. De-identified participant quotes are used in this chapter to provide support for the themes. When de-identifying the quotes, participants were assigned a number. This number was carried through all data presented. For example, Provider #2 is the same individual throughout all focus groups, interviews, and document analysis. After each quote, the participant who spoke is listed, along with the data collection method used to obtain the quote.

4.1 Participant Demographics

Overall, 28 participants were involved in this study, examining the implementation and execution of the COPD management program (Tables 4.1 and 4.2). The case study involved one FHT spread out over five sites. As such, the participant pool was limited to individuals working at or who were patients at one of those sites. Providers were identified as participants who worked for the FHT using the COPD management program to provide care to patients or, additional primary care providers referring patients to the program. In this case one additional primary care provider (a physician) was interviewed. Patients were participants who received care from the COPD management program at one of the FHT sites.

Table 4.1: Participant Characteristics

<u>Participant Characteristics</u>	
Consented Participants	28
Providers (n=24)	
Executive Director	1
RT/Certified Respiratory Educators	2
Clinical Lead/Nurse Practitioner	1
Physician	1
Nurse Practitioner	2
Reception	3
Registered Practical Nurse	1
Dietitian	1
Registered Nurse	4
Administration	2
Social Worker	4
Kinesiologist	1
Mental Health Counsellor	1
Patients (n=4)	

Table 4.2: Type of Data Collection

<u>Type of Data Collection</u>	<u>Number of Participants</u>
Provider Focus Groups	23
Patient Focus Group	4
Field Notes	6
Physician Interview	1
Documents	4
Key Informant Interview	1

4.2 Case Description

4.2.1 The COPD Management Program

The COPD management program is a model of care created by an independent organization (herein referred to as “the Founding Organization”) for the purposes of “delivering standardized, high-impact best-practices, an interdisciplinary care model, an electronic care delivery, and evaluation system” (Founding Organization Report, p. 6) for COPD education and management using primary care teams as the delivery method. It uses an interprofessional team including RTs trained as certified respiratory educators to deliver self-management support and care for patients with COPD. The program has the goal of teaching patients how to self-manage their disease. This includes training providers to become certified respiratory educators and delivering COPD specific education and care to patients. Once they have been given this best-practices education and care, they will be better able to self-manage their care when having an exacerbation of their COPD. This will then result in decreased use of COPD specific acute healthcare services (Founding Organization Report). This program has shown to improve patient outcomes such as reduction in emergency department visits and hospitalizations while

being integrated into current healthcare delivery models such as FHTs (Ferrone et al., 2019). The program is highly evidence-based, using information obtained from previous iterations and a randomized control trail with over 1000 patients (Ferrone et al., 2019). The program was originally developed and implemented in one region, after which it was spread and implemented in a FHT in a new region (Founding Organization Report).

The Founding Organization focuses on primary healthcare system innovation. It has developed clinical programs using interprofessional teams to manage many different types of chronic disease such as asthma, COPD, and chronic heart failure. Their goal is a wide-spread program to benefit as many individuals as possible and to develop sustainability within itself. This was done by partnering with various healthcare organizations and solo practitioners using a peer-to-peer approach to implementation (Founding Organization Report). The Founding Organization uses evidence-based outcome measures gathered through research to show the success of the program when recruiting new partners. They hire and train providers as certified respiratory educators to create an interprofessional team. Figure 4.1 is an excerpt from a report that discusses the spread of the program to a new region's FHT.

Figure 4.1: Spread of The COPD Management Program to B-FHT

[The Founding Organization] team partnered with [B-FHT] to demonstrate the feasibility of implementation and spread of the [COPD management] program using peer-to-peer education and a project management approach. The [Founding Organization] coordinator facilitated hiring, assessment, training, and clinical and digital implementation processes at the [B-FHT] sites. A RT/certified respiratory educator was hired and collaboratively worked with the current RT as part of the interdisciplinary team. Within a 3-month timeframe they recruited and evaluated 133 patients, confirming the diagnosis in 80%. 40% of the patients were GOLD C and D equating to high risk individuals utilizing high hospital and emergency room services at 23 Hospital admissions and 40 emergency room visits one year prior to their evaluation. After one year in the program, the high-risk individuals should see a significant decrease in health services use. Patient satisfaction surveys were utilized in a small group of individuals after the initial visit with the certified respiratory educators with a high satisfaction rating of the overall program and all would recommend to others with COPD.

4.2.2 The Site - B Family Health Team (B-FHT)

The program was implemented by the Founding Organization into a FHT within southwestern Ontario (herein referred to as B-FHT). The organization used a peer-to-peer approach to implementation in order to spread and implement the program. For the implementation, B-FHT was responsible for providing a roster of patients, a location to treat them, and staff support (B-FHT Memorandum of Understanding). The Founding Organization facilitated the training of employees, installation of new software, and assisted with data mining (a technique used to identify patients appropriate for the new program).

At B-FHT, a RT was already a part of the team as a 0.5 full-time equivalent, which the Founding Organization made full-time. Although RTs are not often used in primary care, COPD was identified by B-FHT as a significant problem in the community, thus one was hired. B-FHT is spread out over five sites. The providers refer their patients to the COPD management program operated at each site by a traveling RT.

B-FHT was chosen by the Founding Organization to act as a proof of concept site. This means that program was implemented to show that it was possible to spread to another site. It was implemented very successfully, a thought shared by many of the staff and patients at B-FHT. As such, this site was used to identify what factors were pertinent in this peer-led implementation effort.

4.3 Results - Facilitators

The results are presented in two sections, facilitators and barriers. These are each further broken down into categories and constructs based on CFIR. In determining which constructs were important to include, multiple coding processes were performed by the principal investigator, myself, and a physician on the research team. These results were then discussed until a consensus was reached, reported back to B-FHT, and analyzed in conjunction with field notes and document analysis for factors such as length of time the construct was discussed by participants.

Document analysis was completed by the principal investigator and myself on four documents obtained via the executive director of B-FHT. These documents were useful in providing background context to the program, the Founding Organization, and the spread to the FHT implementation site. In addition to providing information on context, the documents and field notes served as extra data points to allow for triangulation and to support the main sources of data: focus groups and interviews. Throughout my results, I will mention when the documents and/or field notes were used in this way. A list of documents received and analyzed are included in Table 4.3.

Table 4.3: List of Documents

Document Type	Quantity
Report on Spread of Program	1
Memorandum of Understanding	1
Data Sharing Agreement	1
Software License Agreement	1
Total	4

4.3.1 Intervention Characteristics

CFIR describes intervention characteristics as “the features of an intervention that might influence implementation” (Keith et al., 2017, p. 2). Eight constructs are included in this category (Appendix A). Through the rigorous process of data analysis explained earlier, it was evident that intervention characteristics was best represented by the constructs: design quality and packaging, complexity, and relative advantage.

Design Quality and Packaging

The packaging and presentation of the program by the Founding Organization to B-FHT was discussed as a very important factor in the decision to implement. B-FHT had attempted to develop a similar internal program for patients with COPD but did not have the expertise or resources to do so. The Founding Organization provided them with the means in a way that was evidence-based and rooted in experience.

When they came in, they knew what the expectations were, they knew what the outcomes would look like. They had that experience, where we were just fishing and hoping we would get the outcomes we were hoping for, but we didn't really have the experience with that to confidently approach all those physician groups (Provider #3, Provider Focus Group #1).

The Founding Organization's knowledge and experience was reflected in the document analysis. The data used to build confidence in B-FHT was evidence-based from a previous iteration of the program. B-FHT providers explained that this was how the Founding Organization was able to package and present it in an effective and enticing way.

Participants talked about the program's success and how was implemented at a previous site. Participants stated that this success translated to little work required by the B-FHT staff in terms of program implementation.

So, right away we were sold. I mean it's an easy sell because they essentially come in and drop a program and a person attached to it in your lap. It is zero work. That is why, any team that doesn't take advantage of this, I feel is missing out because if every program could be like this, it would be wonderful (Provider #2, Key Informant Interview #1).

Participants talked about how the program pitch to B-FHT was so effective that they unanimously believed there was no reason to not implement this program.

It's not a program you can really say no to. When they pitch their program, there isn't really a single negative... there's really no reason not to jump on... it's an easy sell when our physicians did not have to do any work to have this service

available to their patients. Any help that can be offered... was hard to say no to (Provider #1, Provider Focus Group #1).

Complexity

The complexity of the implementation was fairly low as mentioned by the participants. B-FHT providers remarked about how easy the program was to implement long-term. Once the program had been introduced and executed, it required little oversight by the administrative staff.

Once it was off the ground, then you're pretty hands-off... apart from making sure that the outcomes are reported, but once... the patients were being seen, there's not a whole lot of other admin, oversight really required. It's the simplest honestly. So simple... everything just fell into place. They were very accommodating (Provider #2, Provider Focus Group #1).

Providers elaborated on the actual implementation process and how even though it was intense, they felt that it was done properly and that was the best way to implement as it did not disrupt the day-to-day activities.

It seems really simple, but that's what it was. It didn't really disrupt... your everyday (Provider #1). I don't think they did anything that they didn't need to do. But, so, it was very simple, it was intense, and... (Provider #2). Smooth, really (Provider #3). If we could roll out every single program that way, it'd be great (Provider #2, Provider Focus Group #1).

Relative Advantage

Prior to the implementation of the program, providers mentioned that B-FHT was attempting to create their own internal program for COPD care. Trying to implement an internal program into the FHT was a reported challenge for the site's RT.

[The RT] had a vision for how she saw the [internal] program running. But there [were] challenges with it. One, that there wasn't an established program, for her to mimic. And two... we are a multi-site organization, and with a 0.5 [full-time equivalent RT] position it is really hard to establish any programming without a consistence presence. Which... just wasn't possible (Provider #2, Key Informant Interview #1).

The Founding Organization offered an alternative solution in the form of their own COPD management program that was relatively advantageous. Provider #2 explained “we probably had six months of struggling to establish a program, to all of a sudden having a program where our days are completely packed full of patients” (Key Informant Interview #1). This result was also evident in the document analysis, showing a strong uptake of the program with success after three months relative to the previous attempt’s struggle for six.

Physician #1 agreed, having a comprehensive COPD specific care program has “freed me up to focus on other things during appointments” (Phone Interview #1) compared to previously.

I’ve been super impressed! I think it’s great that I can send my patients... and delegate to them a lot of the education. It’s allowed me to focus my time and energy with the patient on other medical issues by saying “Okay now great, I have someone involved in their care that can spend even more time than what I ever could and give even more in-depth education and teaching than what I would ever be able to do” (Physician #1, Phone Interview #1).

4.3.2 Outer Setting

CFIR describes outer setting as “the features of the external context or environment that might influence implementation” (Keith et al., 2017, p. 2). Four constructs are included in outer setting (Appendix A). Through data analysis, it was evident that the category is best represented by the constructs: patient needs and resources, and cosmopolitanism.

Patient Needs and Resources

Participants mentioned that one of the reasons that B-FHT was selected for program implementation was that their region specifically had a large prevalence of patients with COPD. Their old COPD program was described by a provider as: “a drop in the bucket for the amount of COPD patients that we had” (Provider #3, Provider Focus Group #1).

Provider #3 discussed how “COPD was a problem. And COPD patients are complex, time-consuming, and costly, so, any help that can be offered to them to help manage them

was hard to say no to, too. There's plenty of patients and ongoing work to keep you busy full-time" (Provider Focus Group #1). As such, for the patient needs to be met, a new program was required. Using their already established resources, the Founding Organization was able to implement this new program to address the problem.

Cosmopolitanism

Cosmopolitanism, defined as the extent that an organization is networked with external organizations (Damschroder et al., 2009) has been determined to be one of the most important constructs in CFIR related to the implementation of the program. B-FHT's relationship with the Founding Organization was described by participants as instrumental in implementing the program so efficiently.

There was a shared agreement amongst providers about how "their guidance was key for us being successful so quickly. And we were successful very quickly" (Provider #3, Provider Focus Group #1) and that the program would "not [be implemented] that quickly, not that successfully, not that confidently without their guidance" (Provider #3, Provider Focus Group #1).

One topic probed in the data collection process was that of the degree to which B-FHT would require the Founding Organization to maintain sustainability of the program after initial implementation. Two providers at B-FHT reported they would need "Not much. A little bit for pulling the information, so, not near as much as what we needed at first, but still a little bit of ongoing support in the background" (Provider #1, Provider Focus Group #1). The benefits of having the Founding Organization at initial implementation were reportedly so meaningful that long-term, they had the ability to be successful, allowing the Founding Organization to dedicate more time to exploring further spread options.

I think that if they exploit the resources that they are building here then it is entirely possible to be sustainable... five years from now, for example when we have been at this then for seven... we will have built that internal capacity... We

can easily build a strong enough network of RTs in [the region], be self-sustainable as new RTs come on (Provider #2, Key Informant Interview #1).

This long-term sustainability which has reportedly been a result of the Founding Organization's external influence has also led to new cosmopolitanism efforts by B-FHT. A provider mentioned how the program has been able to coordinate with the hospital to refer patient discharges with COPD to be treated by the program.

We actually built it to [be] part of one [program] to refer hospital discharges... with the COPD diagnosis... to automatically send a message to the RT saying that that person was discharged. So that was integrated, plus, if I see somebody in my clinic that's having respiratory issues, we'd refer [them] (Provider #5, Provider Focus Group #2).

