BRIDGING SILOS: INCREASING COLLABORATIVE TEAMWORK BETWEEN FAMILY PHYSICIANS AND HOME HEALTH STAFF

by

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Abstract

Family physicians (FPs) and home health staff (HHS – home care nurses, case managers, occupational and physiotherapists, and nutritionists) share complex acute and chronically ill patients, but experience significant barriers to collaborative care. This study employed a mixed methodology design to assess the effectiveness of use by FPs and HHS of a structured communication process (pre-scheduled, secure audio-conferencing) about patients they shared, involving all HHS staff and a convenience sample of 22 FPs providing service in one geographic area of a large multi-cultural Canadian city. Following a three-month baseline measurement period, FPs were randomized to an intervention or usual communication group, and the intervention was applied for eight months. Outcome measures included number of shared patients; total number of contacts about shared patients; changes in perception of quality of collaboration; and qualitative experience of using the intervention. Primary data sources included extracts and chart reviews from the HHS electronic clinical documentation system; pre- and post-study administration of a published survey designed to measure perception of collaboration for FPs and home care staff; and post-study semi-structured interviews and focus groups. Non-parametric statistical procedures and mixed effects Poisson regression for longitudinal count data were used for quantitative data, and thematic content analysis for qualitative data. Results from quantitative and qualitative analysis were considered overall to generate insights into how to further collaborative care planning between FPs and HHS. The average number of shared patients per FP per month did not change, but a statistically significant increase was observed in the average number of contacts per shared patient between FPs and HHS for both study groups in the intervention phase. FPs and HHS agreed that the conferences were beneficial for patients, and both gained a better understanding of each others’ services and work processes. Both FPs and HHS provided evidence that structural barriers greatly impede collaboration between primary and community care. Use of audio-conferencing may have provided a proactive, efficient method of communication that avoided the need for subsequent back-and-forth clarification. Limitations included the small sample size of FPs and short timeline of the intervention period given the magnitude of the change expected.
Preface

This dissertation is an original intellectual product of the author, S. Berg. The study was covered by UBC Ethics Certificate number H08-01100 and Vancouver Coastal Health Research Institute Ethics Certificate number VC10-012.
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Lists of Abbreviations

ALC – Alternate Level of Care
APN – Advanced Practice Nurse
BCMA – British Columbia Medical Association
CAS – Complex Adaptive System
CHA – Community Health Area
CHC – Community Health Center
CHOICE – Comprehensive Home Options of Integrated Care for the Elderly
CLSC – Centres locaux de services communautaires
ECCM – Expanded Chronic Care Model
EMR – Electronic Medical Record
FP(s) – Family Physician(s)
GPSC – General Practice Services Committee
HCC – Home and Community Care
HHS – Home Health Staff, or Home Health Services
IHN – Integrated Health Network
IPCC – Integrated Primary and Community Care
MOH – Ministry of Health
MOA – Medical Office Assistant
MSP – Medical Services Plan
PARIS – the clinical documentation system used by all Community Health staff in Vancouver Coastal Health, including the Home Health staff involved in this study
PCP – Primary Care Partnership
PSP – Practice Support Program
SBAR – Situation, Background, Assessment, Recommendation
SIPA – Système de services intégrés pour personnes âgées fragiles
SVCHC – South Vancouver Community Health Center
UBC – University of British Columbia
VCH – Vancouver Coastal Health
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Mona Groves and her Home Health team on the Sunshine Coast piloted the adapted SBAR, colleagues at the Canadian Home Care Association and the National Case Management Network provided advice, information and knowledge translation. Many more colleagues from Vancouver Coastal Health, the BC Ministry of Health, the BC Medical Association, as well as colleagues from across the country assisted in so many ways to provide knowledge that was useful to this study and to help implement it. Thanks to Henry Liu, Dillon Takata and Nadia Batara, the research assistants who provided support for this study, and to Sheila Fee who put in many hours formatting this document.
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Dedication

For the family physicians and home health staff providing service to residents of South Vancouver, whose commitment to high quality care for their shared patients led to their involvement in this study.
1 Introduction

1.1 Introduction

The primary purpose of this study was to evaluate the effects of implementing an intervention, the objective of which was to increase communication and collaboration about mutual patients of home health staff (home care nurses, community rehabilitation professionals, case managers) (HHS) and family physicians working in small group or solo practices (FPs), in an urban multi-cultural setting. The innovation applied was a targeted communications strategy of regularly scheduled and structured audio-conference meetings.

Lack of coordination between services delivered by FPs and the services provided to the patients of those physicians by other health care services (such as community health) has long been understood to be a fundamental structural problem with the Canadian health care system. The lack of coordinated care can lead to negative health outcomes, inconvenience to patients and their families, and increased health care costs. Primary care has historically been delivered by FPs working in solo or small group practices, with little communication or coordination between these FPs and HHS. Although increasing client complexity merits improved collaboration, FPs and HHS face barriers to communication: difficulty transferring information across different work locations; poor continuity given the variety of different home health professionals; non-optimal timeliness of communication; lack of opportunity for engagement with each other in proactive problem solving for deteriorating patients; and difficulty coordinating appropriate specialty referrals.

1.2 Origin of the Research Question

The difficulties faced by HHS and FPs in communicating about shared patients were brought home to me in real life and real time while working as the manager of a Home Health team at South Vancouver Community Health Centre (SVCHC). On many occasions the staff raised the need to collaborate more effectively with FPs to ensure safe and effective care, particularly for complex and medically unstable patients. Issues such as the inability to connect with physicians in a timely manner to clarify medications and other medical orders, and lack of coordination between what a FP was apparently telling a patient and what HHS were doing for
the same patient were particularly alarming. As a manager for HHS, I also had opportunities to talk to FPs, who on occasion voiced similar concerns about lack of timely communication with HHS, and failure to coordinate care plans. It was apparent that FPs and HHS, while they shared a common goal of improving care, were unable to overcome the problems noted above. Not surprisingly, these issues are common (see literature review in Chapter 2). Thus, while the initial motivation for this research was local, it became quickly apparent that effective solutions, though challenging, could have widespread application.

1.3 Study Aims

There were two parallel aims for the research reported on in this thesis. The first was to generate new knowledge about whether a specific intervention targeted at improving communication between HHS and FPs could address the coordination issues noted above. The second was to pilot and evaluate an intervention that, if successful, could be feasibly spread beyond the actual research study to improve quality of care for patients.

An overarching objective of any healthcare innovation is wider implementation if the innovation is shown to be effective. TELUS Business Solutions, the Primary Care Division of the British Columbia Ministry of Health, British Columbia’s College of Family Physicians, and the Home and Community Care Division of the British Columbia Ministry of Health all provided feedback and input at early stages with respect to the intervention and study design. Feedback on methods was also received during the design phase from the Canadian Home Care Association, the National Case Management Network, and numerous Home and Community Care colleagues from other provinces and other health authorities within British Columbia.

In addition to the formal UBC thesis committee, a second local research support team consisting of the manager of the HHS at South Vancouver Community Health Center, the TELUS Business Solutions representative, and the Chief Financial Officer of Vancouver Coastal Health was called upon for specific content knowledge, and practical advice about study implementation.

The reason for such wide and varied engagement was to ensure that if the intervention was successful at the clinical level, it would more easily spread – a knowledge translation motivation in keeping with the factors that facilitate successful adoption of innovations in complex adaptive systems (Plsek and Greenhalgh 2001), (Boustani, 2010), (May and Finch
2009). The engagement of leaders within the health authority, organizations that support FPs in private practice, and the communications industry early on in the development of the intervention proved helpful in two ways: first, the endorsement by leadership provided a positive message to HHS and to FPs in the community that they were supported in participating; and second, the intervention could be vetted by staff and by industry to ensure that it was feasible to implement/adapt.

1.4 Study Objective

The primary objective of the study was to assess the effectiveness of an intervention designed to improve communication and thus collaboration between solo and small group FPs and HHS.

1.5 Research Questions

The study involved the following research questions:

1) Will use of a structured, targeted communication strategy of secure audio-conferencing at pre-scheduled times increase the number of “shared patients” between family physicians (FPs) and home health staff (HHS), and for which specific HHS disciplines (nursing, occupational and physical therapy, case management)?

2) Will use of a targeted communication strategy increase the quantity of patient-related care planning and coordination between FPs and HHS?

3) Will use of a targeted communication strategy increase the quality of patient-related care planning and coordination between FPs and HHS?

4) What parts of the targeted communication strategy do FPs and HHS evaluate as most useful, and what would they require in order to sustain the strategy after the study is complete?

1.6 Structure of Document

This dissertation is divided into six chapters. This first chapter provides an introduction to the study.

Chapter 2 contains a critical review of published and grey literature speaking to all aspects of the thesis questions. This includes evidence regarding the need for collaboration and communication between HHS and FPs generally, conceptual models identifying factors that
influence interprofessional collaboration, and previous research looking at the effectiveness of interventions designed to improve collaboration between FPs and other health professionals. Chapter 2 includes a consideration of the evidence linking interprofessional collaboration and patient/client outcomes. Also in this chapter, a Temporal Logic Model is included to show how the study inputs and outputs relate to the expected outcomes.

Chapter 3 situates the study within the Canadian and British Columbia policy context. The research questions and initial research protocol were developed in 2005-6 but not implemented until 2010-2011\(^1\). Across Canada in recent years, there has been a major focus on issues regarding primary care, and in particular on innovations within and between community care and primary care health sectors. Thus, situating this research in time within the context of changes occurring across primary and community care is critical for the reader to understand the broader policy environment that study participants experienced.

Chapter 4 lays out the methodologies used, including details about the study team and partnerships, sample design, study procedures, and the analytic approach using mixed methods. Also in Chapter 4 the reader will find a description of the geographical context in which the study took place, and aspects of the organizational details relevant to the study. These become important facilitators/constraints when I turn my attention to generalizability later in the thesis.

Chapter 5 reports study results, organized by research questions as posed above. Chapter 6 discusses the results in the context of previous knowledge (Chapter 2) and the specific policy context (Chapter 3). In addition, the Temporal Logic Model introduced in Chapter 2 is revisited, and differences between study results and expected outcomes are discussed in relation to study inputs and outputs and to the literature. It is in Chapter 6 that I also discuss study limitations and threats to internal validity of the study, and consider matters relevant to external validity/generalizability, policy implications, and knowledge translation.

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\(^1\) Proposals were submitted for research funding over three years; twice, positive reviews were provided but the proposals did not make the cut to be funded. Funding was received through the Canadian Institutes of Health Research in March 2009.
2 Review of Relevant Literature

2.1 Introduction

This chapter provides a critical look at interprofessional collaboration to facilitate patient care. The first part of the chapter is an overview of theories and frameworks that influenced the conceptualization, implementation and analytic phases of this research. In addition, a conceptual framework that was used in the analysis phase of the study will be presented and explained. The conceptual framework plays many roles: two critical ones for this study are to make explicit the assumptions that underlie the research, and to provide a framework for interpreting the study results.

The second part of the chapter will review the literature relevant to interprofessional collaboration, particularly between FPs and other health care professionals within a community setting. In particular, facilitators and barriers to interprofessional collaboration will be highlighted. Evidence linking interprofessional collaboration and patient outcomes, and examples of service models involving interprofessional collaboration from the peer reviewed and the grey literature will be discussed.

2.2 Review of Relevant Theoretical Frameworks

Two theoretical frameworks were used for different parts of this research, one to generate the research questions and methodology, and a second to analyze study results and evaluate the intervention.

2.2.1 BC Expanded Chronic Care Model

The original research questions and design were based on application of the BC Expanded Chronic Care Model (ECCM) (British Columbia Ministry of Health Services, 2007c). The ECCM provided a very useful conceptual framework in development of this research study for a number of reasons. First, the assumptions underlying the model (that relationships between a prepared, proactive practice team and an informed involved patient lead to better patient outcomes) were closely aligned with the reasons for introducing this research, and reflected potential solutions to the problems that served as the stimulus for this research: the intervention...
aimed at allowing the practice team (the HHS and FP) to be more proactive. In addition, the intervention could be aligned to the four focus areas of redesign within the health care system as in the model (described below). Finally, from a knowledge translation perspective, use of the ECCM was strategically important in terms of generating support for the research study, as the model is well understood among primary care policy makers and researchers across BC.

The ECCM has its roots in a literature review (Wagner et al 1996) examining elements of programs that were achieving positive results in managing chronic disease. Five elements found to be associated with positive results were organized into a ‘Model for Effective Chronic Illness Care.’ These included the use of explicit care plans/protocols; practice reorganization to provide patients with more face time with clinicians; a broader range of services and proactive follow-up; attention to behavioural change needs of patients; accessible care; and supportive information systems (described more fully below).

The original work has been expanded upon over the years. The most significant changes were motivated by a study employing surveys and site visits across 72 programs nominated by experts as effective (Wagner et al 1999). The model was revised to embed the health care system as part of the community, in recognition of the fact that chronic illness support requires linkages between health care and non-health community resources to support appropriate care management as well as a healthy lifestyle. A second significant change was to highlight the active relationship between a patient/client and the health professional. Revisions to the original Chronic Care Model continued to be specific to managing chronic diseases within primary care practice, and have not been evaluated as thoroughly with some of the client populations that HHS deal with, such as frail seniors and people living with significant functional disability. The revised chronic care model recognized that modifications to elements of the health system (its design, support for chronic disease self-management, clinical decision support, and information systems) might enhance productive interactions between an “informed, activated patient” and a “prepared, proactive practice team.” Being “prepared” meant that health professionals had the time, expertise, and resources to provide effective clinical management, and being “proactive” meant that the care plan had mechanisms in place for sustained monitoring and/or follow-up. Productive interactions implied a collaborative partnership between the patient and the care team with the patient/client taking a very active role in the process. The delivery system design referred to the roles and distribution of tasks among team members, and the use of planned,
evidence-informed interventions by team members. Self-management support was defined as the use of effective supports to empower a patient to make informed decisions. Decision support was defined as the use of strategies and tools to ensure care provided to patients was consistent with available scientific evidence and with patient choice. Finally, information systems referred to mechanisms to organize patient and population data in order to facilitate provision of effective and efficient care.

In British Columbia, the model published by Wagner et al (1999) was adapted to include elements of the Ottawa Charter for Health Promotion (Canadian Public Health Association 1986). The Charter recognized a number of pre-requisites for health such as basics for living (i.e. food, shelter, income) and broader social supports (for example, stable economic system, social justice and equity) and suggested the need for advocacy and mediation to ensure access to these pre-requisites. These elements were built directly into a made-in British Columbia version of the chronic care model, called the Expanded Chronic Care Model (ECCM) (Barr et al 2003).

Although the ECCM provided an excellent conceptual framework for development of the research questions and protocol for the present study, it proved less useful as a foundation for determining how best to analyze the results of the empirical work. The model related to redesign within the primary care environment, whereas this study was focused on introducing new approaches to communication between primary and community care sectors. Factors that influence changes in quality of interprofessional collaboration took on added importance. The ECCM did not easily provide a framework for explaining factors influencing collaboration across multiple primary care sites, nor did it provide explanatory factors with regard to the gap between physician-based primary care and community-based home care services. This realization led to consideration of frameworks or models that focused on interprofessional collaboration and successful uptake of new innovations including technology.