Cosmopolitanism was recognized as important throughout the entire data analysis process. One provider explained how this helps to get more patients recruited. "We've done more communicating at the hospital to get patients from [the emergency department] or straight from discharged from the hospital. So those aren't necessarily our patients at that time but to get them referring to our programs that are timely place" (Provider #5, Provider Focus Group #2).

4.3.3 Inner Setting

Twelve constructs are included in inner setting (Appendix A), described as "the features of the implementing organization that might influence implementation" (Keith et al., 2017, p. 2). Of these twelve, two, namely networks and communication, and readiness for implementation stood out as the most important. Readiness for implementation's sub-construct of - available resources - was particularly evident.

Networks and Communication

B-FHT is comprised of providers from multiple disciplines (see Table 4.1) and it was reported that in order to benefit providers working in the same program, the peer-to-peer implementation approach was used. This approach used networks that facilitated communication between providers of the same type. The program lead from the

Founding Organization who trained the RTs was herself, a RT. Now, “the RTs have their own network where they communicate with each other” (Provider #6, Provider Focus Group #2) and are able to ask each other questions. Two providers agreed that this network has been a tremendous help for them in practice.

[The Founding Organization] [does] a quarterly meeting to bring all the RTs together... because it's a new program for many. It's an opportunity for them to... say what's working, what's not working, what are they finding out there in the field. They [also] have a [messaging] group (Provider #4, Provider Focus Group #2).

The network of the other RTs and talking to [Program Lead #2] is helpful from my end, as well, having that relationship, because it is being out here all by yourself, essentially. But you know that there's that network because they take care of you behind the scenes (Provider #1, Provider Focus Group #1).

This peer-to-peer approach to implementation has extended beyond the RTs. Speaking with various members of the team during the focus groups, it was discussed how many other members in the team have begun to use it. There was high familiarity and agreement when the peer-to-peer implementation approach was discussed. Provider #2 mentioned during a discussion that “after team meetings if the social workers wanted to get together, we use the opportunity to do that” (Key Informant Interview #1). Many providers take the team meeting as an opportunity to meet afterward and discuss challenges and techniques to help in practice.

Providers on the team have “felt connected enough with [Program Lead #2]” (Provider #3, Provider Focus Group #1). Program Lead #2, as a member of the Founding Organization, has always been in contact with B-FHT in case they need help. This line of communication was reportedly highly valued by providers. One provider even equated her to be the Founding Organization. “So [the Founding Organization] being this one person, she's always available if we run into any problems or have questions. She's always made herself available to help us... if we run into something just reach out to her directly” (Provider #4, Provider Focus Group #2). At many points throughout the document analysis and review of field notes, it was noted that there was a shared feeling

of importance given to Program Lead #2 as a main point of contact for B-FHT. From this analysis it is evident she has cemented herself as an integral part of the implementation process.

According to a physician, communicating by sharing patient information through the EMR is a very important part of the program. It is this sharing of patient information that helps this team collaborate on the patient's care. They are able to "communicate back and forth with the referral source, as well as any other team member that need to be involved, dietician, social work, anything that's going to enhance the care of the patient, as well as perhaps outside sources" (Physician #1, Phone Interview #1).

Readiness for Implementation – Available Resources

Of the three constructs under readiness for implementation, available resources was determined to be the most important. Resource support during the implementation process was important to its success. The providers working at B-FHT reported that upon uptake of the program, typically the Founding Organization hires their own RT, which then works alongside the FHT to provide care using the program. However, in this case, "[B-FHT] is using their existing respiratory person to deliver [the Founding Organization]'s model, whereas [at] all the other sites, [the Founding Organization] brings their own person in because they didn't have that person [a RT] in the first place" (Provider #4, Provider Focus Group #2). Participants discussed how this made it easier to implement the program in the new clinical setting. The providers felt as if they "were lucky enough to be a bit ahead of that" (Provider #3, Provider Focus Group #1) because "we don't typically have RTs in primary care" (Provider #2, Key Informant Interview #1).

Although the B-FHT already had a RT working on staff, prior to implementation "she wasn't able to have a heavy presence at any of our sites because she's half-time and working out of three (Provider #2, Provider Focus Group #1). The Founding

Organization was able to expand this role into a full-time position and in doing so, the RT was reportedly able to cover more sites with the extra time.

We went from a half-time RT to a full-time, which definitely had an impact given that we're multi-site. With the half-time person covering essentially four sites, then you don't have a real presence at any one of the sites to establish yourself for your program. That did assist with having a more consistent presence at each of our sites by having that full-time designation (Provider #6, Provider Focus Group #2).

4.3.4 Characteristics of Individuals

CFIR describes characteristics of individuals as “the characteristics of individuals who are involved in implementation that might influence the implementation” (Keith et al., 2017, p. 2). Five CFIR constructs are under characteristics of individuals (Appendix A). It was determined that self-efficacy and knowledge and beliefs about the intervention were representative of the themes related to this category.

Self-Efficacy

As a result of the peer-to-peer implementation approach, many individuals reported that they have learned much from consulting with the other providers. This increased knowledge has allowed providers to become more confident in the type of services that they provide, increasing their self-efficacy. Two examples of this are shown below.

I really appreciate having people who are experts in COPD care that can give me recommendations. I have an expert in the field that I can draw on... So, the more knowledge that I start to feel comfortable with this is – in COPD in particular is because of [the RT](Provider #3, Provider Focus Group #1).

I learn things too. From when I see the recommendations that they send back and... it's good for me... from an education standpoint it helps me to reassess and revisit a little bit better. Compared to just putting somebody on something and then kind of forgetting about it and not adjusting it based on how the patient is doing (Physician #1, Phone Interview #1).

A provider discussed the uptake of the program and how the implementation efforts of the internal COPD program were performed with low self-efficacy. It was only when the

Founding Organization intervened that they were able to use their knowledge of the program to expand its reach. This self-efficacy was praised by Provider #2 as a very prominent facilitator to the implementation of the program.

[Program Lead #2]... knows the data, she's been [a] RT forever, she believes in the program, she can sell that program to anyone if she can get in front of them... [Program Lead #2] had the process down pat and knew the steps to take... So yeah, she was... amazing. And plus, they just had the confidence to come in and do that and help us with that (Provider #2, Key Informant Interview #1).

Knowledge and Beliefs about the Intervention

During focus group discussions, the providers at B-FHT all mentioned that they were aware of the implementation of the program. They have also put a lot of value towards the program, expressing many positive views about the RT. “If we could clone [the RT], that’s part of what has... made it so successful for us is that she was able to just come in, she’s a very capable provider, well-respected by the team, immediately, has that good relationship with patients” (Provider #2, Provider Focus Group #1). This individual was praised by both patients and fellow providers. Their discussion during focus groups, paired with an analysis of the field notes showed how instrumental she was in the implementation and execution of the program.

4.3.5 Process

CFIR describes process as “strategies or tactics that might influence implementation” (Keith et al., 2017, p. 2). Eight constructs are related to implementation process (Appendix A). After analysis, two were chosen as important. These were engaging, and reflecting and evaluation.

Engaging

Engaging individuals who will drive your program forward is an essential part of the implementation process. Participants explained how the Founding Organization needed additional primary care providers to refer to the program in a committed way. They

underwent many different tactics to set up opportunities for individuals to become engaged in being a part of the program. These tactics were “mostly done directly [by] [the Founding Organization]” (Provider #4, Provider Focus Group #2). Program Lead #2 was a big part of this using “an engagement session that the physicians were invited to and then... door to door trying to individually engage each physician to make them aware of the [program]” (Provider #7, Provider Focus Group #2). Physician #1 mentioned that “they sent us messages explaining what the program was, which again my understanding was ‘there’s going to be some [RTs] here now and please refer all of your COPD patients to them’” (Phone Interview #1).

In addition to preparing individuals to use the program through notifications, the Founding Organization was reported to also provide training to providers in the RT role. The Founding Organization had training materials ready and already knew what was to be expected in terms of outcomes. "They provided some training... [Program Lead #1] came up with [Program Lead #2] to talk about the program initially, and then, they brought [Program Lead #1] back up to provide some overall COPD education and a kick-off to the program” (Provider #3, Provider Focus Group #2).

One provider reported that she believed the training component was a largely important part of implementation. Gaining experience from individuals who had done this job in the past helped her to ensure consistency in delivery. Provider #1 said that she “sat with somebody who’d been doing it [being a certified respiratory educator] for 20 years... for five years and... for three years. So, you can see that they’re doing the same job even though they’ve been doing it for different periods of time” (Provider Focus Group #1). Provider #2 elaborated on how important training was “I think the training piece was also big... that training then does ensure that there’s a consistency in how the program is being delivered across providers (Provider Focus Group #1).

Providers praised the Founding Organization’s intense approach. They explained how although it was quick, results were evident early in the implementation process. One provider spoke about how this particular approach was necessary.

That initial, really strong blitz on talking to, providing the education to the physicians, speaking with the physician groups individually, getting the searches ready to go... It seemed like that period was probably short, but intense, and necessary (Provider #3, Provider Focus Group #1).

Physicians and other primary care providers were given many opportunities to engage with the program. One stressed the importance of frequent follow-ups and reminders. This way the engagement was ongoing and could be remembered. She explained that due to her busy lifestyle as a physician, she appreciated the frequency.

Initially... we were reminded to refer any of our COPD patients for the [RTs] to make sure that there was a demand. I would really emphasize the importance of frequent reminders to... everyone who would refer patients to the program, reminding them of the fact that it exists and what kinds of things they can and should refer (Physician #1, Phone Interview #1).

Reflecting and Evaluating

During the data collection, participants were given the opportunity to reflect upon and present their thoughts about the implementation of the program. One B-FHT provider had nothing negative to say. “You know what honestly, I don’t have a single criticism about the program. I really can’t think of how it could have been done better” (Provider #2, Key Informant Interview #1). Her advice to other teams who may implement the program was rooted in positivity, applauding it as a necessity.

I don’t have any advice, other than... “take advantage of this program it is zero work on your end. They will come in and do everything and they will also return”. If you are struggling at any point... having trouble identifying patients or... with physician buy-in, if you’re having process issues, they are happy to return... my only advice actually, is “say yes” (Provider #2, Key Informant Interview #1).

Providers were asked about patient experience in the program. They were described as “Positive. From my perspective, very, very positive” (Provider #1). “They were very, very positive with me too” (Provider #3, Provider Focus Group #1). This shows how not only had the implementation worked well, affecting providers positively, but that the patients were most likely benefitting from this new program as well. Analysis of field notes revealed that throughout all focus groups conducted with providers, the level of

consensus was noticeably high when discussing the success of the program. To achieve the level of agreement that was reached, it was obvious that the program was revered by all.

Not only are participants' informal perceptions of the success of the program relevant, but it is also important to know how the program is formally evaluated. "We always look at outcome measures, which are always really positive. As a provider, I like if the patients are happy and feeling improved and having fewer exacerbations and landing in [the emergency department] less, and also, that I as a provider, improve my knowledge of how to manage them on my own" (Provider #3, Provider Focus Group #1). Providers explained that not only is patient satisfaction increasing but "hospital admissions had been decreased... last year it was 41, this year it was nine... we've dropped by what they told us we would" (Provider #1). "It's just been – it's been so successful" (Provider #2, Provider Focus Group #1). Evaluation is an important step not only for B-FHT, but also the Founding Organization. Document analysis revealed that the Founding Organization uses some qualitative methods to evaluate the success of the program. Those results were also all very positive with many individuals willing to recommend the program to others.

4.4 Results - Barriers

As mentioned above, this site was chosen by the Founding Organization to act as a proof of concept site. During data collection and analysis, few barriers were found that affected the implementation of the program.

4.4.1 Intervention Characteristics

Complexity

Providers mentioned that when the Founding Organization implemented the program, a new reporting technology was also installed onto B-FHT's computers. In an interview, a provider mentioned that although the new system was very helpful in the implementation

process, there was a downside to its installation. They pointed out that although helpful, they do not enjoy adding too many systems.

Well, they have their own system... I hate adding systems. That was the one thing probably that I really was not happy about the project...we have an EMR. We're seeing our patients but will be documenting in [the Founding Organization]'s... It is certainly adequate in that the physicians or the provider receives that information that they need. I just don't like the creation of additional systems (Provider #2, Key Informant Interview #1).

4.4.2 Outer Setting

Cosmopolitanism

During the focus groups, it was discussed how prior to implementation, B-FHT began working with the local hospital, outsourcing their spirometry. This coordination with an external organization was working well, until the Founding Organization began implementing the program, and as a result, wanted B-FHT to conduct in-office spirometry.

This reportedly created a concern for B-FHT about implementing the program that the Founding Organization intended versus maintaining their partnership with the hospital. After the implementation, this political relationship with the hospital was kept intact and B-FHT still used them to perform the spirometry. It is important to be considerate of other relationships that an organization has prior to implementing because his type of dispute could have consequences if not properly navigated.

We have the hospital group here has always done the diagnostics for COPD... so, they were a little bit nervous about us doing in-office spirometry then taking all of their business. We have a really close kind of political relationship with the hospital, we opted to work with the hospital to continue that, versus do the in-office spirometry like the other places that are running this program, is probably the big one (Provider #3, Provider Focus Group #1).

We are unable to do it. We have an agreement with the hospital that they continue to offer that piece of it (Provider #5). Yeah, it was just that piece we weren't able to adopt from [the Founding Organization]. But other than that, it seemed to be pretty seamless (Provider #6, Provider Focus Group #2).

4.4.3 Inner Setting

Networks and Communication

Participants discussed how communication within B-FHT is an important factor. Although often done successfully, it can act as a barrier when it is overlooked or done poorly. One provider noted that when she is busy and does not receive enough reminders about team meetings, this can often act as a barrier. It may be especially significant when those team meetings are used as an opportunity to communicate with other providers.

I think the consistency is really important. I think we know [when meetings are]... if they're last minute or we forget, if they're not in our schedule, it's just not going to be priority to move all our other appointments around. So, I feel like that's the biggest barrier is having a lot of heads up... and making it your priority (Provider #7, Provider Focus Group #2).

Readiness for Implementation – Available Resources

When discussing resources, two providers mentioned they felt that “better data in [the EMR] would’ve helped. But that’s not...” (Provider #2). “Likely or possible” (Provider #3). “Yeah, that’s a really big challenge” (Provider #2, Provider Focus Group #1). In addition to not having sufficient EMR data, it was important to the providers that they had support during the beginning stages of implementation. They mentioned that without support, these early stages could be time-consuming and RT hours dealing with patients would be spent doing administrative work instead.

If you’re rolling a program like this into a [family health team] office without a lot of allied health, those cold calls might be time-consuming initially. So, extra support doing those calls to get those first patients in for their first visit might be time-consuming if they didn’t have that stress support. That would, from my perspective, be the only real big challenge (Provider #3, Provider Focus Group #1).

4.4.4 Process

Reflecting and Evaluating

The full-time RT position added by the Founding Organization was helpful during implementation. However, when reflecting on sustainability long-term, one provider discussed how it could be challenging to create relationships with stakeholders. As the program spreads, the RT may have less time to dedicate to creating new relationships and may focus more on maintaining older ones.

Having a full-time RT this past year has been amazing because you've just made those connections because of consistency of the role. As it gets more spread out, that could be a challenge just in that it might take longer to establish those relationships... or become an afterthought when you're not seeing people that lay eyes on you very often (Provider #2, Provider Focus Group #1).

If it gets too spread out, one provider over too many teams, I would worry it will take longer to develop those relationships with the physicians and allied health with the patients (Provider #3, Provider Focus Group #1).

4.5 Patient's Views

Patients who had received care and education from the COPD management program were involved in a focus group with the intention of understanding their views. This was performed as a method of complementing the data collected from provider interviews and focus groups. Many patients had positive views, mimicking those of the providers. They expressed that the care they receive from the program was thorough and excellent. As Patient #1 said "She was very thorough and the other people that were with her, with their explanations of your puffers [and] your medication... I was a nurse, but that doesn't mean I know everything and [the RT] gave you [advice]... I find it very good, helpful (Patient Focus Group #1).

Through an analysis of the deductive and inductive coding, the results were gathered and compared. In both sets of data, the patient's comparison of their current and previous care was shown. This theme is represented in CFIR as - relative advantage - and was coded inductively as - comparison of care. Patients of the program reportedly prefer the COPD

management program to the alternatives they had previously experienced. Patient #4 made comments about the benefits compared to seeing specialists or other healthcare providers for their COPD. “I’ve got a specialist that I’m not agreeing with and that’s not helping me, I might as well not even go to him. [The RT] is doing [more for me] than he is (Patient Focus Group #1).

Throughout discussion, there were occasional mentions about patient’s confusion regarding the continuity of their care. These were coded deductively as – cosmopolitanism - and inductively as - communication between providers. Patients wanted to know about the collaborative nature of the care they received. Many received care from the program’s providers as well as a specialist, and as a result, were unsure if the providers ever communicated externally to the specialist about their care. “I don’t know whether they talk together or not. Same with the specialist, I don’t know if he talks – he doesn’t even seem to know my therapist” (Patient #4, Patient Focus Group #1). This, in conjunction with field note data shows a lack of communication between the program’s providers and the external supports that the patients use to manage their COPD.

As expected, due to the gap in CFIR’s ability to evaluate patient perspectives of care, inductive themes emerged which were not easily comparable with the CFIR constructs. Themes coded as “do as I am told”, and “awareness” emerged as important. “Do as I am told” emerged as a prominent theme within the patient focus group. Throughout the discussion, patients remarked about how if they used the self-management techniques that B-FHT providers taught them, they noticed an improved quality of life.

You follow what [the RT] says and [what] the doctor says and... my quality of life is better (Patient #2). I would agree, definitely, yeah (Patient #1). Yeah. Yeah, absolutely (Patient #3). Yeah. Yeah, a lot better, because I monitor it myself (Patient #4, Patient Focus Group #1).

Later, when Patient #3 was asked what their role was on the healthcare team, they reiterated with “I just do as I’m told” (Patient Focus Group #1). This signifies a trust that is built between the providers and patients of the program. The skills that they are taught

allow them to better manage their healthcare on their own, contributing to a perceived increased quality of life and trust in the program.

Another theme that emerged as part of the inductive coding was that of “awareness”. When asked about their awareness of being a patient of the COPD management program, Patient #1 responded with “I [did not] know” (Patient Focus Group #1). The other three patients in the focus group concurred with Patient #1’s response. This shows that the implementation of the program did not disrupt the flow of care that the patients were receiving, while still improving it. This was also shown to be evident because after the program was explained to them, the patients were asked to recall when they were transitioned in. The responses mostly agreed that working with the RT was the initiation point, while still stating “Well that’s a hard one for me because like I say, [I] flowed right through” (Patient #3, Patient Focus Group #1). Patient’s awareness of the implementation of the program was low and determined to be a facilitator to program implementation due to the easiness of the transfer.

4.6 Summary

The purpose of this chapter was to present the findings of this study as they relate to CFIR. Part one presented the demographics of all individuals that participated in the study including the number of participants in each type of data collection procedure. Part two provided a rich description about the context that this case study was situated in. The COPD management program was described with detail, along with the Founding Organization, and the FHT which acted as a site for implementation. Parts three and four presented the results of my study, providing supporting quotations from the focus groups and interviews, while including information gleaned from document and field note analysis as support. Lastly, part five discussed patient’s views about the implementation of the program and how it increased their quality of life. In chapter five, I will compare the findings presented in this chapter with those in the current literature surrounding the implementation of chronic care models. Discussion will be centered around each finding as a construct of CFIR and then the research objectives.

Chapter 5

5 Discussion

The purpose of executing this study was to answer the question: what are facilitators and barriers to the implementation of a chronic care model for COPD management? In order to answer this question, my research objectives were to: 1) determine the enabling factors of implementation and spread of an interprofessional team-based model of care; and 2) explore the processes associated with the peer-to-peer approach to implementing a team-based model of care.

This chapter will begin by summarizing key findings from my study and comparing them to the literature. This will include a comparison to the systematic reviews broken down in chapter two by Davy et al. (2015) and Kadu and Stolee (2015), which both examine factors affecting the implementation of chronic care models in primary care. The discussion will be presented according to the five categories of CFIR. Research objectives as they relate to the discussion will then be presented followed by a discussion of the limitations of the study. Lastly, I have included a section on reflectivity pertinent to the constructivist nature of my study.

5.1 Innovation Characteristics

The main findings in the category of innovation characteristics were classified under a) design quality and packaging; b) complexity; and c) relative advantage.

5.1.1 Design Quality and Packaging

Much of the literature surrounding design quality and packaging in relation to implementation has been published within the last decade. A literature review revealed that many studies described design quality and packaging not as a facilitator to implementation, but explain how it acts as a barrier when not done well (Hagedorn et al., 2019; Stevenson et al., 2018; Weir et al., 2019). Stevenson et al. (2018) described a

scenario where participants believed a program was designed poorly at the policy level, resulting in confusion at the organizational level during implementation. Participants in that study identified that developing education materials would have helped guide the implementation process (Stevenson et al., 2018). In order to facilitate implementation, the design of the intervention must be well packaged and presented. King et al. (2019) discussed how well-designed educational materials for the study's participants fostered their fuller engagement in the implementation effort. The participants then reported increased clarity, acting as a contributing factor to successful implementation (King et al., 2019).

Counterintuitive to my study, design quality and packaging was not listed as a major factor to implementation in either of the systematic reviews by Davy et al. (2015) or Kadu and Stolee (2015). B-FHT providers discussed how the Founding Organization designed and packaged the COPD management program in an evidence-based way, using proven outcome measures. Participants further explained how this presentation was useful in convincing B-FHT to decide to implement the program. Providers agreed that due to the high quality of evidence and experience presented on behalf of the program by the Founding Organization, they unanimously decided to proceed with implementation. Unlike the instances documented in Hagedorn et al. (2019); Stevenson et al. (2018); and Weir et al. (2019), the design quality and packaging was not a barrier to implementation, but acted as a facilitator as described in King et al. (2019).

5.1.2 Complexity

Participants from my study reported on the high level of simplicity during the program's implementation. This feeling was shared by multiple key participants at B-FHT. The Founding Organization was exceedingly involved during the implementation process, supporting B-FHT in many aspects of implementation including data mining and training providers. Providers at the site explained how it was this high level of support from the Founding Organization that resulted in the complexity of implementation being perceived as low.

Literature about program implementation complexity states that if stakeholders believe the implementation to be simple, the program is more easily implemented into practice (Greenhalgh et al., 2004). Complexity is listed as a major factor affecting the implementation of chronic care models in the systematic review conducted by Davy et al. (2015), labeled as the synthesized finding - information about the change. According to the authors, implementers require the implementation plan be explained clearly and thoroughly to avoid any misconceptions about the desired outcomes. If this is accomplished, a chronic disease management program can be more effectively implemented (Davy et al., 2015). It is also important to note a high degree of complexity in any implementation setting can cause conflict and stakeholder alienation, acting as a barrier to implementation (Kochegar & Yano, 2006). One B-FHT provider stated that the implementation complexity of the program was increased due to the installation of an additional patient reporting system. However, this was mitigated by the user-friendliness of the system and willingness from the Founding Organization to train providers how to use it. Overall, the complexity of the COPD management program was perceived as low by the participants, facilitating implementation efforts. Accordingly, providers eagerly explained their desire to implement all future programs in a similar way.

5.1.3 Relative Advantage

Relative advantage was mentioned most frequently when discussing B-FHT's first attempt at implementing a COPD management program. A B-FHT RT discussed how she had attempted to establish an internal program for COPD management prior to the involvement of the Founding Organization. The providers explained that due to the region's high prevalence of COPD, they decided this type of program was needed. They further explained that unfortunately, this attempt lacked the ability to make a meaningful impression because their resources were limited to a single RT covering five sites and only working a 0.5 full-time equivalent position. The Founding Organization proposed an alternative program that included funding resources and a plan based on proven outcomes (Ferrone et al., 2019). The providers explained how the relative advantage for B-FHT was high, acting as a facilitator to implementation.

Greenhalgh et al. (2004) discussed how when programs have a “clear, unambiguous advantage in either effectiveness or cost-effectiveness [they] are more easily adopted and implemented” (p. 594), however if no advantage is seen, often considerations do not progress. In their study, Weir et al. (2019) located 12 different examples that show when a program being implemented offered a relative advantage compared to an alternative, it acted as a facilitator to implementation. B-FHT management explained how the Founding Organization improved upon the program that they had already attempted to implement. Provider #2 elaborated that after six months of failed implementation attempts, the relative advantage of the new program was too great to refuse. She explained that within three months, it seemed the new program was implemented much more efficiently than the original internal program.

5.2 Outer Setting

The main findings in the category of outer setting were classified under a) patient needs and resources; and b) cosmopolitanism.

5.2.1 Patient Needs and Resources

When B-FHT providers explained the motive supporting the implementation of the COPD management program, patient needs were discussed as one of the main reasons. Providers considered COPD a significant problem within the region and wanted to take action to address it. They mentioned that even though RTs do not usually work in primary care, B-FHT hired one in an attempt to address the community’s respiratory health needs. A great deal of literature explains how implementation efforts should take into consideration contextual factors at multiple levels including the provider, team, organization, and system levels (Aarons et al., 2011; Ault-Brutus et al., 2014; Damschroder et al., 2009; Davy et al., 2015; Greenhalgh et al., 2004). The synthesized finding - a reason to change - in Davy et al. (2015)’s systematic review describes how providers must be aware of how their patients can benefit from programs. Implementation will be facilitated when providers believe their intervention is being implemented for the purpose of helping patients with a specific need, rather than just

change for change's sake (Davy et al., 2015). According to the participants, the COPD management program addressed a clear and growing need for COPD-specific care in the community. Because of this, patient needs and resources acted as a facilitator to the implementation of the program.

5.2.2 Cosmopolitanism

Cosmopolitanism describes how networked an organization is to other external organizations (Damschroder et al., 2009). In the case of the COPD management program, it reflects B-FHT's partnership with the Founding Organization. According to provider comments and document analysis, the Founding Organization was instrumental in assisting B-FHT with implementation and sustainability of the program. Literature on the implementation of chronic care models states that when a collaborative effort is made with external organizations, implementation and sustainability efforts are more effective (Davy et al., 2015) and factors such as communication, cohesion, role clarity, and role primacy increase (Bauer et al., 2019). This is represented within Davy et al. (2015)'s work as the synthesized finding - collaborations with other healthcare services - and mimicked in recent works by Bauer et al. (2019); Brown et al. (2012); and Huang et al. (2018). Multiple participants described the relationship between B-FHT and the Founding Organization as beneficial. The Founding Organization's guidance and support was reported by participants as necessary to enable implementation in such a successful manner. When sustainability was discussed, the providers agreed they were ready to function long-term without continued support from the Founding Organization. This indicated sustainability support was given to B-FHT during the implementation process.