2.2.2 Factors Influencing Interprofessional Collaboration

There are a myriad of theories and frameworks aimed at explaining the factors that influence successful interdisciplinary, or interprofessional collaboration. The first task was to define what is meant by collaboration, and there were a number of definitions available in the literature. They commonly included the concept of effective communication between two or more health professionals (sometimes including the patient) (Schroder et al 2011), (Bainbridge et al 2010), (Canadian Interprofessional Health Collaboration 2010), (Canadian Medical Protective
Association 2006). In addition, the need for understanding and clarity about the unique knowledge and skills that various professions contribute was a common factor (Gaboury et al 2009), (Canadian Interprofessional Health Collaborative 2010), (Bainbridge et al 2010), (Canadian Medical Protective Association 2006). Finally, the idea of shared goals for collaboration that are related to health outcomes and/or assisting patients and families with health care decision making was common to definitions (Schroder et al 2011), (Bainbridge et al 2010), (Gaboury et al 2009), (Canadian Medical Protective Association 2006). Because this study is primarily interested in collaboration between family physicians and home health teams (and does not necessarily include communication with patients and families) a more restrictive definition was chosen: Interprofessional collaboration is, “a process by which individuals from different professions structure a collective action in order to co-ordinate the services they render to individual clients or groups” (Sicotte et al 2002).

A strong incentive for use of a framework that explained successful interprofessional collaboration was that, in an environment involving increasing community patient complexity, collaboration across team members has been viewed as an enabler of improved efficiency and effectiveness of service quality, while simultaneously increasing the quality of work life of team members (Schroder et al 2011), (San Martin-Rodriguez et al 2005). In order to enable effective interdisciplinary collaboration, the professionals involved must have a reason and a willingness to collaborate, the knowledge and skills required, and a facilitative environment.

One high level framework that provided some context for understanding factors affecting interprofessional collaboration (San Martin-Rodriguez et al 2005) described three levels of determinants: interactional determinants that involved interpersonal relationships within the team; organizational determinants that were conditions within the organization; and systemic determinants that referred to the environment. A second way of presenting and understanding factors related to interdisciplinary collaboration was to consider them in terms of inputs, processes and outputs, with the influence of external factors also playing a role (Gaboury et al 2009). Alternatively, a framework could be chosen that described the competencies required for interprofessional collaboration. The Canadian National Interprofessional Competency Framework described six domains of competencies as important: role clarification; patient/client/family/community centeredness; team functioning; collaborative leadership; interprofessional communication; and dealing with interprofessional conflict (Bainbridge et al
Regardless of the framework chosen to make sense of interprofessional collaboration, the inputs into the chosen framework were similar, including role knowledge and clarity; power and status; trust; and space and time factors. These variables are all considered in the following discussion.

### 2.2.2.1 Role Knowledge and Clarity

Professional knowledge, skills, role, and identity awareness were described as influential factors affecting interprofessional work (Baxter 2008), (Gaboury *et al* 2009). The fact that there is a core of knowledge across professions, but each profession also has its own professional knowledge and skills was described as key to understanding the association between roles and collaboration (Baxter 2008). Exchange and sharing, indeed integration of the unique knowledge and skills across disciplines was a key feature of interprofessional working practice (Baxter 2008), (Pettifer 2007), (Schroder *et al* 2011). Related to this, role clarity, or understanding specific scopes of practice by those involved in collaboration, was considered to be important (Baxter 2008), (Suter *et al* 2009), (Neergaard *et al* 2010), (Molyneux 2001), as were differences in whether professionals saw themselves as primarily a member of their discipline or primarily a member of the team. Recognition of the value of other disciplines for patient outcomes was considered a prerequisite for collaboration to occur (Suter *et al* 2009).

Trust, respect, and a ‘shared care’ culture were key characteristics included in a category defined as “interaction between health professionals” in a qualitative study of shared care between physicians and home care staff in palliative home care (Neergaard *et al* 2010). Adaptability, flexibility and willingness to share with other team members were identified as important personal qualities in a UK qualitative study of interprofessional collaboration in a primary care setting (Molyneux 2001).

A Canadian study (Alberta) that aimed to create a framework to assist collaborative practice and effective communication was informed by interviews with health professionals and administrators across urban and rural settings (Suter *et al* 2009). Two main core competencies emerged: role understanding and appreciation of others roles; and communication. Also found was a need for building trusting, respectful relationships within an environment that embraced collaborative practice and allowed collaborative competencies to develop. Participants expressed a need to set clear boundaries and allow team members to strike a balance between
interdependence and professional autonomy. Communication was identified with an ability to negotiate and resolve conflict, coordinate care, and use language appropriate to the target audience (such as other professionals versus patients/families) (Suter et al 2009).

2.2.2.2 Power and Status

Much of the literature studying interdisciplinary teamwork has focused on doctors and nurses working together, and has often identified power differential as an important element. An underlying theme of “the doctor as primary decision maker” was evident, although team members tended to state that the doctor was only one member of the team (an important contradiction) (Baxter 2008). For example, a survey involving staff nurses and nurse managers (n=425) that aimed to define what “good collaboration” between doctors and nurses meant, and associated the quality of collaboration with nurses rating of quality of care on their unit, found that power was a recurrent theme for nurses in describing their relationships with physicians (Kramer and Schmalenberg 2003). A 5-point scale was presented based on the results of the surveys. Category 1 (collegial) described a relationship based on different but equal power and knowledge. Category 2 (collaborative) described a mutual but not equal power relationship, where trust, respect and power were balanced to produce willing cooperation between staff members. Category 3 (student-teacher) was used to describe relationships where one member (either physician or nurse) was willing to discuss, explain and teach; power was unequal but outcomes from collaboration were beneficial. Category 4 (neutral) was described as near absence of feeling in the relationship, with interaction frequently limited to information exchange. Category 5 (negative) was used to classify relationships that were characterized by frustration, hostility and resignation: power was unequal and outcomes were negative (and frequently a by-product of power plays). Recommendations for creating collaborative relationships with positive outcomes included use of strategies that would promote a culture that valued, expected and rewarded the “equal but different” philosophy. Within a team, where members did not seek to dominate the team there was a perception that this aided in smooth team functioning (Molyneux 2001).

The issue of perceived and actual power differential between doctors and other health providers is not simple, however, as evidenced by a grounded theory study in Sweden that found that family physicians were relatively intentional about staying in charge of treatment decisions
and directing home care providers (described as a conductor role) in their decision making, or alternatively allowing the home care providers to take the initiative (described as consultant role) (Modin et al 2010). Factors leading to the choice of a conductor or consultant role included the comfort level of the family physician with the working conditions of the home care provider, trust in the home care provider, and the physician’s own personal views as to which role was appropriate. Another example of the complexity of power differential was highlighted in a study of collaboration between doctors and alternative medicine practitioners (Gaboury et al 2009), where it was found that even with structural reminders of a power differential (e.g. physicians with better chairs or more than one examining room) these sometimes did not affect interprofessional interactions (Gaboury et al 2009). In addition, power differential (e.g. physician-directed care management) has also been associated with concurrent and urgent care. With less urgency (e.g. primary care), collaboration was found to be more likely sequential in time and involve less physician-directed care management (Retchin 2008).

2.2.2.3 Spatial and Temporal Factors

Particularly important to collaboration between community health care professionals and FPs was a finding that common space and time are major variables affecting quality of interprofessional collaboration (Oandasan et al 2009), (Rice et al 2010), (Goldman et al 2010). Oandasan’s (2009) study is especially relevant, as it was conducted in Ontario across three primary health care centers, and determined that both the quality and quantity of interprofessional collaboration were affected by factors such as physical layout of clinical space and temporal organization of clinical practice. Communication patterns were critical; daily communication between professions was mostly unplanned and unstructured. Interdisciplinary team members tended to interact on an ad hoc basis during the transitions between patient appointments. Common reception areas were hubs for spontaneous interaction. In addition, there was some evidence that co-location led to deeper changes such as rethinking traditional roles and scopes of practice (Goldman et al 2010).

Adding to the issues with lack of co-location, FPs and HHS in Canada generally work in different regulatory and funding streams. As early as 1987, a prospective study of 148 UK FP/district nurse pairs and 161 FP/health visitor pairs found structural arrangements such as attachment of community nurses to a general practice, the number of doctors that a nurse works
with, and co-location in the same building were factors decisively related to levels of collaboration (Bond et al 1987). A qualitative, descriptive study of challenges in shared care for a palliative program reinforced this concept; one of two main categories found to be important was the “organization” of palliative home care (Neergaard et al 2010). Under the “organization” category the researchers included concepts such as proactive planning, a clear distribution of tasks, efficient communication pathways, and accessibility of health professionals to each other.

Temporality was another key factor to be considered with regard to interprofessional communication. Coordinated interprofessional care has been classified depending on whether it occurred concurrently (coordination of care among professionals in one setting and at the same time such as through care conferences or shared interventions) or sequentially (coordination of care between disciplines across episodes of care) (Retchin 2008). Higher urgency (e.g. emergency) was more likely to be associated with concurrent interprofessional care.

2.2.2.4 Summary of Factors Influencing Interprofessional Collaboration

Factors that have been found to be important in facilitating interdisciplinary collaboration include a positive attitude toward collaboration; role clarity; awareness and appreciation of each others’ professional contributions; trust; shared goals for the collaboration; lack of an exercised power differential between team members; and space and time variables (San Martin-Rodriguez et al 2005).

Although all of these factors are important to consider when attempting to influence change in the way that professionals communicate about the care of shared patients, they miss some important systemic elements that are required to understand why a specific intervention might succeed or fail in increasing communication and collaboration across multiple settings (such as one HHS team and multiple FP offices). Models from the literature explaining interprofessional collaboration tended to deal predominantly with factors influencing individual behaviour, often to the detriment of consideration of more systemic factors. Without doubt, individual behaviour is important in efforts to increase collaboration and communication. However, there are environmental and policy variables that influence and shape an individual’s ability to change behaviour, regardless of whether or not they are motivated (May and Finch 2009). For example, to implement successful interprofessional collaboration across organizations, variables such as strong central leadership to enable consensus, many
opportunities for connectivity and participation, consensual client-centered goals, grounded trust, jointly defined rules, and an information collection and sharing infrastructure were found to be important (D’Amour et al 2004). D’Amour and colleagues found that in organizations with well developed strong central leadership, collaboration across organizations could be fostered, whereas where the leadership in organizations was not yet well established, vagueness of purpose led to lack of direction and/or conflict. An earlier study where all Quebec Community Health Care Centres (>150) were surveyed to measure the degree of collaboration found that factors related to the internal dynamics and working relationships among team members were the most important predictors of successful collaboration (Sicotte et al 2002). However, formal administrative structures that promoted interdisciplinary collaboration were also found to be important.

Based on the literature reviewed, it would seem that a balance is required between personal and team factors, and infrastructure or environmental factors to facilitate interprofessional collaboration. The fact that strong leadership has been found to be important suggests that all of these factors (interpersonal/team, infrastructure and environmental) require support for the change management imposed by an innovation. Therefore, the conceptual model used to analyze the implementation of a new intervention expected to increase communication and collaboration between HHS and independent FPs had to consider change management when innovations involve both individual and system variables. A number of frameworks and models discussed in the literature considered these variables.

2.2.3 Change and Systems Theories

Conceptual frameworks and theories that are perhaps more useful in a study dealing with multiple organizations that are not co-located were change theories and system theories. These theories generally accounted for factors that influence individual and collective behaviour in the context of the internal and external environment.

2.2.3.1 Diffusion of Innovations

Perhaps one of the most popular frameworks used to explain uptake of new health innovations outside of a research environment is “Diffusion of Innovations” (Wejnert 2002). The diffusion of innovations theory was originally described and published by Everett Rogers in
1962, and the original publication is in its fifth edition (Rogers 2003). The theory has been applied to the spread of abstract concepts, technical information, and practice change. The conceptual framework associated with diffusion of innovations grouped variables into three main buckets: characteristics of the actual innovation (e.g. benefits versus costs); characteristics of the innovators (e.g. status and position in social network, socioeconomic characteristics, personal characteristics, familiarity with the innovation, etc.); and environmental context (e.g. cultural, political conditions, etc.) (Wejnert 2002). The interaction of these three sets of variables has been graphed to show the spread of an innovation over time. In a clinical context, the theory posited that for any specific innovation, the decision to implement consisted of five steps: researchers acquired new knowledge; a clinician became aware of the new knowledge; the clinician engaged in activities that allowed a choice to be made about whether or not to accept the new knowledge; the clinician incorporated the new knowledge into practice; and the clinician looked for reinforcement from peers about the legitimacy of the choice (Sanson-Fisher 2004). Individuals moved through this process more quickly or more slowly depending upon their characteristics, and could therefore be defined as innovators, early adopters, or late adopters (Sanson-Fisher 2004). The cumulative adoption of an innovation has often been portrayed as an S-curve, where earlier adopters influenced later adopters until a saturation point was reached (Wolfe 1994). Often within change management and behavioural change literature, the normal curve percentages were applied to the various categories of adopters (e.g. innovators at 2.5%, early adopters at 13.5%, early and late majority each at 34% and laggards at 13.5%) (Boston University School of Public Health 2013).

Diffusion of innovation theory seemed to be most useful in observing how an innovation spreads over time. Although diffusion of innovations may be a useful conceptual framework to apply to interventions that increase collaboration between FPs and HHS as time elapses (i.e. observing and analyzing the factors influencing the spread of the innovation from innovators to early adopters to late adopters), the framework was not ideal for this study at this point in time due to the short time frame (eleven months) of the study, where only innovators/early adopters could realistically be engaged.
2.2.3.2 Models and Frameworks Applied to Uptake of Health Technology

While Diffusion of innovations has been used to explain how new technology has been accepted and spread in health care environments (Vedel et al 2012), (Greenhalgh et al 2004), other models were also found in the literature specific to health technology uptake. One theory used to explain health care technology uptake has been the sociotechnical approach (Li 2010), (Westbrook et al 2009), which had its basis in work design, and was rooted in the balancing of work design and quality of life for workers. A main principle was that tasks should be controlled at the worker level as much as possible, providing only enough direction to allow for proper performance while maintaining worker autonomy (Molleman and Broekhuis 2001). When applied to health care and implementation of technology, this theory has been found to be useful because it recognized challenges to both technical and social components of the work setting.

Technological innovation involves changes to work patterns, roles and culture, as well as attitudes about the use of technology (Li 2010).

Factors that have been identified as important to introduction of technology in health settings include business factors (van Limburg et al 2011). Issues such as a lack of attention to reforming financial structures and legal frameworks to allow for technological implementations to be regularized, a rather narrow focus on the technological implementation, and isolated or fragmented implementation without regard for scalability were issues that have been observed to slow down or halt progress toward successful implementation. It was suggested that the introduction of technology requires a participative process that engages all stakeholders, and that the development of the technology must be linked to the implementation (van Gemert-Pijnen et al 2011). Therefore, implementation of new technologies in a complex health care environment must consider a business model in planning and implementation, defined as “the rationale of how an organization creates, delivers and captures value.” Business models work at the strategic level and provide direction for the development of business cases and process models (van Limburg et al 2011)

This was reinforced in a literature review of barriers to adoption of information technology in health care that identified five inter-related dimensions: organizational structure; tasks; human resource policies; incentives; and information/decision processes (Lluch 2011). The inter-relationship of these five dimensions causes complexity that results in more difficult and slower implementation of technology than might be expected on the surface. The
observation that many inter-related dimensions add complexity and unpredictability to implementation of health care technology fits well within a framework that incorporates system theory.