Although B-FHT's partnership with the Founding Organization acted as a facilitator to implementation overall, participants discussed how it did cause conflict when deciding how to implement the spirometry piece of the program. B-FHT wanted to maintain their relationship with the local hospital by allowing them to continue spirometry testing for patients with COPD. Contrary to this, the Founding Organization wanted B-FHT to provide this part of treatment. This political relationship was a cosmopolitan barrier that,

although may have initially hindered implementation, was resolved through an agreement between the Founding Organization and B-FHT which allowed the status quo to be maintained.

5.3 Inner Setting

The main findings corresponding with the inner setting category were represented as a) networks and communication; and b) readiness for implementation – available resources.

5.3.1 Networks and Communication

Networks and communication (Kadu & Stolee, 2015) or information and communication as termed in Davy et al. (2015) are both facilitators within literature surrounding the implementation of chronic disease management models. Kadu and Stolee (2015) discussed how many strong implementation efforts have established internal networks used to communicate frequently. Doing so helps improve long-term sustainability, keep track of patients, and notice gaps in service provision (Davy et al., 2015). However, when information and communication systems fail, they can become a significant barrier to implementation (Weir et al., 2019). For example, Davy et al. (2015) reported instances when a difficult EMR limited communication between providers. Individuals felt the new system was onerous rather than beneficial, thereby hindering implementation (Davy et al., 2015). In the case of the COPD management program, the physician expressed positive views about the EMR system, describing it as user-friendly. Providers reported increased discussion between providers and collaboration on patient care as a result.

Networks and communication was a replicated finding, labelled as - transparent communication - in another paper studying the Founding Organization's use of networks during implementation (Sibbald et al., Under Review). Providers mentioned that throughout implementation, networks were used by the RTs to allow them to discuss ongoing concerns. Participants additionally mentioned that at any time, Program Lead #2 was available to consult if required, acting as the main communication point for providers during implementation. In healthcare teams, providers use different types of formal and

informal social networks to assist them in sharing information (Greenhalgh et al., 2004). In this case, providers noted the increased importance of group meetings, using them as a resource to share thoughts and concerns about patients and program implementation. Valente et al. (2015) discussed how formal and informal social networks can be useful to facilitate program implementation during parts of the implementation process including understanding, monitoring, influencing, and evaluating. Similar to what Kim and Free (2008) say, increasing communication among the same types of providers and establishing networks were mentioned by providers as key components to facilitate peer-to-peer implementation.

Additionally, a B-FHT provider remarked that communication can act as a barrier when it is done poorly. Multiple providers stressed the importance of frequent reminders for team meetings. If these reminders were forgotten, the chance to communicate and collaborate at these meetings was missed.

5.3.2 Readiness for Implementation – Available Resources

Literature concerning the availableness of implementation resources discusses how a lack of resources, or a misuse of available resources can constitute a barrier to implementation (Davy et al., 2015; Uvhagen et al., 2018; Yapa & Bärnighausen, 2018). Uvhagen et al. (2018) showed that managers working in health services research are often conflicted with the responsibility of performing multiple roles simultaneously. These roles include providing healthcare services and facilitating training toward implementation. Uvhagen et al. (2018) further mentioned it is this multiplicity of roles that leads to ineffective resource allocation, acting as a barrier to implementation. Yapa and Bärnighausen (2018) specifically discussed how contextual factors which create circumstances where resources are limited affect overall implementation. They elaborate to say that one solution to counteract this is an influx of funding and resources from external organizations (Yapa & Bärnighausen, 2018). When comparing this finding to Davy et al. (2015), we see similarly, the importance of resources such as funding, time, and

information and communication systems, and how they are important for implementation and sustainability.

The findings from my research agree with the literature presented above (Davy et al., 2015; Uvhagen et al., 2018; Yapa & Bärnighausen, 2018). Participants discussed how the addition of a full-time RT position made a meaningful difference in the overall provision of COPD-related healthcare and education services. Providers mentioned that since B-FHT is spread out over five sites, prior to involvement by the Founding Organization, their lack of resources (a single 0.5 full-time equivalent RT) acted as a barrier to implementing their internal COPD management program. Due to the addition of the Founding Organization's resources, one provider elaborated on how their site was able to assign tasks such as data mining to the administrative staff instead of the RT. She explained how this allowed the RTs to make the best use of their time by treating and educating patients. If a site does not have the available resources to assign the work to an administrative assistant, then the RT must complete it, taking away from time seeing patients. Similar to what the literature suggests, improper resource allocation can constitute a barrier to implementation (Uvhagen et al., 2018).

5.4 Characteristics of Individuals

Data falling under the category characteristics of individuals, was presented as a) self-efficacy; and b) knowledge and beliefs about the intervention.

5.4.1 Self-Efficacy

Damschroder et al. (2009) describes self-efficacy as a provider's ability to feel confident enough in their own abilities to implement a program. Correspondingly, Davy et al. (2015) proposed a synthesized finding labeled - appropriately qualified and experienced chronic care staff - which demonstrates the importance of having providers on the healthcare team who have the skills necessary to execute the program and achieve implementation goals. A pair of studies by Feifer et al., (2001) and (2006) found that when providers lacked self-efficacy, a high staff turnover rate was reported, acting as a

factor undermining the implementation process. Likewise, another study found a decrease in staff turnover was related to high levels of self-efficacy among providers, aiding implementation (Wagner et al., 1999).

Providers at B-FHT discussed how having a RT trained by Program Lead #2 was an extremely useful resource. The new expertise of this RT allowed the other providers to seek recommendations when required about treatment for patients with COPD. Due to this, multiple providers reported having an increased sense of self-efficacy in their ability to treat and educate patients. Program Lead #2's training of the RTs had been a major facilitator to increasing the self-efficacy of providers during program implementation. The study by Sibbald et al. (Under Review), examining the Founding Organization's use of networks in implementation, showed that facilitating empowerment among providers on the team was a critical juncture. This allowed providers to feel more confident expanding their scope of practice and to build trust in each other, further increasing self-efficacy.

5.4.2 Knowledge and Beliefs about the Intervention

During data collection, participants articulated positive views about the implementation of the COPD management program. Field notes showed a consistently high level of agreement among providers and patients regarding the success of the COPD management program's implementation. Patients reported this was due to their increased adherence to medication and self-management, seemingly resulting in an increased quality of life. Providers remarked about the success of the implementation due to reports of decreased emergency department visits by patients. During this discussion, they attributed a large share of the success to the critical role of the RT. Pfadenhauer et al. (2017) discussed how certain individuals can act as champions during an implementation process. According to an analysis of the field notes and focus group data, the RT possessed a high level of positive belief about the program. As a result, others on the team mentioned they were positively influenced by her to maintain these beliefs during implementation. Having positive beliefs about a program was shown as a facilitating factor to implementation in

the systematic review by Kadu and Stolee (2015). Participants reported that the implementation of the COPD management program into B-FHT was facilitated by the positive beliefs stakeholders held.

5.5 Process

Two constructs were used to represent the process category. These were: a) engaging; and b) reflecting and evaluating.

5.5.1 Engaging

Engaging champions to become key facilitators during implementation is a contributing factor to success, particularly when provider support is low (Hagedorn et al., 2019). Hagedorn et al. (2019) explained how champions can help increase provider support by appearing enthusiastic and supportive. Furthermore, Weir et al. (2019) aggregated the results from multiple studies which similarly showed engagement of various stakeholders and healthcare professionals can be a facilitating factor to implementation in primary care. When leadership is engaged, there is more likely to be support from other providers. Similarly, if leadership is not engaged, stakeholders may begin to lose interest (Stevenson et al., 2018).

Davy et al. (2015) and Kadu and Stolee (2015) discussed how engaging leaders and champions is a major factor to implementing chronic disease management models in primary care. Having supportive leadership committed to an implementation effort is a “consistent theme within the papers reporting upon facilitators and barriers” (Davy et al., 2015, p. 6). Within most of the literature discussed here (Davy et al., 2015; Hagedorn et al., 2019; Stevenson et al., 2018), physicians are described as the primary implementation leaders. Alternatively, Kadu and Stolee (2015) elaborated on how leaders in healthcare can be any stakeholder and are not limited to physicians. Participants identified members of the Founding Organization, Program Lead #1 and Program Lead #2 as leaders during implementation. They organized the majority of primary care provider recruitment, facilitated training, and ensured B-FHT management was on-board. B-FHT management

was also identified as a leader, fully supporting implementation and encouraging site-wide buy-in. Lastly, the RT acted as a champion for other providers, influencing them to become engaged.

5.5.2 Reflecting and Evaluating

After the initial stages of implementation, it is important to regularly debrief with stakeholders to allow for critical reflection and evaluation (Breimaier et al., 2015; Davy et al., 2015). Davy et al. (2015) refers to this construct as - monitoring and evaluating. They discuss how each implementation effort should have a system for feedback in order to ensure proper implementation and continued sustainability. If a program does not collect data to use for evaluation, then sustainability (Davy et al., 2015) and continuous quality improvement (Stevenson et al., 2018) will suffer. Stevenson et al. (2018) showed that sites which included systems for feedback had a more successful implementation. An example of this was shown by Breimaier et al. (2015) wherein evaluation data was used in team meetings to create discussion points. These points were then used to facilitate discussion about reviewing any necessary changes to the ongoing implementation strategy.

During analysis, reflecting and evaluating was revealed as an important CFIR construct for both the Founding Organization and B-FHT. The Founding Organization used evidence-based data collected in a randomized control trial as well and other methods to inform its implementation (Ferrone et al., 2019). Document analysis revealed it is this data that allows the Founding Organization to see which outcome measures are important for implementation and sustainability. Additionally, B-FHT providers discussed how they value outcome measures as a method of determining success. After reviewing the data collected, they were able to determine, to a degree, the success of the program. According to Damschroder et al. (2009), qualitative feedback is also important in the reflection and evaluation process. When given the chance to reflect upon implementation, all providers voiced positive comments. They submitted their encouragement to other teams and recommended they agree to have the program implemented if offered the chance.

5.6 Research Objectives as they Relate to the Discussion

While designing my study, it was important to keep in mind the two research objectives. The first objective was to determine the enabling factors of implementation and spread of an interprofessional team-based model of care. In future iterations of chronic care programs, it is recommended that CFIR be used to evaluate the enabling factors. Although all of the factors I have discussed in this chapter affected implementation in a meaningful way, five were determined by the research team as the key enabling factors to consider when implementing a team-based chronic care program. They were identified as most important because they were discussed the most frequently and shown to affect implementation in the greatest way according to data analysis. These five are cosmopolitanism, networks and communication, engaging, design quality and packaging, and reflecting and evaluating.

Cosmopolitanism was identified as the most important enabling factor during the implementation of the COPD management program. B-FHTs relationship with the Founding Organization during the implementation process was necessary in order to provide structure for the program to be successful. When implementing a chronic care management program, it is important to first consider collaboration with other external organizations. Networks and communication was identified as the next most important enabling factor because of the opportunities it gave B-FHT providers to collaborate amongst each other during and following implementation. Being able to have access to knowledge from other providers was a major facilitating factor during program implementation and execution. Third, it is important to engage stakeholders such as providers during the implementation process. It was reported to facilitate implementation greatly when program stakeholders were on-board with program implementation. The next most important factor was the design quality and packaging of an intervention prior to implementation. This factor was considered important because it affected B-FHT's decision to proceed with implementation. If the program was not packaged well, then it may have been more difficult to persuade B-FHT management to accept it. Lastly, when

implementing a program, organizations should consider the processes of reflecting and evaluating. These processes are important after the initial implementation of a program because it allows organizations to understand if adjustments need to be made moving forward.

In addition to the five most important enabling factors, six additional factors played a meaningful role in facilitating the implementation of the COPD management program. These were complexity, relative advantage, patient needs and resources, readiness for implementation – available resources, self-efficacy, and knowledge and beliefs about the intervention. These findings, in addition to the five already mentioned, were shown to facilitate the implementation of chronic disease management programs similar to the one implemented. The implementation should have low complexity, pose a relative advantage, take place in a community that needs the program's services, have a full time RT, and promote high provider self-efficacy and positive beliefs about the intervention.

As mentioned in chapter three, only 32 of 39 CFIR constructs were used during the coding process. Interestingly, this left seven constructs which were not discussed at all by the study's participants. The fact that there were constructs remaining unused after the data analysis process was completed could have various meanings. It may be a result of the questions asked during data collection or my influence as a constructivist researcher. Perhaps if another individual performed this study or used a different set of questions any number of those seven constructs would have appeared. Alternatively, it could speak to the comprehensiveness of CFIR as a useful research tool for determining factors that affect implementation. If CFIR is comprehensive, then it stands to reason not all of its factors would affect every implementation effort. There would exist factors, such as the seven discussed here, that although were not seen in this study, affect implementation elsewhere.