### 2.2.3.3 Complex Adaptive Systems

Complex adaptive systems (CASs) frameworks developed out of general systems theories (Holland 1992), and have been applied in multiple settings including health care. They have been defined as dynamic networks of semiautonomous, often competing and sometimes collaborating individuals (or actors), who interact and adapt in unpredictable (non-linear) ways as their surrounding environment evolves (Boustani et al 2010). A key feature of a CAS is that the unpredictable actions of individuals are interconnected, so the actions of one individual/actor change the context for other individuals/agents (Plsek and Greenhalgh 2001), (Begun et al 2003), (Boustani et al 2010). Changes in any one interaction pattern can have large or small effects on other interactions, and the changes can generally not be predicted based on static representations of the health care system (i.e. replaceable parts and predictable behaviour that can be changed or reproduced based on information about past performance) (Boustani et al 2010).

In CASs, agents/actors are seen as responding to their environment using a set of internalized rules that drive behaviour. These rules may not be explicit or shared (Plsek and Greenhalgh 2001). In addition, specific agents in the system are generally unaware of the system as a whole, and react to information that is locally available (Begun et al 2003). Because agents are capable of changing behaviour over time, CASs are capable of learning, and changes in one part of the system can influence, and can be influenced by, changes in another part (Plsek and Greenhalgh 2001), (Begun et al 2003). Therefore, CASs have a history, and they evolve and change based on past experience. However evolution and learning occur at the local level, and each individual may fail to see, and so be unable to react to, changes at some distance within the system (Begun et al 2003). Within a CAS some documented variables influencing adoption of new innovations include: how adaptable the innovation is to the needs of the adopter(s); the feasibility and ease of use of the innovation; the influence of leaders in supporting the innovation; and support from informal inter-organizational networks for adopting the innovation (Boustani 2010).
With regard to this study, considering the definition of a CAS as a collection of semi-autonomous individuals working in a dynamic network (Boustani et al 2010), each FP office (or practice, for FPs working in a group practice) could be considered a single CAS. (Although an alternative would be to define all FPs as one CAS, in reality each FP practice is very isolated with little or no connection to other FP offices). The South Vancouver Community Health Center HHS would also form one CAS. Using this reasoning, the HHS would be, at any one point in time, working with many FP CASs. One could surmise that a goal of achieving interprofessional collaboration would be more challenging across multiple CASs (one HHS team and multiple, unconnected FP sites) than it would be within one CAS (such as within a HHS team, or within one FP office). Therefore, use of CAS theory as the conceptual framework on its own would be challenging. The challenge facing initiatives that aim to increase collaboration between separate CASs would be to find flexible ways to introduce and foster changes at the individual level that facilitate increased collaboration among all the actors, and then to support sustainability of the change. A conceptual framework to analyze and explain the results of implementing a collaborative intervention across multiple FP offices and a HHS team required enhancing CAS theory with variables that affect interprofessional collaboration.

Therefore, for this study, the conceptual framework used to analyze the ways in which the study intervention answered the research questions had to address the intersection of the variables influencing interprofessional collaboration as they apply across the many individual players. Key concepts from the collaboration literature (role clarity and understanding, accountability for decision making, shared goals, sufficient resources to support collaboration, leadership, respect for unique disciplinary skills and knowledge, spatial elements and temporality) had to be conceptually nested within the variables that affect uptake of innovation/learning in CASs (such as independence of agents; unpredictability of response to change; learning at the local rather than systemic level).

2.2.3.4 Relationship Centered Models Incorporating Complex Adaptive Systems

The actions and motivations of individuals are considered necessary but not sufficient to explain the adoption of innovations in health care (May and Finch 2009). In a tested model designed to explain how innovations were embedded into practice, May and Finch’s Normalization Process Theory (May et al 2009) suggested that people work both individually
and collectively to adopt a new practice. Normalization Process Theory was partially derived from the Complex Adaptive Systems literature, and posited that adoption of a new practice happened through four processes: coherence (the set of ideas that attribute meaning to the innovation), cognitive participation (the engagement of people in the process of implementing the innovation), collective action (the chain of work that is associated with cognitive participation) and reflexive monitoring (formal and informal monitoring of the implementation process). To sustain the innovation, people continuously invest in the innovation over time and space. Normalization Process Theory would provide a robust conceptual model for explaining an intervention in one work place (for example, SVCHC). The theory was not as robust at explaining environmental factors, and would be more difficult to apply to the multiple sites involved in implementation of an intervention across many CASs (such as several FP sites and a HHS team).

A complementary framework that emerged as a useful explanatory model for this study applied CAS theory specifically to the primary care setting, and utilized a relationship-centered approach to understanding primary care practices within the context of CAS theory (Miller et al 2010). Adaptation was defined as “the successful ability to both respond to changes in the local environment as well as to intentionally create change in that environment” (page S70). Central to this framework and based in complexity theory, the concept of simultaneously responding reactively, and proactively causing change was important to understanding why reactions and behaviours were somewhat unpredictable (similar to coherence in May and Finch’s model). Each decision was described as changing the environment, but also influencing the decisions and actions of others, and these future decisions and actions might be immediate or delayed in time. People involved in change were working toward improvement rather than perfection. Improvement initiatives arose out of an environment that included competing opportunities and demands.

Based on this, Miller et al (2010) proposed a framework that included two features: core and adaptive reserve. The core features were classified further into resources, organizational structure(s), and functional processes. Two types of resources were described, material and human. Material resources included space, facilities, equipment and other. The management model (guiding decision making) was described as influenced by the organizational structure (including the leadership, compensation, reward and accountability systems). Three types of
functional processes were defined: clinical care, operations (supplies, support, staffing, information distribution, etc.), and financial.

A robust practice was described as one in which the resources, organizational structure and functional processes (the core) were adequate to maintain consistent performance in spite of fluctuations in external conditions. The features that enhanced performance of a practice during times of dramatic change by facilitating adaptation and development were called the adaptive reserve. Adaptive reserve is the equivalent in CAS to the concept of “resilience”, (Sturmberg et al 2012) and in this model, the elements were described as facilitative leadership, action and reflection cycles, a learning culture, improvisational ability, stories of change, and relationships and communication.

Miller et al (2010) described multiple pathways for practice development that included ongoing continuous improvement internal to the practice, with periods of dramatic transformation where the underlying assumptions of the practice would undergo change. Such dramatic change was seen as requiring unfreezing, transitioning, slowing down, then accelerating. The slowing down period after a transition was seen as allowing time for assessment of the repercussions of the transition (action and reflection cycles, sense-making) before accelerating development.

The adaptive reserve feature that is included in the Miller et al (2010) relationship-centered approach is a very useful explanatory framework for analysis of what distinguishes successful from unsuccessful interventions that are designed to change behaviour in situations/settings that involve multiple CASs, such as a HHS team and a number of FP practices. Each of the FP practices has a core, as does the HHS team. The core of each FP practice is presumably more similar than different to other FP practices, but there will be variation in resources, organizational structures and functional processes. In addition, each FP practice, as well as the HHS team, will have some level of adaptive reserve, but the composition of the elements making up adaptive reserve, as well as the amount of adaptive reserve, will differ across each CAS. Miller et al suggested that when an innovation is introduced that crosses sites (or systems), a process of “unfreezing” as the innovation is tried, and “transitioning” to either acceptance or rejection of the new innovation must occur in each CAS (site). Therefore, if the innovation were to be accepted (or partially accepted) in some of the sites, one could conjecture that there would be a slowing down period as word spread about the innovation and other sites
decided how the innovation applied (or does not apply) to them (sense making), followed by acceleration of acceptance across more of the multiple sites (or systems).

Miller et al’s (2010) relationship-centered approach was useful to frame the context for HHS’s and FPs’ reaction to a new initiative designed to increase collaboration while providing service in South Vancouver.

2.2.4 Barriers to Family Physician and Home Health Collaboration

There would be less need to conduct research related to improving communication and collaboration between FPs and HHS if clear solutions were already supported through a review of the literature. One could possibly apply previous knowledge to the practice setting. There is, however, very little literature available in the area of primary care and community care collaboration. The available literature tends to verify the barriers to collaboration (Aubin et al 2001), (Street and Blackford 2001), and may provide some direction as to what might work to increase collaboration in specific service models (Bailey et al 2006), (Beland et al 2006), (Bradley et al 2008). However, there is little definitive evidence about what works in this area.

Given the lack of evidence-informed solutions, and to aid in the development of the research protocol, a series of unstructured individual and group interviews were held with HHS at SVCHC through April/May 2007 to gain input and feedback about their perceived issues related to communicating with FPs about patient care. (South Vancouver Community Health Center Home Health Staff 2007) The data obtained were collated, categorized and then provided to SVCHC HHS via email for validation in June 2007. Broadly, issues identified by HHS fell into either a ‘communication’ or an ‘availability’ category. Under availability, some of the barriers described by HHS included: FPs who worked part-time, lack of (or did not turn on) a fax machine; lack of on call and night time coverage; receptionists who were perceived to “block” communication; non-optimal timeliness of responses to faxes and phone calls; and perceived unwillingness to do home visits for homebound patients. Under communication, there were several sub-issues. One category included issues with physician orders and referrals (i.e. lack of completeness or timeliness). Barriers to care for complex patients, and those with complications included poor mechanisms for keeping FPs in the loop for palliative and deteriorating patients; lack of awareness when FPs changed the patient’s care plan; issues related to timely and safe medication management; and issues related to coordination across the FP, medical specialists, and HHS.
Underlying the feedback provided by HHS were some possible assumptions that had not been validated and might have been incorrect. For example, some HHS attributed FP’s reluctance to get involved in care planning for deteriorating patients as a monetary issue for FPs (“they don’t do anything that they can’t get paid for”).

These issues were similar to those found in a qualitative study primarily about collaborating with home care teams situated in Centres locaux de services communautaires (CLSCs) that focused on 45 Quebec FPs with community-based practices, (Aubin et al 2001). Both the FPs and the home care teams were included in data collection. Most FPs saw collaboration with home care as favourable, citing advantages such as obtaining support for management of complex patients who require more time and involvement, and describing home care as providing supplemental information and painting a more global picture of the patient. However, FPs found it inconvenient to have to interact with several home care practitioners depending on a patient’s geographic location, and found the lack of continuity (when several staff were involved with one patient) frustrating. The time needed for collaboration was also seen as a barrier by FPs. In addition, lack of respect and relationship friction with home care providers were sometimes seen as barriers to collaboration.

The researchers grouped barriers into three categories: organizational factors such as lack of co-location; professional factors such as the payment system for FPs, organization of work time (office schedule for FPs versus home visits for CLSC staff), and lack of understanding about services offered by CLSCs; and personal factors such as communication style, not knowing each other, lack of common language (medical terminology), attitudes, and resistance to change.

Validating and underscoring some of these themes is knowledge generated through a survey of 67 primary care physicians and 820 home care clinicians assessing perceptions of communication and collaboration between physicians and home care clinicians. This US mail survey had a response rate of 90% of the physicians and 63% of the home care staff. (Fairchild et al 2002) Less than half (46%) of physicians in this study sample “always read forms sent to them by home care staff before signing them”. More home care staff (74%) reported overall satisfaction with communication than physicians (47%), but interestingly, among the physicians who read communications from home care before signing them, satisfaction was higher (70%), a result that was significant at the p = .001 level. Neither physicians nor home care staff were
highly satisfied with ease of communication - physicians gave an average rating of 2.97 on a 5-point scale, while home care staff gave an average rating of 3 out of 5. Only 18% of the home-care clinicians felt that they had clearly defined criteria regarding appropriate reasons for telephone calls to physicians. Both physicians (80%) and home care clinicians (90%) believed that access to a common electronic record and ability to communicate by email would be useful. Physicians were more inclined to believe that clinical pathways or care map protocols would be of benefit (64%, compared to 38% of home care staff), while home care clinicians were highly in favour of case conferencing for complex cases as a means of improving communication and collaboration (90%).

Some reasons for perceptions found in the Fairchild et al (2002) study can perhaps be inferred from results of a qualitative study using critical review methodology (semi-structured interviews and focus groups), completed in Melbourne, Australia that assessed collaboration between palliative care nurses (n=40) and physicians, and explored issues that impede effective communication (Street and Blackford 2001). The study was motivated by the fact that although a number of educational and service delivery strategies to increase collaboration had been undertaken, nurses and doctors were still reporting problems with interdisciplinary communication that affected health care for palliative patients. The focus was on practical approaches for nurse and doctor involvement. Similar to the Canadian context, the authors pointed out that in the community settings, multidisciplinary “teams” consisted of professionals who rarely met face-to-face, and this placed a larger burden on patients and families to ensure that various professionals involved were up to date with each other's care. The authors identified systemic issues such as territorialism between professional disciplines, differing philosophies and styles, and use of different language. The study found that where there was effective communication, it was generally the result of networking by individual professionals rather than being the result of any systemic processes. The nurses who were most effective tended to visit or phone the physician immediately after receiving a new referral, and to use personal visits to establish a relationship both with the physician and with the receptionist. It was noted that phone calls worked less well than personal visits because the receptionist often thwarted the process in
order to protect the doctors' time. Where a sessional\textsuperscript{2} physician was employed by community palliative services, communication with FPs was enhanced, except that in some cases nurses would try to use the consultant sessional physician for assessment and prescriptions, effectively cutting out the patient’s primary FP. An important theme that emerged was that in order to communicate effectively, both the nurses and doctors had to have a common understanding of what the other needed to know. Nurses often noted that specialists and FPs did not provide them with enough information at referral so they could enter the house of a new patient and provide effective care. Nurses also believed that physicians wanted a minimum of information, and had resorted to sending (often unacknowledged) faxes containing only medical information. The study authors observed that resorting to faxes fed into a “reductionist” approach to care that failed to acknowledge the full scope of the patients' needs. Interestingly, the authors also found that there was no consensus on whether the nurse or the physician was responsible for care coordination. Where specialists or acute care was involved, there were added challenges with communication because often the FP was not kept up to date with regard to specialist care or acute care discharge dates. The doctors' patients could have been sent home from hospital, for example, with only verbal instruction to contact their family doctor. This would leave FPs unclear about what medications had been prescribed, and often unaware that their patient was home. Although nurses reported that collaboration was more likely to occur with complex patients, others stated that some FPs were unwilling to become involved with complex palliative patients due to busy clinic schedules.

Further support for the theme of lack of understanding about each other’s roles was found in a qualitative study examining expectations, experiences and perceptions between Australian FPs and community pharmacists. (Dey et al 2011) Although on the surface, these authors found that both FPs and pharmacists reported good relationships, further exploration revealed limited understanding of each others’ roles, and negative assumptions leading to friction in their relationships. There were differences in what each profession wanted – FPs were found to want the facts about the patient whereas pharmacists valued accessibility, style and nature of the communications. Similar to the experiences described in the above reported literature about

\textsuperscript{2} FP paid for a block of time rather than fee-for-service.
communication between home health and FPs, communications tended to be transactional in approach, rather than collaborative.

2.3 Link Between Interprofessional Collaboration and Outcomes

One might raise the question as to what benefit arises out of more extensive and structured collaboration between HHS and FPs, especially given the challenges. Arguably, the right patients are usually referred to HHS for care, and FPs and HHS generally manage to communicate well enough to provide joint care for patients that are treated by both the FP and HHS (referred to in future as “shared patients”).

The need for better collaborative care is supported by the fact that communication failure has consistently been linked to patient harm (Suter et al 2009). For example, inadequate communication between care providers or between care providers and patients/families has been found to be an important cause of more than 60% of sentinel events (defined as serious adverse events) including medication errors, wrong surgery site, suicide, operation and post-operative complications, and falls, among others (Joint Commission of Accreditation of Healthcare Organizations 2007). In addition, because clients seen by HHS often have unstable health status or acute medical needs, effective communication between HHS and FPs is critical to ensure that all professionals involved in the care of a patient can engage in timely decision-making, and therefore facilitate effective resolution of patient health issues (Maison 2006).

2.3.1 Provider Outcomes

A systematic review of literature related to health human resources and interprofessional collaboration yielded forty-one relevant articles from peer-reviewed literature and five articles about projects funded through Health Canada’s Interprofessional Education for Collaborative Patient-Centered Practice (IECPCP) initiative (Suter et al 2012). Overall, studies reported increased provider satisfaction due to improved workplace culture, improved ability to use full provider knowledge leading to greater autonomy, increased collaboration and/or perception of improved patient outcomes. Only two of eighteen studies reported on recruitment and retention, and both reported reductions in staff turnover.

Two Canadian studies involving Family Health Teams in Ontario supported positive provider outcomes due to enhanced interprofessional collaboration. A qualitative case study of fourteen Family Health Teams in Ontario found that most providers valued the opportunity for
interprofessional collaboration, and felt that the collaboration led to enhanced patient-centered care (Goldman et al 2010). The second study involved 21 FPs in three group practices collaborating with an interprofessional palliative care team (Marshall et al 2008). The intervention was multi-faceted, but included common education and regular communication between team members. FPs valued having round the clock access to palliative consultation and access to education, and felt that their patients benefited from the more comprehensive service provided.

Studies targeting students have also shown positive benefits for involved students and professionals in interprofessional collaborative care initiatives. For example, a formal 3-stage training program developed and implemented through family medicine units affiliated with Laval University in Quebec targeted family medicine residents, nursing and social work students. A mixed methodology evaluation was employed; part of the evaluation was a pre-/post-survey that showed statistically significant improvement for both professionals and students in perceived knowledge and skill acquisition for interprofessional collaboration, and attitude toward collaboration (Pare et al 2012). A second study involving 223 fourth year professional students in Saskatchewan (nursing, nutrition, pharmacy and physical therapy) utilized a patient case (an elderly woman transitioning from hospital to home) as an intervention to provide an interprofessional collaborative experience, with measurement of attitudes and satisfaction pre- and post-intervention (Dobson et al 2009). Students’ self-assessed understanding of and comfort with interprofessional collaboration improved between pre- and post-, and overall students found the experience satisfying.

A case study approach utilizing 2-stage surveys to observe the effects of pilots designed to integrate pharmacists into primary care in the UK (Bradley et al 2008) found that, overall, pharmacists did not perceive that they were more integrated with primary care even when new relationships had been developed, but did believe that referrals to pharmacists had increased, which they considered was a positive result. As one might expect, the sites that achieved co-location of pharmacists with FPs were more likely to believe that they had attained some level of integration, and had more positive experiences of teamwork.

2.3.2 Patient Outcomes

For patients, the potential outcomes of integrated teamwork between HHS and FPs include decreased duplication of assessments, efficiency of information transfer between
services, reductions in medication errors and complications, reduction in the number of emergency visits and hospitalizations, improved chronic disease management, more effective pain and symptom control, and increased patient satisfaction (Canadian Home Care Association 2008). In a systematic review focused on interprofessional collaboration and health human resource issues, fifteen peer-reviewed articles were found that reported on health outcomes (Suter et al 2012). All but one study reported positive results, which included reduced hospital admissions/re-admissions, reduced lengths of hospital stay, reductions in adverse events and cancelled surgeries, reductions in the number of semi-urgent pre-operative investigations, lower hospital-related mortality, lower outpatient costs, and a higher percentage of patient care dealt with in outpatient versus inpatient settings.

Teamwork between physicians and other health disciplines has been found to have a positive impact on palliative patient outcomes such as symptom and psychosocial management (Goldschmidt et al 2005), and ability to accommodate patients’ preferred location of death in home-based palliative care (Marshall et al 2008). In hospital-based cancer care, positive results due to collaboration have been reported for patient satisfaction and pain management (San Martin-Rodriguez et al 2008). Collaboration has been associated with decreased mortality and lower readmission rates in intensive care (Wheelan et al 2003), (Rose 2011), quality of life and health outcomes for patients with mental health and substance use disorders (Druss and Mauer 2010), decreased length of hospital stay and increased motor function in stroke rehabilitation (Strasser et al 2005), and diabetes outcomes in primary care (Taylor et al 2007). However, a systematic review found interprofessional collaboration to have no, or small non-statistically significant effects on changes in physician practice behaviour with the introduction of mental health practitioners (Bower and Sibbald 2000).

At a national level, Jesmin et al (2012) used regression techniques and propensity score matching methodology to examine the impact of team-based primary care on several process and outcome indicators for primary care, using national data from the 2007-8 Canadian Survey of Experiences with Primary Care. They found that the estimated average treatment effect of team-based primary care was positive and significant for access to after-hours care, quality of care, confidence in the system, overall coordination of care, and patient centeredness. However these results were limited due to the fact that the survey measured perceptions of patient outcomes rather than using (or including) clinical evidence of changes in patient health status.
2.3.3 Summary of Outcome Literature

Although much of the available literature has been rated in systematic reviews as moderate in quality using pre-determined criteria (such as methodological rigor) (Zwarenstein et al 2009), the reported qualitative and quantitative measures, in most cases, lead to the same conclusions. In general, the literature supports that there is a positive association between interprofessional collaboration and outcomes for patients and for providers.

2.4 Interventions and Models to Increase Collaboration Between Physicians and Home Health Staff

A wide variety of models and strategies designed to increase the collaboration between primary care providers and community providers were found in the literature. However, it was difficult to make sense of this literature because of the large variation in definitions, terminology, settings, collaborative approaches, and extenuating or facilitating circumstances. For example, one can find examples such as “co-location of services”, “referral approaches” (Druss et al 2010) or “coordinated care” models, “integrated care” models, “care management” models and “other” (Sieber et al 2012). The latter example based their classification on work done by Blount (2003).

Blount’s categories were perhaps the most useful to capture the wide variety of models. Coordinated models were defined as spanning different settings and having mechanisms in place to exchange information when patients were in treatment in both settings, while co-located services co-existed at the same practice location. A third category, integrated models, included one treatment plan that was inclusive of medical and other health services. Blount also used two other classification categories -- targeted or untargeted programs, depending upon whether the practice is targeting a specific patient population; and specified or unspecified treatment modality depending upon whether treatment provided was clearly identified and generic (a number of clinicians could provide it) or was clinician specific.

For purposes of classifying models in the following discussion, Blount’s (2003) taxonomy was used.

2.4.1 Integration Models

Given the importance of spatial and temporal variables associated with successful interprofessional collaboration discussed above, the idea of co-locating teams at least, and integrating processes where possible, would seem to make sense. In the literature there are
examples of policy decisions influencing the development of a variety of strategies aimed at co-locating or integrating primary care with other health services. There are also examples of co-located service delivery models targeted at specific patient populations, such as frail older adults or individuals living with mental health disorders.

An example of an integration model that has been in existence in North America for over forty years is the community-board-governed community health center (CHC) model (Dinh 2012). CHCs in many cases developed from grass roots community efforts to improve quality of life for marginalized populations. A descriptive example of this is the Clinica Family Health Services in Denver, which began in the founder’s kitchen thirty years ago, and has evolved to its current form (Bodenheimer 2011). Services now include team-based care provided in “pods” where individual practitioners work in a central area (no offices) surrounded by exam rooms. In each pod, performance data are prominently displayed, and teams deal with any performance deficiencies through team huddles.

In Ontario, CHCs exist in 110 communities, generally targeting low income or otherwise vulnerable populations. In addition to primary care and home health services, the Ontario CHCs generally include health promotion and community development services. Salaried FPs work alongside a team, co-located with a wide range of health and social care providers. A recent Canadian study evaluating three different methods of funding FP’s in Ontario (CHC, fee-for-service, and a capitated model) found that CHCs were the most effective of the three models in achieving adherence by patients to diabetic clinical protocols (Liddy et al 2011). Quebec’s community service centers (CLSCs or “centres locaux de services communautaires”) are another example of CHCs that were established in the 1970’s, and currently deliver approximately fifteen percent of the province’s primary care. CLSC’s include a wide range of disciplines and are governed by non-profit boards. According to Dinh (2012), CLSC’s have not been evaluated from either a health or an economic perspective.

A recently reported example of an integration model was the introduction of a capitation model of funding for family practitioners in Ontario (Family Health Teams). Under this structure, funding is provided to incent FP practices to include allied health professionals such as nurse practitioners, pharmacists, social workers and dieticians (Liddy et al 2011). Beginning in Montreal in 2009, Quebec also began implementing a form of integration model, and plans to expand these throughout the province (Dinh 2102). Integrated network clinics, or “cliniques-
resau intégrées”, consist of interdisciplinary teams and up to 15 full-time-equivalent FPs, all led by a FP who coordinates the clinic operations. Each patient has one clinical record, shared by all FPs and other health professionals involved with the patient.

A number of targeted integration models of care have been developed and evaluated based on the concept of providing primary, health and social care to vulnerable older adults as a complete package by connecting them to a specialty care team. For example, the Quebec SIPA (Système de services intégrés pour personnes âgées fragiles, or Integrated System of Care for the Frail Elderly) model (Beland et al 2006a), (Beland et al 2006b) and the Edmonton CHOICE (Comprehensive Home Options of Integrated Care for the Elderly) program (Tri-global Solutions Group 2009) were based on earlier documented On Lok and PACE models from the US. SIPA and CHOICE were designed to provide a primary care based care system that brought together responsibility for all health and social needs (including acute, community and long term care), into one program (basically a managed care model). In the evaluation of SIPA, patients were selected from usual home care based on a measure of functional disability and then randomized to continue with usual care or enter the SIPA program; 606 patients received the SIPA intervention and 624 patients received usual care and all were followed for a 22-month period. The average age was about 82 years for both SIPA and control patients and the SIPA staff were responsible for all service, regardless of location (home, hospital or long term care facility, drug costs, and specialist referrals) (Beland et al 2006a). The evaluation found that SIPA participants who received home health care services received significantly more home health service hours than did controls. There was a significantly lower use of acute hospital care days that included Alternate Level of Care (ALC) days among SIPA patients. There were no other significant differences in emergency, acute or nursing home use. In the cost analysis, community costs were 44% higher for SIPA but total institutional costs were 22% lower, leading to an overall cost neutral result for SIPA. There was no significant increase in satisfaction for SIPA patients, but caregivers were more satisfied within the SIPA arm. Evaluation of the Edmonton CHOICE program did not include a control group, but confirmed that participants had less use of acute and emergency after enrolment than they did prior to enrolment. (Tri-global Solutions Group 2009)

Evidence on the effects of integrating primary care with other health care would suggest that such models, while effective, require extensive changes to operational structures and remuneration strategies. Therefore, in the short term, integration is likely not a practical solution
to increasing collaboration and/or communication between existing FPs and HHS for the majority of shared patients.

### 2.4.2 Co-Location Models

Druss and Mauer (2010) pointed out that although no specific organizational approach precludes collaborative care, structured organizational models more easily support clinical coordination than do loose referral relationships (Druss and Mauer 2010). The US “Patient Protection and Affordable Care Act” of 2010 has led to a plethora of demonstration projects and other initiatives aimed at improving quality of primary care by facilitating team-based care (Druss and Mauer 2010), (Collins et al 2010), (Grant and Greene 2012).

Targeted co-location of mental health practitioners with primary care practices has been widely reported in the literature as a strategy to coordinate care for patients with mental health or substance use issues (Pomerantz et al 2010), (Bauer et al 2011), (Kilbourne et al 2011), (Bower and Sibbald 2000), (Bower and Sibbald 2001). A systematic review of the effects of adding on-site mental health professionals to general practice (Bower and Sibbald 2000), (Bower and Sibbald 2001) noted that on-site mental health professionals could either directly influence a FP’s behaviour toward patients who are on the mental health professional’s caseload (e.g. change in likelihood of prescribing medication), or they could indirectly influence behaviour (e.g. overall change in medication prescribing pattern in the practice, even for patients not being seen by the mental health professional). The authors also described two models of on-site practice; in a “replacement” model the mental health professional took over care of the patient from the physician, whereas in the “consultation-liaison” model the mental health professional supported the physician's care of the patient.

Similarly, the US Veterans Affairs conducted a study to determine whether co-location of mental health services with general medical clinics would affect quality of non-mental health related medical care (Kilbourne et al 2011). In a cross-sectional design over the years 2006/7, using a random sampling strategy, they found that patients with serious mental illness receiving co-located care were more likely to receive diabetes-related foot exams, colo-rectal examinations and alcohol misuse screening, and were more likely to have good blood pressure control than were similar patients who were not receiving co-located general medical care.

Another reported example of co-location between primary care and mental health was the IMPACT (Improving Mood-Promoting Access to Collaborative Treatment) trial, a quasi-
experimental study that analyzed treatment data for over 2,800 patients across six sites between 2006 and 2009. The intervention consisted of case management support (providing patient education, tracking treatment response, coordinating medication management with the primary care team, and assisting with referrals) for primary care teams, and a consulting psychiatrist who attended the primary care site weekly. Education about depression management was also provided to the primary care teams. The results showed significant variation in qualitative and quantitative outcomes across sites that were not attributable to patient characteristics such as age, sex, language and baseline clinical scores for anxiety and impairment. As might be expected, sites that performed better on quality indicators (such as early follow up or appropriate pharmacological treatment) also had better patient outcomes (Bauer et al 2011).

In addition to co-location models targeted at mental health patients, there were also other reported examples of co-location models involving professionals with primary care teams. For example, within a Family Health Network in Ontario, a co-location trial was implemented by adding pharmacist and nurse practitioner support to the primary care team (Hogg et al 2009). The purpose was to examine whether this intervention (described as collaborative care) improved quality of care for at risk, older patients. Eligible patients within the practice were randomly assigned to usual care or care that included the nurse practitioner and pharmacist involvement. Researchers found significant gains in quality of care outcomes for patients receiving the intervention, compared to those who were not, particularly for diabetes care.

An analysis of efforts to decrease care fragmentation in chronic disease treatment across three European countries (Austria, Germany and the Netherlands) also highlighted strategies that involved co-locating care services (Nolte et al 2012). Across all three countries, the authors noted that approaches had tended to be “disease-specific”, which might be of concern given that many patients are living with multiple chronic diseases. One strategy described was the establishment of ambulatory care centers in Austria aimed at enhancing chronic disease management through integrating services on one site.