It is entirely possible CFIR is not comprehensive and there exist factors mentioned during data collection outside CFIR's scope. However, when coding was undertaken, no data collected from provider participants did not fit into a CFIR construct and was listed as

miscellaneous. Although only 11 constructs appeared in the results, 32 in total were coded in some capacity. This shows the breadth of the CFIR constructs at determining factors affecting implementation. It is for these reasons I believe CFIR was comprehensive enough to cover all factors affecting implementation at B-FHT. Overall, I believe that CFIR was a suitable determinant framework for conducting my study. It provided a broad and useful set of constructs from which was able to determine factors affecting the implementation of the COPD management program. I would recommend this framework for use in the future when conducting studies examining factors affecting the implementation of healthcare programs.

The next research objective was to explore processes associated with the peer-to-peer approach to implementing a team-based model of care. Through the data collection and analysis processes, we were able to determine which processes were important during the peer-to-peer implementation approach.

As the literature describes, the peer-led education is a fundamental part of the definition of peer-to-peer implementation (Aimola et al., 2016; Pronovost & Hudson, 2012; Walpola et al., 2018). During the implementation, this education presented in the form of certified respiratory educator training performed by Program Lead #2 and delivered to the B-FHT RTs. Program Lead #2 has been a certified respiratory educator for many years and is now training other experts in lung health, facilitated by a peer-led approach. The providers mentioned how this peer-led training, along with the availability of Program Lead #2 to be contacted for advice throughout implementation were key facilitators to implementation. After this, the RT was able to offer informal peer-led education to the other providers. Providers mentioned many times that having a newly trained expert on COPD at the site was useful because it allowed them the opportunity to learn. Lastly, a key component surrounding the peer-to-peer implementation was the creation and use of a RT network. Providers mentioned the network allowed RTs to maintain contact throughout and following implementation. This allowed them to share emerging ideas and concerns about patients and the program. The increase of networks and

communication among providers was reported by participants as a major facilitator to the implementation of the COPD management program.

5.7 Limitations

Although this study followed rigorous qualitative technique and a specific methodological paradigm as outlined in chapter three (Stake, 1995), there were limitations.

Due to the nature of this case study (a FHT), the potential for participants to have previous working and social relations was high, possibly affecting their willingness to fully participate in focus groups. A collective setting of individuals discussing work-related topics runs the risk of suppressing expression of negative views or coming to a false consensus (Litosseliti, 2003). This posed a potential problem with the quality of findings, as suppression of negative but honest remarks about the program, if not captured by the research, will affect the findings. In order to ameliorate this, I disseminated an interim finding report to be shared amongst staff with opportunity for individual feedback. No feedback was received after offering providers this option. This led me to believe the results of the interim report were representative of provider views. It is possible providers did not respond out of apathy, thereby acting as a possible limitation to the findings. This was responded to through a second provider focus group where member checking, a qualitative technique used to ensure researcher's interpretation of data is aligned with participant views (Birt et al., 2016) was performed, giving providers another chance to express their views. Additionally, providers were assured no work-related repercussions would be taken against them for expressing honest views during data collection.

We reached out to the executive director of B-FHT on an ongoing basis throughout the study for the purposes of recruiting additional primary care providers for interviews. Despite our best efforts, we were only able to secure a single physician participant for a phone interview. It was difficult to recruit additional primary care providers for the study

due to the changing landscape as a result of the novel coronavirus (COVID-19) as well as the ongoing amalgamation of B-FHT with a neighbouring FHT. Although only having a single physician interview was a limitation, we were able to compare the physician's remarks with comments made from other providers, finding similarities. This, in addition to triangulation of the data and member checking established confidence that the data collected in this study represents additional primary care provider beliefs well.

As mentioned in section 3.2.3, due to the vulnerable status of many patients with COPD, only patients deemed healthy enough by the RT could participate in the study. The recruitment of solely healthy patients poses the possibility of a bias. It stands to reason that healthy patients may present with more positive views of the program and its implementation than would other patients. Although there was no way to avoid this limitation, we do not believe it altered the results meaningfully.

Additional limitations that must be addressed are those innate with Stake (1995) case study methodology and the constructivist paradigm in research. When discussing data collection and analysis, Stake (1995) mentions that there is no particular time when either formally begins. This can be perceived as uncoordinated and less rigorous by those who align with the post-positivist Yinnian method (Yazan, 2015; Yin, 2002; Yin, 2012), however it is this freedom to collect and analyze data that defines the constructivist methodology. Stake (1995) maintains that the research process cannot be drawn like a map and followed from start to end and that even though the process is malleable, it takes significant skill from the researcher to navigate the research process (Yazan, 2015).

Constructivism involves the creation of knowledge between the researcher and the participant (Merriam, 1998). Therefore, the data collected in this study was the participant's perceptions of the factors affecting implementation as comprehended by the researcher. This poses a possible limitation, because participant knowledge regarding the root cause of factors affecting implementation may be lacking. Therefore, the results, although representative of the study participant views, may be less generalizable during

instances of staff turnover, or implementation at another FHT when different individuals are responsible for constructing the reality.

The transferability of the findings may be reduced due to the anonymization of the case and founding organization. Without a full identifying description, it may be more difficult to transfer the results to a program implementation at another site. This was mitigated through a rich description of the case and the Founding Organization throughout.

Lastly, few barriers to implementation were found. I believe this is a result of my interpretations of the context surrounding the implementation of the COPD management program by the Founding Organization (discussed in 5.8 Reflexivity). Because the data produced such favourable outcomes at this site, many facilitators to implementation were determined. This acted as a limitation by affecting the usefulness of the findings in informing the spread and implementation of the program to other sites.

5.8 Reflexivity

As a researcher using constructivist Stake (1995) case study methodology, it is important to remember that we must have an active personal role in data collection and analysis. As constructivists we believe knowledge is constructed during interaction between the researcher and the participants. Alternatively, in post-positivist research, the researcher is often asked to shelve their beliefs and to collect and analyze data with no influence (Denzin & Lincoln, 1994). When the researcher becomes involved, multiple different interpretations of reality are formed (Merriam, 1998) and I believe in order to help understand the data as it was created by the participants in conjunction with the research team, a reflexivity piece is required.

It is important as a constructivist researcher that I practice reflexivity (Finlay, 2002). This can be done by stating my preconceived notions and assumptions about the research and discuss how they affected my interpretation of the data. Since the beginning of this project I have been forming opinions, impressions, and interpretations by reading, reflexive note taking, and formal data collecting with participants. It is this constant

learning and interpretation that has caused the evolution of my research question throughout this process, something Stake (1995) believes is necessary during research. The decision to engage in this particular research project came after a discussion with the principal investigator. She had worked alongside the Founding Organization in the past, evaluating their initial COPD management program, and as a result knew their program and implementation strategy well. The initial iteration of the program was studied and understood to be a notable success as determined by measuring patient outcomes. As a result, upon the commencement of my research project, I possessed an understanding that the COPD management program was, in itself, a successful program.

This understanding, although backed up by statistics from the first implementation (Ferrone et al., 2019), influenced the way I interpreted my results. Although I found the majority of results to be clearly positive, I believe that on occasion, I may have been more likely to code in a positive manner rather than neutral or negative. This was as a result of my pre-conceived notion of the COPD management program being a success. Although I do believe that my interpretation of the data fit with proper constructivist methodology, due to this, there may exist other interpretations of which I was not immediately aware of. These interpretations may have been understood by another researcher unaware of the Founding Organization's original implementation of the COPD management program.

Throughout this research project there was no greater dilemma for me than choosing my ontological perspective. Being torn between constructivist and post-positivist lenses was difficult, because it made me think about how knowledge is created in different circumstances. I realized that I need not select an ontological perspective for the rest of my life, but that it may change depending on the nature of the research I undertake. I realized although post-positivism has its place in research and would have been certainly adequate, constructivism was the appropriate perspective for this particular case study.

If I had to do this project again, there are two things I would have incorporated with the benefit of hindsight. First, I would have used an inductive coding technique in addition to

a deductive technique for all of the interviews and focus groups, not solely the patient focus group. Doing so would have allowed me to compare those results with my current results for similarities and differences. Additionally, it would allow me to test CFIR's comprehensiveness for provider data. Secondly, I would try a post-positivist approach. This would allow me to flex my Yinian (Yin 2002; Yin, 2012) muscles and challenge the research question from an alternative point of view. I believe it would offer me a different insight into the B-FHT case studied.

Overall, I believe the addition of an inductive coding process was successful in bringing out themes that otherwise would not have been evident if a solely deductive framework was utilized. Some of the inductive themes that emerged aligned with the deductively coded constructs, showing consistency. Although the inductive coding required more analysis because the data did not all fit into previously determined constructs, it was a useful tool in exploring patient views on program implementation. I would recommend it for use in the future when analyzing qualitative patient data in conjunction with CFIR.

In the end, I was able to gain considerable perspective and experience taking part in this research project and am quite content with the result; a constructivist case study of a chronic disease management program rooted in implementation science theory.

5.9 Summary

The purpose of this chapter was to discuss the findings of my research in relation to current literature. In addition to this, each construct was compared to the results of two systematic reviews (Davy et al., 2015; and Kadu & Stolee, 2015), which examined facilitators and barriers affecting the implementation of chronic care models in primary care. Examples from data were given to substantiate the comparison and show the degree of alignment with the literature. After this, discussion was centered on the fulfilment of the research objectives. Finally, the chapter included sections on limitations and reflexivity. The next chapter will discuss the implications of these findings in various contexts including future research, policy/system, and practice.

Chapter 6

6 Conclusion

This study was performed to determine the factors that affected the peer-to-peer implementation of a COPD management program. This chapter will begin by discussing the implications this study has on future research. Furthermore, policy and practice implications will be explored. A conclusion, summarizing the contents of this thesis will be provided.

6.1 Implications

6.1.1 For Future Research

Implementation of the COPD management program at B-FHT was the Founding Organization's initial step in the spread of the program to multiple sites. As the program continues to spread, it will present opportunities for additional research. Evaluating the implementation at multiple sites will allow a cross-case comparison of data. The potential overlap of findings may influence not only how programs such as this are implemented at individual sites, but how they are scaled and spread to sites in different regions.

This research discovered factors affecting the implementation of the COPD management program into B-FHT, during which time, the sustainability of the program was discussed in brief. Although participants mentioned that the program possessed a high degree of sustainability due to assistance from the Founding Organization, determining the specific factors affecting the level of sustainability were outside the scope of this study. Future research could create a deeper understanding of the factors affecting the program's sustainability by examining B-FHT longitudinally and evaluating its level of sustainability over-time as a result of the Founding Organization's influence.

According to providers, B-FHT was an ideal location to implement the program due to the high prevalence of COPD in the community. Future research can conduct a needs

assessment of communities to determine which have high concentrations of patients with COPD and would benefit most from the program. By identifying these communities in Ontario, the Founding Organization would have promising FHT locations for implementation. This would increase the probability of implementation success as explained by the construct patient needs and resources.

Throughout the reflection and evaluation process, B-FHT providers mentioned that patient outcome measures are an important measure of success. Providers receive some outcome measures from the Founding Organization's data. Providers explained that these statistics, along with occasional anecdotes from the patients has shown that the program has likely led to improvements in patient's quality of life. This data was not explicitly collected as it was outside of the scope of my study. Although it appears that patient health has improved, future research could seek to gather proof of increased quality of life by examining this measure before and after the implementation of the program. This would provide verification of program operational success in addition to implementation success.

6.1.2 For Policy/System

When comparing my findings with literature, it was determined that many factors affecting implementation of the program studied are similar to those found to affect the implementation of other similar models of care. For example, networks and communication, engaging, and knowledge and beliefs about the intervention were results found in this study as well as in the systematic reviews by Davy et al. (2015) and Kadu and Stolee (2015). The results from my study build upon this body of literature. My study, in conjunction with those from future research and the existing literature, can be used to create a standardized framework to support the evaluation of team-based chronic care models. Such a framework could assist in the standardized evaluation of chronic care models and the dissemination of information surrounding discussion of these standards. The framework could potentially be modeled after the CFIR evaluation framework Damschroder and Lowery (2013) created to evaluate the implementation of a large-scale

weight management program. In this example, each CFIR construct is given a rating (-2 to +2) based on the degree it facilitates or acts as a barrier to implementation (Damschroder & Lowery, 2013). This framework can be used to determine which constructs are most important to consider while implementing or to compare with other programs. Unfortunately, this framework is very subjective, being influenced based by the beliefs of the evaluator, causing a possible bias if used for program comparison. This framework was not found in many studies in the literature, and as such, more analysis would be required before a standardized framework was developed. If the framework was modified to include a Likert-style scale, it may be easier to use during evaluation.

6.1.3 For Practice

Results from this study have been turned into reports for B-FHT and the Founding Organization. They will provide a clearer understanding of the various facilitating and impeding site-specific CFIR factors relevant to implementation as well as the function of peer-to-peer implementation. Our hope is that these reports will be useful to both organizations by determining the factors which should be nurtured to facilitate implementation as well as those that should be mitigated to avoid barriers.

The spread of the COPD management program is ongoing; therefore, the reports will be immediately useful for the Founding Organization as it considers the current spread of the program to other FHTs. In the future, the Founding Organization will be able to take steps towards achieving greater program spread and sustainability as it compares findings from this research to those from other sites. The information gained from the reports will also be immediately beneficial to B-FHT. Since the data collected represents provider's perception about the different aspects of implementation, B-FHT will be able to take lessons learned from this research and make adjustments to their current program delivery by focusing on maintaining or improving facilitators that the participants deemed important. B-FHT will also be able to use information in the reports to surmise site-specific factors that will help in future program implementation.