Generally the literature seemed to support co-location as a useful strategy for improving care processes, with limited support for improvement in care outcomes. However, although co-location may be successful in improving care processes, the Canadian health care system does not easily support models of co-located home health and primary care. Physicians in solo or small group practices are generally set up in small office environments with little or no extra
available physical space for home health teams to occupy. In addition, in major urban centers real estate is expensive, and capital development takes many years to achieve, from the planning stage to finally achieving a new building. To create new spaces that could co-locate FPs and Home Health would potentially require complicated contractual arrangements between a number of physicians and a health authority, and many years to move from idea to reality. Therefore, strategies for interprofessional collaboration that do not involve sharing space across providers may be more practical in the short term to promote HHS and FP collaboration.

2.4.3 Coordination Models

The literature identified a myriad of possible strategies to coordinate care between physicians and other providers where integration and co-location were not an option. Some strategies included partnership models where providers were not co-located; use of shared technology such as electronic medical records; use of telephone, email or other communication systems; in-person co-visits with patients; common education across physicians and other providers; shared care plans where the patient had a copy; and use of common processes to standardize care (Dinh 2012). An older but useful resource, a UK literature review by Singh (2005), provided a useful starting point. Singh supplemented her review through interviews with experts to determine trends in how care was organized for people with long-term conditions, the systems used to deliver care, and strategies for involving patients living with chronic conditions. At a broad level, she found evidence to support managed care programs in terms of the quality of care, clinical outcomes and costs of such programs. She also found some evidence that integrated care across FPs, hospitals and community can be cost effective and result in increased patient satisfaction. She found that care coordinated by nurses generally had similar clinical outcomes to that coordinated by physicians. She did not find clear evidence that case management, care pathways or written care plans led to better outcomes, except where these strategies were targeted at patients with the highest risk of acute care hospitalization. In terms of methods to involve patients in their care, Singh found strong evidence that including patients in decision-making about their care, providing written information, group education sessions and use of lay educators improved self-management of chronic conditions, and some evidence that self-monitoring and tele-monitoring could improve clinical outcomes for patients with long-term conditions.
2.4.3.1 Partnerships

There were a number of examples of formal or informal partnerships between community health providers and FPs that were aimed at coordinating patient care. Perhaps the first example documented in the Canadian literature was a small 2-year pilot (from 2000 to 2002) that attempted to integrate FPs and in-home service providers to provide acute care services in the home, evaluated using qualitative methods (McWilliam et al 2001). The program was set up to provide services for up to two weeks following an emergency visit or hospital admission, or where there was an acute medical condition. Involved professionals included case managers, a nurse practitioner, and the patients’ FPs. Through the FPs and nurse practitioner, 24-hour in-home medical coverage was available. A phenomenological research design was employed to evaluate the program, with a sample of patients and providers participating in interviews (n=12). The nurse practitioner was found to provide a ‘coordinating’ role between FPs and other involved professionals. Study participants identified the need to clarify admission criteria to this more intensive service (compared to usual home care services); the need for clarification of the role of FPs, the nurse practitioner and other professionals; a tendency for communication to originate from the FP (authors described it as “top-down”); and ambivalence on the part of professionals with regard to the inequitable funding for patients in the pilot program versus usual acute care patients (e.g. oxygen and some medications that would be covered in for patients in the hospital were the patients' own responsibility in this pilot program) as critical barriers to integrated care provision. Patients and caregivers described positive experiences, believing that the in-home care was more convenient and possibly led to faster recovery. Physician remuneration for the extra workload was identified as an issue, as FPs were compensated for providing home visits as they would have been if the same patient had attended an office visit.

This program later underwent a quantitative evaluation, using matched controls (by age, sex and diagnosis) as the comparison group. After controlling for symptom severity (which was significantly different between the intervention and control groups), satisfaction with service was significantly better for the intervention group, and they had significantly less emergency visits while they were on the program and in the six weeks following the intervention (Stewart et al 2010).

Few of the pilot projects that were part of the Canadian Primary Care Innovation Fund (discussed in Chapter 3) led to peer-reviewed publications. However, results of a partnership
project jointly funded by the Calgary Health Region and the Alberta Medical Association beginning 1999 were published (Korabek et al 2004). Home care services were restructured so that designated staff members, who were given extra training based on self-assessment of learning needs, provided service to seniors. Assignment of staff to patients was re-organized, using computer software, to align specific home care staff to specific FP practices. A formative evaluation found that the majority of homecare staff (83%) and FPs (91%) believed that they worked together as a team using phone consultations, face-to-face reviews and joint home visits. All FPs and 89% of home care staff reported that they were comfortable sharing information necessary for patient care and clinical decision-making. Participants felt that they were creating mutually agreed upon care plans (61% of home care staff and 78% of physicians) but did not believe that roles and responsibilities were well defined (home care staff 28% and physicians 26%). Although the perception of the Calgary home care staff was that their travel time was not significantly increased because they adjusted by visiting less frequently for longer periods of time, other jurisdictions that have tried to replicate a model that matches home care nurses to specific FPs have been unable to sustain the model due to extra resource requirements of such a model.

Another reported example of partnership that focused on palliative care patients consisted of using an Advanced Practice Nurse (APN) to coordinate with FPs, with the aim of creating a virtual interprofessional palliative care team (Marshall et al 2008). The addition of the APN was used as a mechanism to increase case finding and improve patient access. FPs remained the most responsible provider, with the palliative care team involved as collaborators in care. Weekly updates to FPs, and use of the APN as a link to doctors’ offices were the strategies employed to pull the team together. Education was provided to physicians for symptom management and communication in palliative care at the specific point in time that one of their patients required this support (known as “just in time”). Reported results included a 40% increase in referrals from FPs to the palliative care team in a 12-month period. Of the 93% of patients in this study who expressed a preference to die at home, 59% of them did die at home. The base-line percentage of patients whose expressed wish to die at home could be accommodated (prior to the study) was reported to be 28% (Marshall et al 2008).

There has been a recent emphasis in many jurisdictions on redesigning case management services to better serve either entire patient populations or subpopulations such as frail elders. An
example of a reported case management redesign pilot designed to decrease hospital utilization and decrease mortality for older people was undertaken by the National Health Service in the United Kingdom (Gravelle et al 2007), (Boaden et al 2006). In 2003, a new targeted case management model was introduced into nine English trusts to provide service to people who were 65+ years and had a history of emergency admissions. The case managers were meant to be nurse practitioners, although many were not, and FPs played a “mentoring” role for these new “community matrons” (Boaden et al 2006). The community matrons created individualized care plans with the patients and the FP, and monitored the patient/care plan. It was expected that intervention by these nurses would avoid medication errors, increase access to community services, and coordinate care to reduce fragmentation. A controlled before and after analysis, using other English trusts as the controls, found no significant effect on emergency admission rates, emergency bed days, or mortality (Gravelle et al 2007). FPs reported a “front end loading” increase in workload (in training the community matrons), which was later compensated for because the community matron patients visited FP offices less and required fewer home visits by FPs by the end of the pilot (Boaden et al 2006).

The Australian Primary Care Partnerships (PCPs), which align Divisions of General Practice (voluntary family practitioner organizations) with a network of public health providers, provide an example of formal organization of partnerships at a system level (McDonald et al 2009). Many Australian PCPs have, over time, implemented service coordination frameworks that include common tools and use of electronic referral between FPs and partnering organizations. Although quantitative measures were not reported, these changes were found to have resulted in increased coordination across service boundaries, improved quality and efficiency of service across organizations, reduced wait times for some services, and increased use of care plans for patients described as ‘high intensity users’.

2.4.3.2 Use of Structured Processes or Tools

The Expanded Chronic Care Model (described previously) highlighted ‘clinical information systems’ and ‘decision support’ as two areas of practice design important for ensuring proactive chronic disease management (British Columbia Ministry of Health, 2007b). Decision support involved ensuring access to evidence-informed care protocols or guidelines to encourage the application of therapies that have been shown to be effective. Clinical information
systems supported patient self-management and decision support by employing a targeted approach to care, such as developing registries of patients with specific diseases to facilitate monitoring, follow-up and self-management (Wagner et al 1999). In practice, formalized mechanisms for using technology to improve communication are increasingly important facilitators of success with regard to both of these areas. The concept of the “patient centered medical home” as discussed in the primary care literature was defined as a primary care practice that provides continuous, comprehensive care. Each patient in a “medical home” has an ongoing responsible primary care contact who is backed up by a team, all patient needs are addressed using evidence-based care, and there are quality improvement processes in place that include monitoring of outcomes (Collins et al 2010).

Informal methods of communication have, in the past, been important facilitators of successful interprofessional collaboration, as discussed earlier in this chapter. However, the uptake of more formal methods of communication and information sharing will be required to ensure consistent interprofessional collaboration (Dinh 2012). Some reported formal communication activities included interprofessional case conferences, clinic huddles, regularly scheduled and documented meetings, and care plans with specific tasks for each team member to accomplish within a defined time period (Dinh 2012). In addition, communication could be enhanced through use of technology, such as electronic health records, computerized messaging systems, video and tele-conferencing, and tele-health technology, among others (Dinh 2012).

Much of the literature about the use of communication and technology strategies is descriptive. For example, Calman et al (2012) provided several examples of linking FPs and public health providers through shared electronic health records in order to improve public health surveillance for both communicable and chronic diseases. Similarly, Cunningham et al (2012) classified the strategies used across twelve US communities between 2000 and 2010 to increase access and coordination of care for uninsured or under-insured Americans. Approaches they identified included centralized referral and/or enrolment networks and coordination of care across multiple providers through provision of a “membership” card, among other strategies.

There are few examples of studies using more rigorous research designs. However, a randomized controlled trial conducted in New Zealand, involving case conferencing about shared dementia patients between primary care physicians and palliative care specialists found that patients in the case conference group had better quality of life measures on some physical (such
as nausea) and mental health (such as memory and ability to concentrate) variables, measured using validated tools, in the last month of life (Mitchell et al 2008). The authors speculated that the case conferences might have enhanced the relationship between the primary care provider and the specialist early on in the treatment, which led to better care coordination when symptoms developed later in the course of the illness.

With regard to use of electronic reminders, a before-after three-group case control study (a control group, and two levels of intervention groups) conducted in France examined the introduction automatic reminders into the electronic medical record of type-2 diabetic patients, which would alert the FP during patient visits about guideline care activities to be performed. The second-level intervention group included the electronic reminders during a patient visit, and also enabled the physician to refer the patient to a nurse for patient education and counselling, when agreed to by the patient. Glycemic control (level 2 intervention) and performance of guideline care activities (both intervention groups) were both significantly improved for intervention groups, and there were no significant cost difference between the control and the two intervention groups (Mousques et al 2010).

Tools as mechanisms to address communication between physicians and other health professionals have been reported as a method to increase collaboration. One of the barriers to FP and HHS collaborative care planning identified in the literature was the potential lack of alignment in understanding about the purpose and goals of the patient consultation process. For example, Street and Blackford (2001), in a qualitative study of communication between FPs and nurses sharing palliative patients, found that the capacity of FPs and nurses to ascertain what the other needed to know was a key component of effective communication. In addition, communication patterns between health care providers were found to be highly variable and influenced by multiple factors such as professional background, established hierarchies, individual communication style, cultural background, and level of stress (Boaro et al 2010). For patient-related communication involving exchange of information between doctors and other health care professionals, an added barrier identified in the literature was differences in how the various professions are trained to communicate. Physicians were described as being trained to summarize, diagnose and treat, whereas most other health professionals are trained to provide descriptive, detailed narrative information about a patient (Denham 2008).
A very widely used tool that has been shown to be effective in a number of different settings was the SBAR. The letters in SBAR stand for “Situation”, “Background”, “Assessment” and “Recommendations”, and the tool is designed to provide a common and predictable structure to facilitate succinct, timely and outcome-focused exchanges (Denham 2008). Originally adapted by Kaiser Permanente (Leonard et al 2011) based on previous use by the US Navy (Denham, 2008), the tool has been widely taken up in health care settings and used in situations such as patient hand-over in acute care (Wacogne and Diwakar 2010), (Ascono-Martin 2008), information exchange between nurses and physicians when patients’ medical condition changes (Leonard 2001), communication among care teams when a patient is transferred from one care setting to another (Wentworth et al 2012), and structuring of interprofessional communication in a rehabilitation setting (Boaro et al 2010), (Velji et al 2008). The tool has also been adapted to structure communications between patient and families and health care providers (Denham 2008).

2.4.4 Summary of Coordination Models

The literature related to coordination models of interprofessional collaboration appeared to be primarily descriptive in nature. Many of the initiatives described appeared to have been implemented without consideration of all the variables that are important for interprofessional collaboration, which may have affected the success of the intervention, but also limited the ability for those initiating the interventions to evaluate why they achieved the results they did. If one accepts the premise that change within a primary care environment involves an understanding of how the innovation will affect both the organization’s core and its adaptive reserve (Miller et al 2010), then likely the degree of success or failure of the various innovations described in the literature is due to a multitude of interacting variables that were not measured during the implementation process.

It appears that interventions designed to increase interprofessional collaboration between primary care and community health providers must consider all (or many) of the variables that influence collaboration in order to evaluate their success or failure. For example, the finding by Bradley et al (2008) that establishing interprofessional collaboration between FPs and pharmacists is “a piecemeal process with reliance on goodwill and trust-based relationships” does not take into account the leadership, and the need for role clarity and structural support (spatial, temporal and consistent processes) identified in the literature.
2.5 Conceptualizing this Study

Temporal logic models have been found to be useful to address the issue of conceptualizing interventions that have a combination of challenges, including multiple stakeholders with different perspectives and structural barriers across partnerships and temporal challenges (Rogers 2008), (May and Finch 2009). In addition, temporal logic models provide a mechanism to draw upon a number of different theories of change to explain the outcomes that are expected and achieved. The purpose of a logic model is to illustrate how a program’s components link logically together (den Heyer 2002). However, where comprehensive a priori knowledge of the situation surrounding an intervention is lacking, and/or where there are external factors that could interfere with implementation of an intervention, a logic model may not fully reflect the reality of implementation, and its effects, over time. (den Heyer 2002). A temporal logic model addresses this through periodically reassessing the program and the logic model, and recording contextual changes that integrate subsequent program and contextual modifications (den Heyer 2002).

Figure 1 provides a visual representation of the context and components of the intervention implemented in this study.

Figure 1: Implementation of Secure Audio-Conferencing Between Family Physicians and Home Health Staff – Temporal Logic Model
Figure 1 shows the current challenge faced by HHS and FPs (barriers to collaborative care) being addressed by the intervention inputs (structured, pre-scheduled audio-conferencing about shared patients), leading to the outputs of the intervention (number of audio-conferences, number of FPs and HHS who participate in audio-conferences, number of patients identified for audio-conferencing and number of patients discussed). These outputs are then expected to lead to outcomes such as increased contacts about shared patients, an increased number of shared patients, increase in perception of the quality of collaboration by HHS and FPs, and the ability to identify ways to sustain the intervention by FPs and HHS. The ultimate goal of the intervention is for joint care planning about shared patients to become part of the core processes (Miller et al 2010) for both HHS and FPs, with an expectation (grounded in the literature reviewed earlier) that this will lead to improved patient outcomes. The intervention is being implemented within the context of separate systems with differing business structures and processes, where FPs’ offices and HHS are not co-located and do not have opportunities for spontaneous interactions, and where each FP office as well as HHS have different clinical documentation systems that do not interact with each other. Therefore, although the intervention seems relatively simple and straightforward (introduction of audio-conferencing), the theoretical foundations underlying implementation include the multiple factors affecting interprofessional collaboration as well as a number of system and change theories.

2.6 Conclusion and Study Rationale

The literature reviewed in this chapter established that there was, by and large, a positive association between patient-related interprofessional collaboration and improved outcomes for patients, professionals and the health care system. The literature identified the variables that influence success with regard to interprofessional collaboration, including role clarity and understanding, accountability for decision making, shared goals, sufficient resources to support collaboration, leadership, respect for unique disciplinary skills and knowledge, spatial elements and temporality. These factors must be considered when implementing models that will support interprofessional collaboration between FPs and HHS.

The literature reported examples of interventions targeting integration or co-location of FPs and community professionals that had been relatively successful. There were also examples of a number of cooperative strategies that has been tried, but the literature was primarily
descriptive and difficult to evaluate outside the context of a common framework to address all the variables required for successful interprofessional collaboration.

In the current British Columbian health care context, there are multiple barriers to FPs and HHS collaborating in the care of shared patients, and such barriers are similar to those identified previously in the literature. Given the increasing complexity of patients who are jointly shared by HHS and FPs, there is a need for interventions that will create mechanisms to facilitate collaboration. Applying the concepts of complex adaptive systems (CASs) would suggest that each FP office and the HHS team are capable of learning, and can be influenced by each other (Plsek and Greenhalgh 2001). However, learning must occur at each site (i.e. each individual FP office and each HHS office) (Begun et al 2003).

Although integration and co-location models are most likely to produce wide-spread and sustainable results in terms of interprofessional collaboration, to adopt such models requires policy, organizational and structural changes involving multiple stakeholders. Cooperative models of interprofessional collaboration are more feasible to implement for HHS and multiple solo or small group FPs, where spatial, resource, policy and organizational challenges stand in the way of more effective integration/co-location approaches. However, the literature reviewed here offered little in the way of clear evaluative information about such models, and the various interventions described do not necessarily clearly address the multiple factors required for successful interprofessional collaboration across HHS and multiple FP offices.

This study evaluated interprofessional collaboration for FPs and HHS using a new communication component, and addressed in a systematic manner many of the factors required for collaboration using a coordination model (Blount 2003). Leadership was provided through formal commitment by a health authority to work with clinicians and researchers. The mechanism for communication was provided through audio-conferencing, and this was designed to be practical for FPs and HHS by creating pre-scheduled times for the conferences. Role clarity and a structured process were addressed through provision of a tool used by HHS to pre-plan the conferences in order to ensure that the conferences resulted in a shared care plan (the SBAR, discussed in the Methodology chapter). In addition, structure was addressed by providing FPs and HHS with current lists of patients that were shared in common prior to the audio-conference times. For FPs, the financial concern with having time for patient conferencing was addressed through Ministry fee codes already in place for community conferencing and telephone
consultation. For HHS, backfill resources were provided for the time required to coordinate the audio-conferences.
3  Policy Context

3.1  Introduction

The purpose of this chapter is to situate the study within the policy and organizational context into which the intervention was introduced. Therefore, historical events are simply described in the following sections, avoiding any attempt to critique or comment on their relative success or failure.

3.2  The Changing Face of Disease in Canada

The profile of population illness, in which chronic conditions currently play a central role, has changed remarkably over time. The second most common cause of death in 1921-25 was “influenza, bronchitis and pneumonia” at 141 per 100,000 population per year; that figure had declined sharply to 32 per 100,000 population per year by 1974 (Statistics Canada, 2007). From 1921-25, cardiovascular and renal disease accounted for high death rates at 222 per 100,000, but by 1974 that had climbed to 368 per 100,000 deaths per year.

One factor underlying this changing profile of illness is that Canada, including British Columbia, faces an aging population. In 2010, 15% of British Columbians were estimated to be 65 years of age or older, and by 2036 this is projected to increase to almost 25% (Statistics BC 2011). With an older population, chronic diseases become much more prevalent. In contrast to the profile of illness in the early 1900’s, by 2008 the leading cause of death for Canadians was cancer, followed by cardiovascular disease and chronic respiratory disease (Statistics Canada, 2011). In 2005/6, 32% of British Columbians had one to three confirmed chronic conditions such as hypertension, diabetes, depression, chronic obstructive pulmonary disease, or heart failure. A further 2.2% had four or more confirmed chronic conditions (British Columbia Ministry of Health, 2007b). It has been projected that due to aging, the prevalence of chronic conditions in BC could increase by almost sixty percent in the next 25 years (British Columbia Ministry of Health, 2011).

Adult Canadians in general have healthier lifestyles than did their parents, and in general we can expect older people to be healthier than previous generations (Romanow 2002). However, when this older population does require health services, the services must be organized
in a manner that can respond effectively to often multiple chronic care needs. In illustration of this point, the highest users of physician services in British Columbia in 1994/95 tended to have more than one condition, often had a combination of acute and chronic conditions, were more likely to have a persistent psychosocial illness/diagnosis, and were more likely to reside in areas with lower average income (Reid et al 2003). The current and projected profile of high users of health care services suggests that the health care system must be increasingly configured to support the needs of the patients who will dominate the “need profile” -- people living with complex, co-morbid conditions.

3.3 The Primary Care/Home Health Divide

Given that diseases/disabilities commonly dealt with by our health care system now tend to be long term and complex in nature, often involving multiple systems (e.g. neurological, cardiovascular), treatment options generally require active involvement of patients in the daily management of their chronic health conditions (e.g. lifestyle change, or ongoing adherence to a therapy), but also the interactive engagement of a variety of health care (and at times other) professionals (Robinson 2010). This suggests the need for a comprehensive, integrated system of care (Reid et al 2003). However, physicians in BC (and most of Canada) who provide primary care generally work without the support of an interdisciplinary team and provide patient care on a fee-for-service basis (Hutchinson et al 2001), (Muldoon et al 2006). In this delivery system, patients tend to be placed into a passive role in health care decision-making, and interactions with the health care system are predominantly with single health care professionals, who will rarely interact with other professionals in the course of determining a care pathway for the patient. Ideally, chronic disease management requires patients to have greater control over their own care (Romanow 2002), and access a ‘suite’ of professionals working in tandem. Independent general practice physicians working on a fee-for-service basis and without access to an interdisciplinary team may have provided an effective service delivery model in the past when they were confronted with a quite different disease mix profile. However, smaller primary care practices with no interdisciplinary team to draw upon face contemporary challenges in delivering the comprehensive, coordinated care required for chronic disease management, and may have little flexibility or “reserve capacity” to devote extra time to new or complex patients (Rich et al 2012).
In part, this disjointed approach to care for patients with chronic co-morbidities is a product of equally disjointed health care funding in Canada. Only physician and acute hospital services are universally publicly funded in all provinces and territories. Other, often complementary services are funded through other mechanisms, and financial incentives rarely align to encourage interprofessional/sectoral collaboration. It is no surprise, then, that services are rarely coordinated in a manner that would allow for the full interprofessional team care required for chronic disease management (physician and specialist care, and a wide range of interdisciplinary support for managing chronic disease). Services funded in part, and often delivered by provinces and territories through provincial programs may include prescription drug coverage, home care, continuing and long-term care, community mental health services, rehabilitation and chiropractic services (Romanow 2002). Publicly subsidized community care services vary across jurisdictions, but generally include home services such as personal care, nursing and rehabilitation as well as residential care services for people who are no longer able to live independently due to health reasons (Hollander 2012). Although these services are available, it is clear that there are limited systematic mechanisms in place to coordinate patient care across primary and community health care providers.

3.4 Primary Care Development in BC and Canada

There are a few early Canadian examples of broader, more interdisciplinary models of primary care. Quebec and Ontario had begun broadening the models for primary health care as early as the 1970’s and 1980’s with the introduction of CLSC’s in Quebec and Community Health Centers in Ontario (Hutchison et al 2001), (Muldoon et al 2006). However, national consensus on the need to reform primary care was not achieved until September 2000. Following a consensus agreement at a First Ministers’ meeting, the federal government established an $800 million Primary Health Care Transition Fund to be used between 2000 and 2006. Some projects were funded at the federal level, and each province/territory also had funding to initiate local primary care innovation (Health Canada 2007).

Concurrently with the initiation of projects funded by the Primary Health Care Transition Fund, the Romanow Commission (2002) report was released. This report characterized the Canadian health care system as fragmented and siloed, with insufficient coordination between hospital care, physician care and community care. The Commission recommended that measures
be taken "to create a more comprehensive system whose components fit together more seamlessly" (page xix).

Each province used its portion of the Transition Fund in a different way. In British Columbia, the relationship between the BC Medical Association and the Ministry of Health had historically been somewhat rocky (Berg et al 2011). Therefore, a significant milestone for the province was the establishment of a General Practice Services Committee (GPSC), a joint committee of the B.C. Ministry of Health, the B.C. Medical Association (BCMA), and the Society of General Practitioners of BC, as part of the 2002 formal negotiations between the government of BC and the BC Medical Association. In practical terms, the aim of GPSC was to support practice change for FPs through mechanisms such as cost sharing for clinical information systems (if specific criteria were met), funding for change management support within the practice in areas such as patient access (e.g. implementation of advanced access scheduling, use of group visits in chronic care management), clinical enhancements (e.g. use of the BC Chronic Disease Toolkits), structured learning modules on a number of topics ranging from how to use a computer to advanced access scheduling, and networking opportunities for quality improvement through shared learning (General Practice Services Committee 2007).

The GPSC, in turn, created billing codes that included chronic disease management fees available to physicians providing care according to BC guidelines for patients with a diagnosis of diabetes, heart failure, or hypertension; a facility-patient conference fee that could be billed under appropriate conditions for in-person interdisciplinary conferencing in a long-term care, rehabilitation or sub-acute facility; and a community patient conference fee that could be billed in order to create a coordinated clinical action plan with community health professionals, and did not require a face-to-face interaction (therefore, and of particular relevance to this study, could be used for telephone consultation where the intent was coordination of a clinical action plan). A fourth code, a complex care fee, was designed to compensate the ‘most responsible general practitioner’ for the extra time required to provide planned longitudinal, coordinated care to patients living at home or in assisted living, and was billable for patients who had two or more chronic diseases from among a list of approved diseases. Another remuneration tool that was designed to encourage coordination of care was a telephone fee code (actually available prior to the establishment of GPSC, and also relevant to this study) that could be billed when another health professional called a FP for advice, orders, or input into care planning (British Columbia
Ministry of Health 2007d). The program included bonus payments for providing long term guideline-driven care to certain types/groups of patients (e.g. all patients on a FP caseload with a diagnosis of diabetes), by identifying these patients on rosters and providing longitudinal chronic disease management rather than episodic care.

Through the GPSC, a Practice Support Program (PSP) was created, to provide primary care providers with the skills and knowledge required to work as part of an interdisciplinary team providing longitudinal care to complex and chronic patients (Berg et al 2011). Local learning sessions were coordinated through the PSP to provide information about specific topics/modules (British Columbia Ministry of Health 2007b). Some of the early PSP modules created and implemented were designed to change the structure of physician practices and included advanced access, development of patient registries, group visits and management of patients with chronic illness. Later modules were aimed at encouraging evidence-based practice in high impact areas such as mental health and end-of-life care. The end-of-life care module showed the development of the PSP over time, as it was the first module to include health authority staff along with FPs and medical office assistants in both the creation of the module and participation in the workshops (Berg et al 2011).

In 2009 the GPSC, following the lead of countries like Australia (McDonald et al 2009), enabled development of Divisions of Family Practice, defined as community-based affiliations of family physicians working together to achieve common health goals (General Practice Services Committee 2009). Divisions of Family Practice were incorporated as non-profit societies, and formed tri-partite agreements between the Division, the relevant health authority and the Ministry of Health. Funding was provided through GPSC based on the number of physicians engaged in the Division. GPSC has described the uptake by family physicians as high, with approximately 30 Divisions in existence as of September 2012 (Divisions of Family Practice, 2012).

For Vancouver Coastal Health, this includes six Divisions (three urban and three rural). The development of Divisions as a tool for collaboration between family physicians and health authorities has potential to be leveraged as a powerful accelerant. Previously, if health authority staff wanted to engage with community FPs in initiatives to improve patient care, they resorted to hit and miss methods of trying to locate interested FPs who might or might not be representative of the rest of their colleagues, and these FPs had no systematic way to network
with their colleagues about the successes or learning from the initiative. Currently, in communities where Divisions of Family Practice have formed, a health authority leader and a Division chairperson co-chair a ‘Collaborative Services Committee’, providing a formal structure to engage with each other in common improvement activities, and to share initiatives meant to enhance the health of populations or individuals receiving care. Although it is very early in the development of these new bodies, there is potential for more collaboration in planning and service delivery across primary care and health authorities since their creation.

3.5 Defining Home Health Services

The Canadian Home Care Association defines home care as “an array of services, provided in the home and community setting, encompassing health promotion and teaching, curative intervention, end-of-life care, rehabilitation, support and maintenance, social adaptation and integration and support for the family caregiver” (Canadian Home Care Association 2012). The British Columbia Ministry of Health has a somewhat narrower definition of Home and Community Care than the Canadian Home Care Association (British Columbia Ministry of Health 2007a). The role of Home and Community Care in BC is described as “provision of a range of care and support services to individuals with acute, chronic, rehabilitative and palliative needs, designed to complement but not replace the support provided by family and friends”. Core in-home services provided to eligible residents of British Columbia include home care nursing, rehabilitation, palliative care and home support. Within the community, ambulatory clinic-based nursing, adult day programs, meal programs, assisted living and complex residential and hospice care are also available to patients. Eligibility requirements for public subsidy by the program include a set of criteria based on citizenship, provincial residency, age, health conditions, and third party liability coverage (examples would be WorkSafe BC or the Insurance Corporation of British Columbia). Stated goals of the BC Home and Community Care program are “to support people to remain at home as long as possible, and to provide services in the community rather than in health care institutions (i.e. acute care hospitals, residential care facilities) wherever possible”. These services are provided through Health Authorities, and are distinct and separate from primary care family physician services.

Across many jurisdictions, as the complexity of care (as described at the beginning of this chapter) was increasing, there was a focus on integrating the professional and the case
management roles in home care to avoid potentially duplicative overlap across community services and shift toward chronic disease management. The UK experiment of adopting a population-based approach to supporting people living with long-term conditions is a representative example of models that were being considered and piloted at the time (Department of Health 2005). This service delivery model was represented by a triangle showing seventy to eighty percent of people with long term conditions requiring support to self-manage their condition, a second tier of high risk people requiring disease specific care management, and a top tier of people with high complexity requiring an intensive case management approach.

Concurrently, British Columbia and Ontario began the process of reforming their case management model using a population-based approach. In Ontario, this has led to a population-needs-driven care management strategy called the Integrated Client Care Project, driven by the principles of specialization, integration and coordination (Bell and Foley 2011). Although these models showed promise for integrating and coordinating care within home care services, they did not address the divide between home care and primary care.