If future iterations of this program consider the implementation factors discussed, more patients will be able to benefit from the COPD-specific education and care received. Therefore, when patients who have received this education suffer an exacerbation, they will be more likely to possess the knowledge and skills necessary to self-manage their condition. If more patients are able to self-manage their COPD-related exacerbations at home, they will be less inclined to use emergency department resources to relieve their condition. If this occurs on a larger scale, it has the potential to reduce the financial burden of patients with COPD on the healthcare system in Ontario.

The implications of this research can be useful to organizations beyond B-FHT and the Founding Organization. In the discussion, the results were compared to literature surrounding the implementation of many types of chronic care models. These other models were successful, but not specific to COPD management. They included education and care for chronic diseases such as diabetes. This creates the possibility for the findings of this study to be used by organizations to evaluate the peer-to-peer implementation of chronic disease management models for other chronic conditions.

6.2 Conclusion

This study was conducted to understand the facilitators and barriers that affect the implementation of a chronic care management program for patients with COPD. The program was examined in order to: 1) determine enabling factors of implementation and spread of an interprofessional team-based model of care. Although all factors discussed were relevant to implementation, the five most influential factors to successful program implementation were reported as cosmopolitanism, networks and communication, engaging, design quality and packaging, and reflecting and evaluating. 2) Explore the processes associated with the peer-to-peer approach to implementing a team-based model of care. With Program Lead #2 acting as the educator and main point of contact throughout implementation, RTs were trained to become certified respiratory educators. This allowed the RTs to provide care tips to other providers regarding respiratory care.

Additionally, a network of RTs was utilized in order to share information amongst each other concerning patients and the program.

To accomplish this, the study used a constructivist approach to qualitative case study research, closely following methodology developed by Robert E. Stake (1995). Data was collected from 28 provider and patient participants and triangulated using focus groups, interviews, observational field notes, document analysis, and member checking. To analyze the results, I incorporated descriptive theory into case study using CFIR. This framework was used to deductively code the data collected. Data was analyzed with rigorous procedure involving multiple coding processes.

The findings of this study revealed that the CFIR constructs of 1) Design Quality and Packaging, 2) Complexity, 3) Relative Advantage, 4) Patient Needs and Resources, 5) Cosmopolitanism, 6) Networks and Communications, 7) Readiness for Implementation – Available Resources, 8) Self-Efficacy, 9) Knowledge and Beliefs about the Intervention, 10) Engaging, and 11) Reflecting and Evaluating were most influential during the implementation process. Based on these findings, an ideal implementation of the COPD management program would have those factors considered. The intervention would be presented to the FHT in an evidence-based manner, have low implementation complexity, and have benefits in comparison to an alternative option. Additionally, implementation would include providers who are concerned that their community has a high level of COPD, partnerships with external organizations, and internal communication networks for providers. Lastly, the program would have a full time RT, training that boosts provider self-efficacy and beliefs about the intervention, engaged implementation champions, and a system in place for effective feedback. In order to facilitate a knowledge translation approach, reports outlining the facilitators and barriers to implementation were developed and given to B-FHT and the Founding Organization to assist in current and future spread and sustainability efforts.

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Appendices

Appendix A: Consolidated Framework for Implementation Research Constructs and Descriptions

Construct	Short Description	
1. Intervention Characteristics		
A	Intervention Source	Perception of key stakeholders about whether the intervention is externally or internally developed.
B	Evidence Strength and Quality	Stakeholders' perceptions of the quality and validity of evidence supporting the belief that the intervention will have desired outcomes.
C	*Relative Advantage	Stakeholders' perception of the advantage of implementing the intervention versus an alternative solution.
D	Adaptability	The degree to which an intervention can be adapted, tailored, refined, or reinvented to meet local needs.
E	Trialability	The ability to test the intervention on a small scale in the organization, and to be able to reverse course (undo implementation) if warranted.
F	*Complexity	Perceived difficulty of implementation, reflected by duration, scope, radicalness, disruptiveness, centrality, and intricacy and number of steps required to implement.
G	*Design Quality and Packaging	Perceived excellence in how the intervention is bundled, presented, and assembled.
H	Cost	Costs of the intervention and costs associated with implementing the intervention including investment, supply, and opportunity costs.
2. Outer Setting		
A	*Patient Needs and Resources	The extent to which patient needs, as well as barriers and facilitators to meet those needs, are accurately known and prioritized by the organization.
B	*Cosmopolitanism	The degree to which an organization is networked with other external organizations.
C	Peer Pressure	Mimetic or competitive pressure to implement an intervention; typically because most or other key peer or competing organizations have already implemented or are in a bid for a competitive edge.
D	External Policy and Incentives	A broad construct that includes external strategies to spread interventions, including policy and regulations (governmental or other central entity), external mandates, recommendations and guidelines, pay-for-performance, collaboratives, and public or benchmark reporting.
3. Inner Setting		
A	Structural Characteristics	The social architecture, age, maturity, and size of an organization.
B	*Networks and Communications	The nature and quality of webs of social networks and the nature and quality of formal and informal communications within an organization.
C	Culture	Norms, values, and basic assumptions of a given organization.
D	Implementation Climate	The absorptive capacity for change, shared receptivity of involved individuals to an intervention, and the extent to which use of that intervention will be rewarded, supported, and expected within their organization.
1	Tension for Change	The degree to which stakeholders perceive the current situation as intolerable or needing change.
2	Compatibility	The degree of tangible fit between meaning and values attached to the intervention by involved individuals, how those align with individuals' own norms, values, and perceived risks and needs, and how the intervention fits with existing workflows and systems.
3	Relative Priority	Individuals' shared perception of the importance of the implementation within the organization.
4	Organizational Incentives and Rewards	Extrinsic incentives such as goal-sharing awards, performance reviews, promotions, and raises in salary, and less tangible incentives such as increased stature or respect.
5	Goals and Feedback	The degree to which goals are clearly communicated, acted upon, and fed back to staff, and alignment of that feedback with goals.
6	Learning Climate	A climate in which: a) leaders express their own fallibility and need for team members' assistance and input; b) team members feel that they are essential, valued, and knowledgeable partners in the change process; c) individuals feel psychologically safe to try new methods; and d) there is sufficient time and space for reflective thinking and evaluation.
E	Readiness for Implementation	Tangible and immediate indicators of organizational commitment to its decision to implement an intervention.
1	Leadership Engagement	Commitment, involvement, and accountability of leaders and managers with the implementation.
2	*Available Resources	The level of resources dedicated for implementation and on-going operations, including money, training, education, physical space, and time.
3	Access to Knowledge and Information	Ease of access to digestible information and knowledge about the intervention and how to incorporate it into work tasks.
4. Characteristics of Individuals		
A	*Knowledge and Beliefs about the Intervention	Individuals' attitudes toward and value placed on the intervention as well as familiarity with facts, truths, and principles related to the intervention.
B	*Self-Efficacy	Individual belief in their own capabilities to execute courses of action to achieve implementation goals.

C	Individual State of Change	Characterization of the phase an individual is in, as he or she progresses toward skilled, enthusiastic, and sustained use of the intervention.
D	Individual Identification within Organization	A broad construct related to how individuals perceive the organization, and their relationship and degree of commitment with that organization.
E	Other Personal Attributes	A broad construct to include other personal traits such as tolerance of ambiguity, intellectual ability, motivation, values, competence, capacity, and learning style.
5. Process		
A	Planning	The degree to which a scheme or method of behavior and tasks for implementing an intervention are developed in advance, and the quality of those schemes or methods.
B	*Engaging	Attracting and involving appropriate individuals in the implementation and use of the intervention through a combined strategy of social marketing, education, role modeling, training, and other similar activities.
1	Opinion Leaders	Individuals in an organization who have formal or informal influence on the attitudes and beliefs of their colleagues with respect to implementing the intervention.
2	Formally Appointed Internal Implementation Leaders	Individuals from within the organization who have been formally appointed with responsibility for implementing an intervention as coordinator, project manager, team leader, or other similar role.
3	Champions	"Individuals who dedicate themselves to supporting, marketing, and 'driving through' an [implementation]" (Greenhalgh et al., 2008, p. 182), overcoming indifference or resistance that the intervention may provoke in an organization.
4	External Change Agents	Individuals who are affiliated with an outside entity who formally influence or facilitate intervention decisions in a desirable direction.
C	Executing	Carrying out or accomplishing the implementation according to plan.
D	*Reflecting and Evaluating	Quantitative and qualitative feedback about the progress and quality of implementation accompanied with regular personal and team debriefing about progress and experience.

***Bolded Constructs were relevant to the implementation of the COPD management program in this study**

Damschroder et al., 2009

Greenhalgh et al., 2008

Appendix B: Provider Focus Group Guide



Project Title: Evaluation of Team-based Care: The
[Founding Organization] Approach

Pre-Q: Draw your team.

1. Describe the [COPD Management] program and your role within it.
 - a) Describe what a patient experiences in this program.

(get at program complexity, duration, scope, intricacy, and number of steps)
 - b) How does the program compare to other similar existing programs in your setting? What was missing in standard care that the [COPD Management] program was targeted to fix?
2. **IMPLEMENTATION-1:** How was the decision made to implement the program?
 - a) What was your role in the implementation?
 - b) What support, internal or external to your FHT, did you have during implementation?
 - c) What was happening locally, or provincially that may have supported or hindered your choice to implement?
3. **PREPARATION:** How did you prepare for the implementation of the program?
 - a) What kinds of training/structured learning sessions were used?
 - a. What was the role of internal versus external support during this phase?
 - b. What was helpful; what would have been more helpful?
4. **ADAPTION:** What kinds of changes or alterations were made to the [COPD Management] program to fit your clinic and community?
5. **PATIENTS:** How did patients respond to the program?
 - a) What role did patients have?
 - During implementation
 - b) Should that role have been different?
6. **IMPLEMENTATION-2:** Tell me about the process and plan around program implementation.
 - a) Were there clearly defined roles, milestones or targets?
 - b) Has the program been implemented according to plan?
 - c) How did the infrastructure of your organization impact the implementation of the program?
 - d) If you had to implement this program again, what would you do differently?

7. **EVALUATION:** What methods are you using to monitor or evaluate the program?
- a) How are they working for you?
 - b) If NONE: What are you planning on doing?
8. Do you think the [COPD Management] program is sustainable?
- a) Why or why not?
 - b) What needs to happen to ensure sustainability?
9. What advice would you give another group, in a similar setting, going through this process of implementing a new program?

References

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Peer Implementation Literature Review/Summary Sheet

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Appendix C: Patient Focus Group Guide



Project Title: Evaluation of Team-based Care: The
[Founding Organization] Approach

[COPD Management] Program Patient Focus Group Guide

1) What were your expectations for the care you received?

2) Have your expectations been met? Why? Why not?

[Or, if the participant didn't have any hopes and expectations at the start, we can skip this question]

3) Is there anything that could have been done to help you be better prepared to manage your COPD?

4) Please think back over the last 6 months and think about the care you (or your loved one has) have received for your/their COPD. Please rate your experience with the programs or services you have received over the past 6 months. Overall, did you find the programs/services to be:

Very Unhelpful	Somewhat Unhelpful	Neither Helpful nor Unhelpful	Somewhat Helpful	Very Helpful
1	2	3	4	5

5) How has the new [COPD Management] program as compared to your previous COPD management option, improved (or not improved) your quality of care?

6) What do you think made it (helpful/unhelpful) for you? What do you think is missing or would improve the program? Is there anything we can do to make the program more helpful in the future?

7) Describe your healthcare team. What was your role on that team? Could it have been different or better?

8) Did the team seem prepared to deliver the appropriate type of care, aligning with the new [COPD Management] program?

Appendix D: Provider Interview Guide



Project Title: Evaluation of Team-based Care: The
[Founding Organization] Approach

[COPD Management] Program Provider Interview Guide

SCRIPT:

Hello.

May I please speak with [Insert participant's name]. *If they are not available, a message will not be left.*

My name is [Research Assistant]. I am a research assistant working with Dr. Shannon Sibbald from Western University. I am assisting Dr. Sibbald today with conducting phone interviews with practitioners in your FHT.

Thank you for agreeing to participate in this interview. Is this time still convenient for you?

Before we begin, I need to ensure you have read the letter of consent, and have signed the consent form. I believe that [Name of [COPD Management Program] Contact] has provided you with a copy of the study's letter of information and consent. Do you have any questions about the information in the letter?

[If already have consent] Thank you for taking time to send in your sign consent form – we have received it.

[If do not have consent] We have not yet received your consent, please email or fax your consent as soon as possible so that we can use the information from this interview in our research.

Today we will have a short interview to better understand the implementation of the new [COPD Management] program, and how you, a provider, has been impacted by this team. The interview will be audio-recorded. Your participation in

this study is voluntary, and you can decide to stop at any time. Everything that you say will be confidential and all data collected will be anonymous.

If you have any concerns with this interview or this study, the contact information for the principal investigator, Dr. Shannon Sibbald, and the ethics board at Western University are listed on the last page of the letter of information.

Do you agree to be audio-recorded? [begin audio-recording]

Do you agree to consent to this interview?