### 3.6 Integration of Primary Care and Home Health in BC

Within British Columbia, concurrently with working collaboratively with family physicians to improve primary care delivery, the Ministry of Health also created expectations of the health authorities to change service delivery models. In its Primary Health Care Charter, the Ministry laid the foundation for development of Integrated Health Networks, which entailed partnership and alignment between primary care (physician) teams, health authority health professional teams (including acute care, home and community care and mental health and addictions), and the community (social and recreational agencies, municipalities, schools, etc.) (British Columbia Ministry of Health 2007b).

The BC Ministry of Health restated this direction in 2010 (British Columbia Ministry of Health 2010b) in a planning document affirming that:

- Independent family physician practice (over 2000 solo and small group practices in BC) makes collaboration between FPs and health authority (including home health) staff challenging;
The community health care system must adapt to increasing demands for post-hospital care and support for increasing numbers of long-term patients with chronic health needs;

The current system is challenged by interdisciplinary scope of practice overlap that results in lack of efficiency.

The Ministry document made clear the Ministry’s belief that facilitating greater information sharing across different provider groups (including FPs and health authority staff) could result in more cost effective care coordination with reduced waste and possibly increased service delivery volume from the same number of providers (British Columbia Ministry of Health 2010b).

At the same time as the Ministry of Health Primary Care division was working on integration of physician services with community-based teams, the Health Authorities division of the Ministry of Health was engaged in a process with the health authorities of redesigning home health services. In March 2010, the “Home and Community Care ‘Care Management Strategy and Action Plan’ 2010-2012” was released (British Columbia Ministry of Health 2010a). The Care Management Strategy document provided a high level action plan for development of an integrated, population based approach for delivery of care management and clinical health services in BC’s Home Health program. Key to the new model was the introduction of intensive, proactive and coordinated care management for complex Home Health patients. Aligning with the Expanded Chronic Care Model (British Columbia Ministry of Health 2007b), the action plan called for provision of supports for patients who were able to self-manage their conditions. The action plan also recognized the need for retraining of existing Home Health clinicians to enable them to provide both clinical interventions and care management for the population of patients they were serving.

This strategy is in the initial stages of implementation across all BC health authorities. Some initial examples of service model changes include proactive, telephonic nursing support to patients with chronic diseases who would previously have received passive case management; and creation of smaller, focused caseloads for patient populations such as frail/complex geriatric patients or younger patients living with significant physical or neurological disability.

The 2012/13 to 2014/15 BC Ministry of Health Service Plan (British Columbia Ministry of Health 2012a) confirmed the goal of integrating community and primary care services, and
integrated the strategies of the Primary Care and Health Authorities Divisions of the Ministry. A major goal identified in this Service Plan was that “British Columbians will have the majority of their health needs met by high quality primary and community based health care and support services.” This goal was associated with only one objective “Providing a system of community based health care and support services around attachment to a family doctor and an extended health care team with links to local community services” (British Columbia Ministry of Health 2012a). The strategies outlined in the Service Plan included promotion of health service redesign, use of integrated health care teams, coordination between health care providers, improved access to family doctors and more responsive care in community settings. A key strategy outlined by the Ministry was the redesign of community based health services including care management practices, actions for people with dementia and strategies for those requiring end-of-life care (British Columbia Ministry of Health 2012a).

3.7 Accelerating Integration: Primary and Community Care Team Development

In order to implement and sustain these new models of care delivery, in 2010 each Health Authority and the BC Ministry of Health signed a “Bilateral Agreement” for the term 2010 to 2015, in which the Ministry agreed to match funding of up to $2 million for each year of the agreement to meet a set of service deliverables, and to pay up to $750,000 annually for the first three years to fund a primary care change management team. The set of services agreed to in the deliverables was extensive, but the broad aim was to create an integrated system of primary and community care services to achieve improved health outcomes for specific patient populations, among them patients with chronic, co-morbid and/or complex medical care needs, and fragile elderly patients (Vancouver Coastal Health Authority 2010). The Bilateral Agreement was positioned as a change management tool aimed at supporting Health Authorities to engage with Divisions of Family Practice in communities across the province. Integrated Primary and Community Care (IPCC) committees were put into place in prototype communities across the province (e.g. Powell River and the North Shore in Vancouver Coastal Health). IPCC committees chose priority populations based on community profiles provided by GPSC (e.g. cardiovascular conditions, mental health and addictions, palliative care), and the prototype communities were expected to develop strategies to begin to address the need to integrate care
between physicians and home health staff around the care needs of the identified priority patient population. Health authorities, however, were finding it difficult to find capacity to work with community FPs, as targeted funding for redesign of health authorities programs to support integration with primary care was not in place.

In 2011/12 the Health Services Purchasing Organization (HSPO), which in previous years had facilitated increased efficiencies in acute and emergency care by providing Patient Focused Funding (PFF), funded several community-based Patient Focused Funding projects meant to “bend the cost curve” and move care from more expensive hospital and residential care settings to community settings (Vancouver Coastal Health 2012). Several health authorities took advantage of this opportunity. VCH launched three projects that targeted Home Health services, and succeeded in showing short term gains in decreasing registrations for residential care and lowering Alternate Level of Care (ALC) rates in some acute care facilities that may have been at least partially attributable to the HSPO PFF initiatives (Vancouver Coastal Health 2013).

The HSPO PFF projects showed initial promise in trending toward decreased acute care and residential care use, but the Ministry of Health was concerned that separating change management funding for Health Authority staff from the overall IPCC strategy might lead to solutions that did not support integrated primary and community care teams. In the 2012/13 budget letters to the Health Authorities, three years of funding amounting to $50 million per year across the province was provided for PFF initiatives that would support change within health authorities targeting reduction in acute, emergency and residential care use where appropriate, by engaging with FPs to support enhanced community and primary care. Health authorities were encouraged to collaborate, share, and standardize as much as possible. Several categories of initiatives were approved for 2012/13. One set of initiatives broadly encompassing the principle of “Home is Best” included strategies aimed at supporting frail elderly patients who would otherwise require residential care to be maintained in their home environment through a combination of intensive care management, enhanced community supports, and enhanced collaboration between family doctors and health authority staff. The objectives of a second set of initiatives were to provide early discharge from acute care hospitals through some combination of community-based interdisciplinary clinical support, home health tele-monitoring, and linkage back to the family doctor for patients who had been admitted with exacerbation of a chronic disease (chronic obstructive pulmonary disease, heart failure or stroke for example). Another set
of proposals was intended to provide change management support and activity-based or patient-focused funding to Home Health teams for redesign of services to achieve the deliverables of the Care Management Strategy and Action Plan. All of the proposals approved through Accelerating IPCC funding are to be evaluated as elements of the provincial IPCC initiative. The Michael Smith Foundation for Health Research (MSFHR) is coordinating this large-scale provincial evaluation.

3.8 Situating this Study in Time

The initial involvement of South Vancouver Home Health staff in creating the raising the research questions that formed the basis of this study occurred in 2006, prior to publication of the BC Primary Health Care Charter. A cursory scan of Table 1 indicates that since 2007, BC has been engaged in ongoing change. The study took place between 2009 and 2011, in a period of rapid change at the policy level. It is important to note, however, that for the FPs and HHS providing care to patients/clients in the South Vancouver area, these changes at the policy level had not generally affected their care delivery.

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>2002</td>
<td>BC General Practice Services Committee established, leading to negotiation of fee codes to provide more proactive, comprehensive care for patients with chronic disease, a Practice Support Program to facilitate physician practice change, and incentives to develop clinical information systems.</td>
</tr>
<tr>
<td>2006</td>
<td>THE HOME HEALTH TEAM IN SOUTH VANCOUVER ASSISTS IN CREATION OF A RESEARCH PROJECT TO ADDRESS THEIR PERCEIVED NEED FOR INCREASED COMMUNICATION AND COLLABORATION WITH FAMILY DOCTORS IN CARING FOR SHARED PATIENTS.</td>
</tr>
<tr>
<td>2007</td>
<td>BC publishes Primary Health Care Charter, including a vision for Integrated Health Networks where patients would be supported by primary care teams, health authority teams/programs, and community services.</td>
</tr>
<tr>
<td>2009</td>
<td>Establishment of Divisions of Family Practice (under the auspices of GPSC) and Collaborative Services Committees, providing formal mechanisms for quality improvement work to be coordinated between general practitioners and Health Authorities.</td>
</tr>
<tr>
<td>2009-10</td>
<td>CIHR CATALYST GRANT APPROVED FOR THIS STUDY. PHYSICIANS ARE RECRUITED AND SOUTH VANCOUVER HOME HEALTH TEAM IS ENGAGED IN IMPLEMENTING THE STUDY. STUDY RUNS UNTIL JULY 2011.</td>
</tr>
<tr>
<td>Year</td>
<td>Event</td>
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<tr>
<td>2010</td>
<td>BC Ministry of Health Service Plan calls for collaboration between physicians and health authorities to adapt to increasing demands for post-hospital care and support increasing numbers of long-term patients with chronic health needs in order to provide more cost effective care, reduce waste and increase service delivery volumes.</td>
</tr>
<tr>
<td>2010</td>
<td>BC Care Management Strategy and Action Plan mandates BC Home Health services redesign in order to support self-management capacity for clients with stable health needs and provide intensive care management for clients with complex health needs.</td>
</tr>
<tr>
<td>2010</td>
<td>Health Authority and BC Ministry of Health Bilateral Agreements signed, providing matched funding for change toward integrated primary and community based teams, and funding for 3 years by Ministry of Health to Health Authorities for change management teams to work with the physician communities.</td>
</tr>
<tr>
<td>2011</td>
<td>Separate from GPSC-based initiatives, the BC Health Services Purchasing Office (HSPO) funds a limited number of Patient Focused Funding initiatives to facilitate innovation within health authorities on the community care side, and “bend the cost curve” through enhanced community capacity rather than acute care and residential care utilizations.</td>
</tr>
<tr>
<td>2012</td>
<td>The BC Ministry of Health publishes the 2012/13 to 2013/14 Service Plan. A major goal is “British Columbians will have the majority of their health needs met by high quality primary and community based health care and support services”</td>
</tr>
<tr>
<td>2012</td>
<td>The BC Ministry of Health builds on early success of HSPO PFF initiatives, making “Accelerated IPCC” funding available to health authorities for initiatives that utilize a Patient Focused Funding (PFF) mechanism, and support integrated primary and community care teams providing care in community settings rather than acute care, emergency, and residential care.</td>
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### 3.9 Contextual Landscape for Home Health Staff and Family Physicians

Figure 2 portrays the relationship between the South Vancouver Home Health Team and the FPs in South Vancouver, through the lens of a relationship-centered approach to change. There are a few external factors that are shared between the HHS and FPs. For example, all health providers in South Vancouver must react to the multi-cultural and multi-lingual nature of this geographic area, and all health care providers are working with a population that is older, on average, than the rest of Vancouver.
Each FP office represents a unique Complex Adaptive System (CAS). Each FP CAS has a number of internal and external forces affecting its function, and some of these are outlined along the left hand side of the diagram. FP practices must deal with the resource issues and concerns involved in running a private business, such as rent, the condition of the facility, and staffing issues. The resources in the FP practice must respond with available resources to a caseload that may be up to 2000 to 3000 patients. The BC Ministry of Health Medical Services Plan (MSP) is the main source of revenue so the practice must respond to demands from the Ministry, and must work within a primarily Fee For Service compensation model. In addition, the rules and conditions in the Pharmacare program influence how patients can be treated by a FP, and drug companies (as well as other suppliers) drop into the practice to raise awareness of their products. The FPs also have a relationship with the BC Medical Association (BCMA), whether or not they are a member, as BCMA is responsible for negotiating their fee schedule. FPs now deal with a complexity of other associations: the General Practice Services Committee (GPSC) where BCMA and the Ministry negotiate fees and other conditions of family practice, the Division of Family Practice of which the FP may or may not be a member, the College of Physicians and Surgeons of which the FP must be a member, and the Canadian Medical
Protection Association (CMPA) which insures physicians. In addition, for many FPs in South Vancouver, English is not the first or primary language used in assessing and treating patients, which adds complexity to their practice.

South Vancouver Community Health Center HHS team is also a unique CAS with its own core. External and internal forces that this CAS must react to (some of which are portrayed along the right hand side of Figure 2) are generally not the same as the forces that FPs deal with. The SVCHC HHS must align and work with the six other HHS teams in Vancouver. The Ministry of Health Home and Community Care (HCC) legislation and policy guides the amount and type of services provided, the manner in which patients can access services, and the costs that patients are assessed for services. In addition, Vancouver Coastal Health (VCH) administrative and clinical policies and protocols guide clinical practice for HHS teams. The health authorities are a unionized environment, and collective agreements must be adhered to, affecting policy requirements and resource availability. WorkSafe BC also imposes rules. Some services (home support, adult day services, assisted living, residential care) managed by HHS are contracted to VCH, and therefore the independent agencies providing these services have their own company policies that affect how HHS can access their resources. In addition, because SVCHC borders on Burnaby (which is in Fraser Health Authority) and many South Vancouver residents are closer to Burnaby General Hospital than any of the Vancouver Coastal hospitals, SVCHC HHS must also react to and align with Fraser Health Authority policies and protocols. Within the framework developed by Miller et al (2010), any initiative attempting to influence the way FPs and SVCHC HHS communicate and collaborate with each other is dependent upon the adaptive reserve of each of these separate entities to change in the face of this multitude of competing priorities.

Adding to this already complex set of variables, initiatives would be attempting to influence behaviour of individuals who are comfortable in the traditional communication patterns between FPs and HHS, which are primarily reactive rather than pro-active in nature. The arrows in the centre of Figure 2 depict these traditional communication flows (relationships). A FP would refer a new patient to HHS through Vancouver’s Central Intake team, not directly to the SVCHC HHS team. Central Intake would then send the new referral to SVCHC for patients who live within the South Vancouver geographic boundaries. Patients and family members can also self-refer to Central Intake, and in this case the staff in the Central Intake team would
contact the FP for corroborating information. SVCHC also receives referrals for patients directly from hospitals, and the FP is not necessarily in the communication loop for these referrals. Communication from SVCHC HHS to the FPs are by phone or fax, and generally consist of providing updates/information about patients shared with the FP or requesting orders/information from the FP. Communication flow from FPs to SVCHC HHS is generally by phone or fax and consists of providing orders or information when requested, or requesting a change in service or a clinical update for a specific patient seen in the FP office. Proactive communication that leads to the development of a joint care plan, and face-to-face communication, are very rare.

Thus applying the Miller et al. (2010) concept of adaptive reserve, the introduction of teleconferencing for shared patients could be considered as another external factor applied to each CAS that requires a response. Engaging in the implementation of this new initiative aiming to increase the proactive communication between FPs and HHS therefore would tap into the adaptive reserve of the multiple CASs involved. The type and degree of facilitative leadership in each CAS would be an important factor. CASs with a learning culture and more tolerance for improvisation might be more likely to try out the innovation. FPs with good relationships with SVCHC HHS might also be more likely to try a new innovation. Once the innovation is tried, how successful it was perceived to be in that instance might generate a change story that led to more or less probability of using the innovation again. In addition, whether the CAS had a reflective cycle after action, and the manner in which the CAS made sense of actions, would influence the probability of repeating the action.