- 1) Explain your role and the work that you do in your FHT.
- 2) Tell me about your experiences working as an (or with the) RTs in your clinic.
 - a) PROBE: Are you aware of the new [COPD Management] program recently implemented? Please tell me about your experience with [the COPD Management program].
- 3) How does working with the RTs impact the way you practice?
 - a) PROBE: How does working with [the COPD Management program] impact your practice?
- 4) What was your experience with the implementation of the [COPD Management] program?
 - a) PROBE: Where there any complications? What would you have needed to overcome these?
 - b) PROBE: What was your role in implementation? What role did others have?
- 5) How might you improve the [COPD Management] program to better meet the needs of your patients and/or your practice?
- 6) If [the COPD Management program] were to be adapted to another FHT, what advice would you give?
 - a) PROBE: to the RTs? Docs? Other allied health professionals? EDs? so that this service could be used to its fullest?

Appendix E: Provider Letter of Information/Consent

Letter of Information & Consent Form



Project Title: Evaluation of Team-based Care: The [REDACTED]
[REDACTED] Approach

Principal Investigator:

Dr. Shannon Sibbald, Health Sciences, University of Western Ontario

Contact Information: [REDACTED]

Research Team:

[REDACTED]
Stefan Paciocco, Health Promotion, Graduate Student, University of Western Ontario

Letter of Information – HEALTHCARE PROVIDER

1. Invitation to Participate

You are being invited to participate in this research study because you are a member of an interdisciplinary healthcare team that provides care for complex patients. This mixed methods study aims to provide a better understanding of the functioning, processes and structure of interdisciplinary care teams. To assess and measure team functioning, this study will observe how interdisciplinary care teams provide care for patients suffering with Chronic Obstructive Pulmonary Disease or COPD.

2. Purpose of the Letter

The purpose of this letter is to provide you with the information required to make an informed decision regarding participation in this research study. It is important for you to know why the study is being done and what it will involve. Please take the time to read this letter carefully and feel free to ask questions if anything is unclear or if there are words or phrases you do not understand. All individuals participating in the study will be informed of any changes or new information as it may affect your decision to participate.

3. Purpose of this Study

A high-performing team is now widely recognized as an essential tool for constructing more patient-centered, coordinated, and effective health care delivery. Our goal is to support interdisciplinary healthcare teams who deal with complex patients by building a better definition of the healthcare team. We are conducting a mixed methods study, which aims to better understand team functioning and process by exploring the implementation of an interdisciplinary, team-based model of care. The objectives of the study include;

- Observe the function and process of care teams
- Assess core principles underlying team-based care
- Better understand the role of patients in care teams

Participant Initials: _ _ _

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4. Inclusion Criteria

Healthcare providers, administrative staff, and patients from family health teams that participate in the BEST CARE COPD program will be invited to participate. This study seeks to obtain **60** team members from your interdisciplinary facility to participate as well as **40** patients served by the model.

5. Exclusion Criteria

No one currently working in the team will be excluded.

6. Study Procedures

If you agree to participate in the study, you will be asked to complete a 15-minute Collaborative Practice Assessment Tool survey, and participate in observation. You will also be asked to complete either a single one-on-one interview or participate in a team focus group.

The interview will take about 15 minutes and can take place over the phone at a time that is convenient for you. The interview will be audio-recorded. Verbal consent will be obtained prior to the interview.

During the focus group you will discuss team culture, function and structure as well as the different perspectives of the team. You will also be asked to “draw the team” based on your experience of working within the team. These drawings a part of a “Systems Engineering” (SE) approach to research. The SE approach combines visuals methods like mind mapping with verbal interviews to discover complex and non-procedural facets of challenging interprofessional scenarios. Lastly, you will be asked questions about your drawing to better understand how you, as a team member, understand the culture, function, and structure of the team. The focus group will be audio-recorded to ease data collection. A note-taker will also be present during the focus groups to help with participant identification. It is anticipated that this focus group will last about 45 minutes. If a team member is unable to attend the focus group session, but wishes to participate in the study, then an individual interview can occur using the same interview guide that is used during the focus group.

Observations will take place during various team meetings where appropriate. We will also conduct an environmental scan and document review to better understand the structure of the clinic and how it influences care delivery. A mutually agreeable time and place for the focus group will be decided closer to the start of the study. It is anticipated that the entire task will be completed in one hour.

After the completion of the focus group you will be provided with the researcher’s contact information should you have any questions or follow up comments. After the completion of data analysis, a report will be provided upon request with the findings of the study. If you have any concerns or questions about the findings, you are welcome to contact the PI.

After the completion of the one-on-one interview, you will be provided with the researcher’s contact information should you have any questions or follow up comments. After the completion of data analysis, a report will be provided with the findings of the study. If you have any concerns or questions about the findings, you are welcome to contact the PI.

Letter of Information & Consent Form

This letter of information will be mailed to you to sign and return. Information gathered from your interview will not be used in research until the signed consent form is returned.

7. Possible Risks and Harms

There are no known harms associated with participation in this study. However, for some people, these questions can be distressing and this distress can occur during or after they complete the study. There may be some social or emotional risks or discomforts to participating team members as participants will be asked about their work in the network and team, including facilitators and barriers to efficient cooperation and implementation of the model of care. However, we believe that this study is low risk.

8. Possible Benefits

Team members will have the opportunity to reflect on their work in the team; they will also have the chance to improve team processes by learning about any potential gaps / areas for improvement. As well, information gathered from this study may provide benefits to society that will, in general, enhance our understanding of health care teams and further develop teams and networks, and more specifically, improve the quality of health services in Ontario.

9. Compensation

You will not be compensated for your participation in this research.

10. Voluntary Participation

Participation in the study is completely voluntary. You may at any time withdraw from the study without giving a reason. Please see Confidentiality Section of this Letter of Information, which deals with the data collected after withdrawal from the study. You do not have to take part in the study if you do not want to. Refusal to participate, consent or withdraw will generate no consequence for your employment. By signing the consent from you do not waive any personal legal rights. You have the right to not answer any questions. You should only agree to take part if you are satisfied that you know enough about these things.

11. Confidentiality

Each respondent will write their initials and date of birth on a form at the time of giving informed consent. This form will have a unique study ID number.

Your research results will be stored in the following manner:

- All paper-based data will be stored in a locked cabinet in a secure office at Western University (Western Centre for Public Health and Family Medicine). Only the research team directly involved in this study will have access to these data.
- All electronic data will be stored on a secure network behind institutional firewalls at Western University. All electronic files will be password protected. Only the research team directly involved in this study will have access to these data.

The study data will be kept for a minimum of 15 years according to LHSC and Lawson policies. Depending on the possibility and length of a follow-up study, it may be used for a longer period. Withdrawal of your participation does not necessarily include withdrawal of any data compiled up to that point, however there will be no personal identifiers attached to the compiled data. Once the study or follow-up study is completed, hard copies of data or personal identification will be shredded. All

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other data will be deleted from hard drives and flash drives. The audio recordings and transcription of the focus group sessions will be stored with the corresponding paper-based data or electronic data and will be stored in a locked cabinet in a secure office at Western University and on a secure network behind institutional firewalls at Western University. Representatives from University of Western Ontario Health Sciences Research Ethics Board and Lawson Quality Assurance and Education Program may require access to their study records for quality assurance purposes.

12. Contacts for Further Information

If you require any further information regarding this research project or your participation in the study you may contact the Principle Investigator, Shannon Sibbald by phone at [REDACTED] or by email at [REDACTED]

If you would like to receive a copy of any potential study results, please contact Shannon Sibbald at the above information.

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Research Ethics [REDACTED] or David Hill, Scientific Director, Lawson Health Research Institute [REDACTED]

13. Publication.

The results of this study are to be published in peer-reviewed journals as well as graduate student theses. Any identifying information will not be used in any publications.

14. Participation in Concurrent or Future Studies.

If you are participating in another study at this time, please inform the research team to determine if it is appropriate for you to participate in this study.

This letter is yours to keep for future reference.

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Letter of Information & Consent Form

Participant Consent Form

Project Title: Evaluation of Team-based Care: [REDACTED]

Study Investigator's Name: Dr. Shannon Sibbald

Contact Information: [REDACTED]

I have read the Letter of Information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.

You do not waive any legal rights by signing this consent form and/or agreeing to participate.

Participant's Name (please print): _____

Participant's Signature: _____

Date: _____

Person Obtaining Informed Consent (please print): _____ Signature: _____ Date: _____
--

Are you interested in being contacted about future research studies being done by this research team?

- Yes
 - No
- Participant's Signature: _____

Participant Initials: ___ ___

Appendix F: Patient Letter of Information/Consent

Letter of Information & Consent Form



Project Title: Evaluation of Team-based Care: The [REDACTED] Approach

Principal Investigator:

Dr. Shannon Sibbald, Health Sciences, University of Western Ontario

Contact Information [REDACTED]

Research Team:

[REDACTED]
Stefan Paciocco, Health Promotion, Graduate Student, University of Western Ontario

Letter of Information - PATIENT

1. Invitation to Participate

You are being invited to participate in this research study because you are a patient with complex medical needs, receiving care from an interdisciplinary healthcare team. This mixed methods study aims to provide a better understanding of the functioning, processes and structure of interdisciplinary care teams. To assess and measure team functioning, this study will observe how interdisciplinary care teams provide care for patients suffering with Chronic Obstructive Pulmonary Disease (COPD).

2. Purpose of the Letter

The purpose of this letter is to provide you with the information required to make an informed decision regarding participation in this research study. It is important for you to know why the study is being done and what it will involve. Please take the time to read this letter carefully and feel free to ask questions if anything is unclear or if there are words or phrases you do not understand. All individuals participating in the study will be informed of any changes or new information as it may affect your decision to participate.

3. Purpose of this Study

A high-performing team is now widely recognized as an important tool for developing more patient-centered, coordinated, and effective health care delivery. Our goal is to support interdisciplinary healthcare teams who deal with complex patients by building a better definition of the healthcare team. We are conducting a mixed methods study, which aims to better understand team functioning and

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process by exploring the implementation of an interdisciplinary team-based model of care. The objectives of the study are to:

- o Observe the function and process of care teams
- o Assess core principles underlying team-based care
- o Better understand the role of patients in care teams

4. Inclusion Criteria

Individuals who have been diagnosed with COPD and are currently receiving treatment for this diagnosis by the health care team of study are eligible to participate in this study. As well, the participants must be 18 years or older; and be able to read and write English. A total of **40** patients and **60** health care providers from family health will be recruited and enrolled in the study.

5. Exclusion Criteria

Patients will be excluded if they are non-English speaking, are unable to comprehend the letter of information and consent documentation, and/or under the age of 18. Furthermore, participants will not be able to participate if they have been advised by a health care provider to not participate in this study.

6. Study Procedures

If you agree to participate, you will be asked to attend a focus group during one of your visits to the clinic. During the focus group, three things will happen. First you will be asked to complete a short 10-question survey with the help of the researcher. Second, you will be asked to “draw the team” based on your experience of working with the team. These drawings are part of an approach, which combines visual materials like drawings with verbal interviews to better understand team structure. Lastly, you will be asked questions about your drawing to better understand how you, as a patient, understand how the health care team functions. The focus group will be audio recorded to ease in data collection.

It is anticipated that the entire task will be completed in 45 minutes, during one session. The task will be completed at the clinic where you already receive treatment at a time that is mutually agreed upon.

After the completion of the interview you will be provided with the researcher’s contact information should you have any questions or follow up comments. After the completion of data analysis, a report will be provided upon request with the findings of the study. If you have any concerns or questions about the findings, you are welcome to contact the PI.

7. Possible Risks and Harms

There are no known or anticipated physical, or psychological risks or discomforts associated with participating in this study. There are minimal emotional risks or discomforts to patients in completing this study if the patient has had a negative experience with the team or his/her care. Talking about this negative experience may be emotionally difficult. We believe that this study is low risk.

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8. Possible Benefits

Patients will have the opportunity to reflect on their hopes and expectations of team based care and may learn about themselves in the process. As well, information gathered from this study may provide benefits to society that will, in general, enhance our understanding of health care teams and further develop teams and networks, and more specifically, improve the quality of health services in Ontario.

9. Compensation

There is no compensation for participation in this study.

10. Voluntary Participation

Participation in the study is completely voluntary. You may at any time withdraw from the study without giving a reason. Please see Confidentiality Section of this Letter of Information, which deals with the data collected after withdrawal from the study. You do not have to take part in the study if you do not want to. You have the right to not answer any questions. You should only agree to take part in this study if you are satisfied that you know enough about your voluntary participation.

11. Confidentiality

Each respondent will write their initials and date of birth on a form at the time of giving informed consent. This form will have a unique study ID number.

Your research results will be stored in the following manner:

- All paper-based data will be stored in a locked cabinet in a secure office at Western University (Western Centre for Public Health and Family Medicine). Only the research team directly involved in this study will have access to these data.
- All electronic data will be stored on a secure network behind institutional firewalls at Western University. All electronic files will be password protected. Only the research team directly involved in this study will have access to these data.

The study data will be kept for a minimum of 15 years according to LHSC and Lawson policies. Depending on the possibility and length of a follow-up study, it may be used for a longer period. Withdrawal of your participation does not necessarily include withdrawal of any data compiled up to that point, however there will be no personal identifiers attached to the compiled data. Once the study or follow-up study is completed, hard copies of data or personal identification will be shredded. All other data will be deleted from hard drives and flash drives. The audio recordings and transcription of the focus group sessions will be stored with the corresponding paper-based data or electronic data and will be stored in a locked cabinet in a secure office at Western University and on a secure network behind institutional firewalls at Western University. Representatives from University of Western Ontario Health Sciences Research Ethics Board and Lawson Quality Assurance and Education Program may require access to their study records for quality assurance purposes.

12. Contacts for Further Information

If you require any further information regarding this research project or your participation in the study you may contact the Principle Investigator, Shannon Sibbald by phone [REDACTED] or by email at [REDACTED]

If you would like to receive a copy of any potential study results, please contact Shannon Sibbald at the above information.

Participant Initials: _ _ _ _

Letter of Information & Consent Form

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Research Ethics [REDACTED] or David Hill, Scientific Director, Lawson Health Research Institute [REDACTED]

13. Publication.

The results of this study are to be published in peer-reviewed journals as well as in graduate student theses. Any identifying information will not be used in any publications.

14. Participation in Concurrent or Future Studies.

If you are participating in another study at this time, please inform the research team to determine if it is appropriate for you to participate in this study.

This letter is yours to keep for future reference.

Participant Initials: ____

Page 4 of 5
Version Date: 03/01/2019

Letter of Information & Consent Form

Participant Consent Form

Project Title: Evaluation of Team-based Care: The [REDACTED] Approach

Study Investigator's Name: Dr. Shannon Sibbald

Contact Information: [REDACTED]

I have read the Letter of Information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.

You do not waive any legal rights by signing this consent form and in agreeing to participate.

Participant's Name (please print): _____

Participant's Signature: _____

Date: _____

Person Obtaining Informed Consent (please print): _____

Signature: _____

Date: _____

Are you interested in being contacted about future research studies being done by this research team?

- Yes
 - No
- Participant's Signature: _____

Participant Initials: _____

Appendix G: Ethics Approval Form



Date: 26 March 2019
To: Shannon Sibbald
Project ID: 108415
Study Title: Evaluation of Team-based Care: The Asthma Research Group Inc. Approach
Reference Number/ID: N/A
Application Type: HSREB Amendment Form
Review Type: Delegated
Full Board Reporting Date: 09April2019
Date Approval Issued: 26/Mar/2019 09:04
REB Approval Expiry Date: 13/Feb/2020

Dear Shannon Sibbald ,

The Western University Health Sciences Research Ethics Board (HSREB) has reviewed and approved the WREM application form for the amendment, as of the date noted above.

Documents Approved:

Document Name	Document Type	Document Date	Document Version
AGRI-2 Provider Phone Interview Recruitment Email	Recruitment Materials	11/Mar/2019	
ARGI-2 Initial Recruitment Email	Recruitment Materials	11/Mar/2019	
ARGI-2 LOI - Consent Patient	Consent Form	11/Mar/2019	
ARGI-2 LOI - Consent Provider	Consent Form	11/Mar/2019	
ARGI-2 Patient Focus Group Guide	Focus Group(s) Guide	11/Mar/2019	
ARGI-2 Provider Focus Group Guide	Focus Group(s) Guide	11/Mar/2019	
ARGI-2 Provider Interview Guide	Interview Guide	11/Mar/2019	
ARGI-2 Western Protocol	Protocol	22/Mar/2019	
CPAT - Patients	Paper Survey	11/Mar/2019	
CPAT - Providers	Paper Survey	11/Mar/2019	
Online CPAT - Providers	Online Survey	11/Mar/2019	2

Documents Acknowledged:

Document Name	Document Type	Document Date	Document Version
Summary of Changes Document	Summary of Changes	22/Mar/2019	

REB members involved in the research project do not participate in the review, discussion or decision.

The Western University HSREB operates in compliance with, and is constituted in accordance with, the requirements of the TriCouncil Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2); the International Conference on Harmonisation Good Clinical Practice Consolidated Guideline (ICH GCP); Part C, Division 5 of the Food and Drug Regulations; Part 4 of the Natural Health Products Regulations; Part 3 of the Medical Devices Regulations and the provisions of the Ontario Personal Health Information Protection Act (PHIPA 2004) and its applicable regulations. The HSREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 0000940.

Please do not hesitate to contact us if you have any questions.

Sincerely,

A solid black rectangular box redacting the signature of the sender.

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).

Curriculum Vitae

Stefan Paciocco

Education

Canadian Memorial Chiropractic College **Toronto, ON**
Accepted into Doctor of Chiropractic (D.C.) Program April 2020

Western University **London, ON**
Master of Science in Health Promotion September 2018 – Present
Dissertation Title: “Using the Consolidated Framework for Implementation Research to Evaluate the Implementation of a Chronic Obstructive Pulmonary Disease Management Program: A Case Study”
Relevant Coursework: Qualitative Methodology, Current Topics in Health Promotion, Perspectives in Knowledge Translation
Cumulative Average: 89.3%

Bachelor of Health Science September 2014 – April 2018
Honours Specialization with Distinction

Relevant Teaching and Employment Experience

Western University **London, ON**
Graduate Student Researcher January 2019 – Present
Lawson Health Research Institute
 Writing and submitting ethics applications
 Data collection tool creation
 Obtaining informed consent
 Data Collection via focus groups, interviews, observation, and surveys
 Deductive and inductive data Analysis including document Analysis
 Paper writing and editing
 Literature review

Teaching Assistant January 2020 – April 2020
Healthcare Management – HS 3040
 Assignment grading and feedback
 Proctoring exams and holding office hours
 Helped create syllabus, midterm, and final exams
 Helped restructure course by creating new project due to COVID-19

Teaching Assistant January 2020 – April 2020
Measurement and Analysis in Health Science – HS 3801
 Proctoring exams and holding office hours
 Presented summary of content at weekly lab meeting

**Presentation not delivered/conference or event cancelled/postponed due to novel coronavirus (COVID-19) pandemic concerns*

☐

Teaching Assistant January 2019 – April 2019
 Social Determinants of Health – HS 1002
 Assignment grading and feedback
 Proctoring exams
 Guest lecture

Honours and Awards

Western University **London, ON**
 Best Masters “Inquire” Oral Presentation February 2020
 Health and Rehabilitation Science Graduate Research Conference
 Best Masters “Spark” Oral Presentation February 2019
 Health and Rehabilitation Science Graduate Research Conference
 Dr. Dan Belliveau Award in Anatomical Sciences June 2018
Exhibits aptitude, excellence, a passion for anatomy, takes pride in mentoring peers and has a love for learning
 Dean’s Honours List September 2014 - April 2018
 Faculty of Health Science
80% average or over with no failed courses during that academic year

Professional Training and Development

Western University **London, ON**
 Lawson Health Research Institute Employee Training April 2019
 Tri Council Policy Statement 2: CORE Certificate March 2019
 Panel on Research and Ethics
 Basic Skills in NVivo February 2019
As a research tool, Webinar
 Teaching Assistant Training Program January 2019
 Centre for Teaching and Learning
 R and R Studio October 2018
 Centre for Teaching and Learning
As a programming/research tool
 Quality Assurance and Education Program - Standards of Practice Training March 2018
 Lawson Health Research Institute
SOP’s # 002-009, 012-016, 19, 100-109

**Presentation not delivered/conference or event cancelled/postponed due to novel coronavirus (COVID-19) pandemic concerns*

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Professional Memberships

North American Primary Care Research Group March 2019 – Present

Research Experience

Western University **London, ON**
 Outreach Development Leader January 2019 – Present
 Health Ethics, Law, and Policy (HELP) Lab

- Blog Contributor: "Cake for Thought: Healthcare Priorities in the Federal Election"*
- Facilitated Journal Club, Topic: A Comparison of Healthcare Platforms in the 2019 Federal Election*
- Discovery Days planner*
- Undergraduate student mentor*
- Steering committee*

Dr. Shannon Sibbald Research Team Member September 2018 – Present

- Assisting in grant writing*
- CV editing*
- Student mentor*
- Best Care COPD Program Spread Project*

Webinar Co-Coordinator January 2019 – May 2019

Knowledge Translation Canada National Seminar Series

- Promote webinar attendance*
- Technical set-up*
- Facilitate conversation and discussion surrounding webinar topics*

Conference/Other Presentations

Western University **London, ON**

- *Paciocco, S. and Sibbald, S.L., "Using the Consolidated Framework for Implementation Research to Evaluate the Implementation of a Chronic Obstructive Pulmonary Disease Management Program: A Case Study", Legacy 2020 Research Conference, Abstract Accepted for Poster Presentation May 2020
- *Paciocco, S. and Sibbald, S.L., "Using the Consolidated Framework for Implementation Research to Evaluate the Implementation of a Chronic Obstructive Pulmonary Disease Management Program: A Case Study", Western Research Forum 2020, Abstract Accepted for Poster Presentation March 2020
- *Robinson, M., "Describing Data", Kinesiology 2032, Guest Lecture March 2020
- Paciocco S. and Sibbald S.L., "Using the Consolidated Framework for Implementation Research to Evaluate the Implementation of a Chronic Obstructive Pulmonary Disease Management Program: A Case Study" Health and Rehabilitation Science Graduate Research Conference, Oral and Poster Presentations February 2020

**Presentation not delivered/conference or event cancelled/postponed due to novel coronavirus (COVID-19) pandemic concerns*

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- Paciocco, S., “Colonialism as a Social Determinant of Indigenous Health”, Social Determinants of Health Guest Lecture (500 Students - 2 Hour Presentation) March 2019
- Paciocco, S. and Sibbald, S.L., “Mixed Methods Evaluation of the Implementation of a Chronic Obstructive Pulmonary Disease Management Program”, Health and Rehabilitation Sciences Graduate Research Conference, Oral Presentation February 2019

Lawson Health Research Institute London, ON

- Paciocco S. and Sibbald S.L., “An Ongoing Evaluation of a Chronic Obstructive Pulmonary Disease Management Program”, Lawson Health Research Institute Summer Student Symposium, Oral Presentation August 2019

Canadian Association for Health Services and Policy Research Saskatoon, SK

- *Paciocco, S. and Sibbald, S.L., "Using the Consolidated Framework for Implementation Research to Evaluate the Implementation of a Chronic Obstructive Pulmonary Disease Management Program: A Case Study", Canadian Association for Health Services and Policy Research Conference 2020, Abstract Accepted for Poster Presentation May 2020

North American Primary Care Research Group Toronto, ON

- Paciocco S. and Sibbald S.L., “An Ongoing Evaluation of a Chronic Obstructive Pulmonary Disease Management Program”, North American Primary Care Research Group 2019 Annual Meeting, Poster Presented November 2019

Trillium Foundation Toronto, ON

- Paciocco, S. and Sibbald S.L., “An Ongoing Evaluation of a Chronic Obstructive Pulmonary Disease Management Program”, Trillium Primary Health Care Research Day Conference, Poster Presentation June 2019
- S.L. Sibbald, B. Ziegler, K. Schouten, and, R. Maskell, “A Cross-Case Analysis of the Implementation of Integrated Care for COPD”, Trillium Primary Care Research Day Conference, Poster Presentation June 2019

Workshops/Conferences Attended

Western University London, ON
Health and Rehabilitation Sciences Graduate Research Conference February 2019 and 2020

A Journey to Mino Bimaadiziiwin Indigenous Health Conference January 2020
Global Health Equity Collective

- *Workshops Attended: Trauma and Violence Informed Care, Indigenous Mental Health and Substance Misuse*

Power and Global Health Day Conference November 2019

Knowledge Translation Canada National Seminar Series January 2019 – May 2019

Literature Review Workshop October 2018

**Presentation not delivered/conference or event cancelled/postponed due to novel coronavirus (COVID-19) pandemic concerns*

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Centre for Teaching and Learning

Other

North American Primary Care Research Group Annual Conference

Toronto, ON

November 2019

Trillium Primary Care Research Day Conference

June 2019

Relevant Volunteer Experience/Student Government

Western University

Director – Network Liaison and Internal Affairs

Global Health Equity Collective

**Recruitment and Interviews*

**Global Health Equity Collective Speaker Series Planning*

**Western Heads East Conference Planning, Global Health Equity Collective*

**A Journey to Mino Bimaadiziwin, Indigenous Health Conference Planning*

**Power and Global Health Day Planning*

**Steering Committee*

London, ON

March 2019 - Present

Vice President Academic

May 2019 - Present

Health and Rehabilitation Science Graduate Student Society

**Health and Rehabilitation Science Graduate Research Conference Planning and Running*

**Abstract reviewer*

**Apply for funding, plan and update budget*

**Volunteer/judge recruitment*

**Sponsorship committee*

Health and Rehabilitation Science Councilor

October 2018 – September 2019

Society of Graduate Students' Council

**Attend council meetings, vote on motions*

**Represent my constituency*

Accessibility Coordinator

May 2017 – May 2018

Accessibility Committee - University Students' Council

**Plan events to facilitate conversation surrounding the needs of students with disabilities*

**Work with student policymakers on behalf of students with disabilities*

**Lead a committee of individuals*

**Collaborate with peer support services*

Student Appeals Support Worker

October 2016 – April 2017

Student Appeals Support Centre - University Students' Council

**Assist students through the academic appeal process by providing advice*

Polling Station Coordinator

October 2016 – January 2017

Elections Committee - University Students' Council

**Facilitate university students' council elections by creating polling stations*

**Presentation not delivered/conference or event cancelled/postponed due to novel coronavirus (COVID-19) pandemic concerns*