If this change cycle was successful and both the HHS team and all (or a majority) of FP sites adopted teleconferencing as a usual practice, then one could consider that the new innovation had become another regular communication flow (and move from being an external force, to an additional bi-directional arrow between FPs and HHS in the centre of Figure 2).

3.10 Summary

This study took place in the context of a rapidly changing policy environment. Traditionally in BC and across Canada, primary physician care has been a universally covered (publicly insured) benefit for all residents, whereas home health services have not. Physician services have been, and still are, provided primarily by private family physicians paid on a fee-for-service basis, and public home health services are provided through staff of provincial health
authorities, or agencies that have contracted with those health authorities. It is important to note that even as the policy context was changing – for instance, with the creation of Divisions of Family Practice in 2009, or initiatives to integrate primary and community care for HHS – for the individual FPs and HHS involved in this research during the period of this study these initiatives had not reached the majority of health care providers in the Vancouver area. Thus this research was developed to address issues of communication in a setting where FP care was still for the most part isolated from HHS care.
4 Methodology

4.1 Research Questions

The research questions that were addressed in this study included:

1) Will use of a structured, targeted communication strategy of secure audio-conferencing at pre-scheduled times increase the number of “shared patients” between family physicians (FPs) and home health staff (HHS), and for which specific HHS disciplines (nursing, occupational and physical therapy, case management)?

2) Will use of a targeted communication strategy increase the quantity of patient-related care planning and coordination between FPs and HHS?

3) Will use of a targeted communication strategy increase the quality of patient-related care planning and coordination between FPs and HHS?

4) What parts of the targeted communication strategy do FPs and HHS evaluate as most useful, and what would they require in order to sustain the strategy after the study is complete?

4.1.1 Rationale for Choice of Measures

With respect to question 1), it was expected that as familiarity with the services offered by Home Health increased, FPs in the intervention group would identify other patients from their caseload who could benefit from referral to Home Health. This might occur either because the FP made the connection between the patient being discussed in the audio-conference and similar patients on his/her caseload, or alternatively due to discussion between HHS and FPs about what services are available related to other patients on the FP caseload. Therefore, it was expected that there would be an increase in shared patients due to the introduction of audio-conferencing.

With respect to question 2), if audio-conferencing about shared patients was seen as successful by FPs and HHS, it was also expected that this would result in further communication about shared patients between the FP and HHS, which would lead to an increase in contacts about shared patients.

With respect to question 4, because a major aim of engaging in this research study was knowledge translation, important research questions related to whether or not there were specific components of the intervention that were seen as more or less useful by FPs and by HHS. In
addition, insights from FPs and HHS involved in the study as to how the intervention could be sustained past the study period were seen as important questions by stakeholders (e.g. Vancouver Coastal Health, TELUS Business Solutions, and British Columbia Ministry of Health).

4.2 Research Design

This study employed a mixed methods approach, including a time series with control design, using quasi-random allocation of family physicians to control and intervention groups (quantitative), and a descriptive explanatory (qualitative) design. The qualitative methods (semi-structured interviews and focus groups) were undertaken in order to examine what parts of the intervention worked for participants and why, and to explore how successful elements of the intervention could be spread beyond the study population.

Figure 3 shows the study design both in terms of calendar time and study time (as FPs had variable start and end dates, calendar time and study time are not the same). Pre-study surveys and demographic questionnaires (described in the quantitative data sources section of this chapter) were administered to HHS and FPs. Baseline data were collected for three months from all participants; this was followed by randomization of the FPs to control or intervention groups, and implementation of the intervention with HHS and the intervention FPs. The intervention period was designed to last eight months, during which information about audio-conferences and number of contacts between FPs and HHS about shared patients was collected. Post-intervention data collection included re-administering surveys to HHS and FPs, undertaking semi-structured interviews and focus groups, and collecting administrative data for analysis.
4.3 Intervention

The protocol for the FPs in the intervention group consisted of the following components:

- A secure audio-bridge teleconference line for each FP to be used to communicate about patients that the HHS and FPs had in common (shared patients)
- A mutually agreed upon, pre-scheduled time slot for audio-conferences to occur between FPs and HHS about shared patients
- A structured format used by HHS for engaging with FPs in shared patient communication (the adapted community SBAR)
- A report providing FPs and HHS with a list of current shared patients as well as the HHS names and disciplines who were working with each shared patient

4.3.1 The Audio-Bridge Teleconference Lines

For the study, a unique secure audio-conference number was provided, and for each of the twelve FPs in the intervention group a unique pass code was assigned. It was decided that FPs would dial in using their telephones, but at South Vancouver Community Health Center (SVCHC) where a number of staff would be participating in each conference, a polycom sound-station conference phone was provided to ensure that sound quality was maintained. HHS were
provided with the call in number and the pass code associated with each FP. HHS and FPs were trained to use the audio-conference number and pass codes, and HHS were trained to use the polycom, and were also made aware of the fact that they could call in from other locations if they were unable to be present at their usual location during audio-conference times (e.g. from a cell phone or another land-line). Initially, the polycom would not work with the telephone system, and staff used a hands-free telephone during the first month of that audio-conferences occurred. This affected user friendliness as well as sound quality. An adapter that would work with the health authority telephone system was obtained, and re-training was provided about how to use the polycom with the adapter. Instructions for use of the audio-bridge conference line and the polycom were posted in large type in the research room where the audio-conferences took place.

4.3.2 The Pre-Scheduled Time for Conferencing

A research team member and the research assistant consulted with each FP in the intervention arm to determine possible times for pre-scheduled audio-conferencing that would work for both the FP and HHS. HHS then negotiated, if required, to match the FP schedule. The pattern chosen by all FPs was bi-weekly; FPs’ preferences were usually weekdays either before seeing patients in the morning, or right after their lunch break before beginning to see patients again. This was based on practical concerns; once office-based FPs start seeing patients, it is difficult for them to book an “exact” time. If a patient visit runs over, they cannot leave the examining room to attend an audio-conference, and it would not have been practical to have HHS dialled into an audio-conference waiting for the FP to become available. For HHS, mid-day was difficult as most staff were doing home visits, so first thing in the morning was more practical. HHS also tried to book conferences Tuesday, Wednesday or Thursday, as some staff were on nine-day fortnights and therefore unavailable on some Mondays and Fridays.

Medical Office Assistants (MOAs), who keep track of FPs’ office schedules, were asked to book in the negotiated conference time on an ongoing basis in the FPs’ schedules for the eight months of the intervention. Generally a fifteen-minute slot was pre-booked.

For HHS, to accommodate the pre-scheduled conferences and ensure that staff were prepared required significant change to pre-existing work processes. The South Research Group, a committee formed by the HHS manager to coordinate the project and liaise between researchers and staff, began to plan for the pre-scheduled audio-conferences two months before the beginning of the intervention phase.
One issue to be worked through for HHS was how to clinically document a conference with a FP where multiple staff members were involved. A solution was generated and applied consistently throughout the project that used the HHS’s electronic clinical record. The foresight of the South manager in pre-planning for clinical documentation had an additional unforeseen value, as researchers were later able to capture all conferences held with FPs for data collection purposes.

4.3.3 The Adapted SBAR

In order to structure the process of communication during audio-conferences about shared patients between FPs and HHS, the SBAR (Leonard et al 2011), a tool developed by Kaiser Permanente to provide an easy to remember, concrete communication framework between health care team members to contribute to patient safety, was adapted for community health communication with FPs. Each letter in “SBAR” stands for a communication step - Situation, Background, Assessment, and Recommendations. With input from a reference group of community health and advanced practices nurses, an adaptation of the SBAR was drafted with FP and HHS communication in mind. In 2008, the HHS manager on the Sunshine Coast (based in Sechelt, BC) agreed on behalf of her staff to engage in a pilot of the adapted SBAR tool and provide feedback on whether it was useful and how it could be improved. Staff from Sunshine Coast who piloted the tool in the spring and summer of 2008 consisted of case managers, home care nurses, an occupational therapist and a physiotherapist. Each HHS was asked to trial the adapted SBAR tool a total of five times (in order to provide sufficient time for them to become familiar with the tool, but avoid an onerous process for them). Each time they used it, they were asked to jot down answers to questions about the convenience, comprehensiveness and relevance of the tool, and also to note whether they would be inclined to use it again. At the end of the pilot period, the researcher attended a HHS meeting in Sechelt where the HHS provided qualitative information about how to improve the tool. Based on feedback received, extensive edits were made to the tool. The Sunshine Coast HHS then used the revised tool with FPs and provided several more suggestions for improvement.

The resulting Adapted SBAR for community consultation with FPs was provided to the South Research Group for use in the study who then made some formatting changes (primarily to provide room to write). This version became the tool used in the study (Appendix A)
4.3.4 Shared Patient Report

It was determined that a useful tool for HHS to be able to coordinate audio-conferences with physicians in the intervention group would be a report providing the names of current patients associated with each of the physicians enrolled in the study, along with the names of involved staff members.

All Vancouver HHS use an electronic record (referred to as PARIS) to document patient care; it is used to record administrative and clinical data about all patients seen by community health staff in Vancouver Coastal Health. PARIS is the system from which data are extracted at the health authority level to meet provincial and national reporting requirements. If the data entered into PARIS have a specified, retrievable field (as opposed to free-form text entry by staff), analysts are able to retrieve counts of the data in report form for administrative, monitoring and research purposes.

In order to provide a regular report showing the patients associated with each of the FPs in the study, along with the names and disciplines of involved HHS, a PARIS management report was created and routed on a weekly basis throughout the intervention period of the study (via email with password protection) to selected South Vancouver Community Health Centre HHS. A sample copy of the Weekly PARIS report showing shared patients between HHS and FPs over the period of study is included in Appendix B.

4.4 Study Setting

The study took place in South Vancouver, BC. The researcher had connections with the South Vancouver home health staff (HHS) as she had formerly managed this team. The HHS team in this location was motivated and interested in the study and this was a major and positive factor that influenced the success of the research project. The fact that the Home Health site was chosen because the researcher had access and support from the staff may have implications for generalizability of study results. However, South Vancouver’s HHS and their FPs’ practices are more alike than different to other locations in BC and across Canada, and results should be reasonably generalizable.
4.4.1 Demographic Characteristics of South Vancouver

The city of Vancouver is subdivided into six Community Health Areas (CHAs) for the purpose of provision of community health services, including Home Health. In 2011, the South Vancouver CHA (CHA 6 – See Figure 4) had the largest population of the six health areas in Vancouver. The BC Stats population estimate for 2011 was 136,209, which was 20.4% of Vancouver's total population (668,690) (BC Ministry of Health Services 2011b).

Figure 4: City of Vancouver Community Health Areas

There were some demographic differences in South Vancouver (CHA 6) that may have implications for generalizability of study results. In 2009, 74.3% of South Vancouver residents were from a visible minority, compared to 51.1% for Greater Vancouver, and 24.8% for the province (BC Ministry of Health Services 2011b). The 2011 Census reported that for British Columbia, the language most often spoken at home was English 80.5% of the time. However, for Vancouver Coastal Health, the percentage dropped to 67.4%, and in South Vancouver English was the language most often spoken at home in less than half the households (46.5%) (Statistics
Aside from English, the languages spoken at home most frequently in South Vancouver were Cantonese (13.6%), Chinese (7.9%), and Punjabi (6.4%) (Statistics BC 2013).

The population of South Vancouver overall was also older than in Vancouver as a whole; 15.31% of residents were estimated to be 65 and older in 2008/9 compared to 14.42% for Vancouver Coastal Health (Statistics BC 2013). This statistic is misleading however; the percentage of 65-69 year olds was lower for South Vancouver than for the city overall (3.84% versus 4.22% respectively), but the proportion in the 69 years+ age group was higher in South Vancouver (11.5% versus 10.2%) (Statistics BC 2013).

The language and cultural diversity, along with the older average age of residents of South Vancouver, might indicate that study results would have limited generalizable to jurisdictions with less diversity. It is also conceivable that introduction of a change in method of communication across Home Health and FPs practices might be more difficult to achieve in this area because the factors of diversity of language and culture would be added to differences in leadership and structural factors discussed in Chapter 2. This could suggest that other jurisdictions would have an easier time implementing the study intervention.

4.4.2 Health Services in South Vancouver

Referrals to HHS in South Vancouver can come from any source: self-referral or referral by a relative, friend, doctor, another health, social or community service agency, or acute care. The eligibility requirements for the various home health services are set out in BC Ministry of Health Home and Community Care policy, which is available publicly on their website (British Columbia Ministry of Health 2012b). According to provincial policy, time limited home health services are to be provided on a short-term basis to patients who require acute, palliative or rehabilitative support. Continuous home health services are to be provided on a longer term basis (usually more than three months) to individuals who are at significant risk of hospitalization or facility placement due to unstable chronic health conditions, and/or a combination of living situation and personal resources, or to individuals with stable chronic conditions who require support to continue living in the community (British Columbia Ministry of Health 2012b).

In Vancouver, referrals are handled by a central professional intake service for all community health areas. Therefore, when FPs refer patients to HHS they call one number no matter where in Vancouver their patient lives. This decreases the “hassle factor” (i.e. FPs do not
need to determine where to call dependent upon a patient’s address) but it may feel impersonal to FPs as they do not connect with the HHS who will actually be delivering the patient’s care.

A parallel process for referrals to HHS takes place in acute care facilities, where a team of nurses provides transition services (referring appropriate patients to the HHS program). Although this enables very efficient follow up for patients, it may mean that a patient is referred to HHS and begins receiving home care without the FPs knowing or being informed that the patient has ever been hospitalized, let alone discharged.

Direct HHS services include home-based (care is provided in the patient’s home) and ambulatory (care is provided in a clinic located in SVCHC) nursing care (including wound care, intravenous infusion (IV) therapy, palliative care, geriatric nursing care and other direct nursing services), occupational and physical therapy for home-bound patients, case management services (provided through interdisciplinary teams including nurses, social workers and occupational therapists) for patients requiring professional support to manage chronic health conditions lasting greater than three months, and nutrition education/counselling for individuals and groups. Program assistants provide telephone and administrative support to HHS services.

Other services are provided by South HHS to eligible South Vancouver patients through Health Authority contracts with service providers, including home support for personal care; adult day services that provide care, socialization and caregiver respite to seniors; and assisted living and residential care that provide a mix of housing and support/care to patients. These services are not unique to South Vancouver; all are also available in other parts of Vancouver and across Vancouver Coastal Health (and, indeed, across British Columbia).

Budgeted staffing levels for South Vancouver Community Health Center HHS at the time of this study included 23.16 full-time equivalent (FTE) nurses (providing home-based and clinic-based nursing service on a seven-day per week basis, including limited evenings, sharing in city-wide night-time on call for registered palliative patients, and staffing the specialty clinics), 10.61 FTE case managers (providing 5 day per week service), 4.5 FTE Occupational Therapists and 3.5 FTE Physiotherapists (providing home-based and residential care facility-based service five days per week), 5.38 FTE program assistants, and one FTE nutritionist. Clinical and administrative support was available from the manager, one full-time clinical coordinator, a full-time educator, a full-time Family and Social Support Consultant, a half-time wound clinician and a half-time mental health clinician.
For the fiscal year 2010/11, the South Vancouver Community Health Center HHS team served a total of 3,243 unique patients. This represented 12% of the 27,853 unique patients seen across all Vancouver HHS teams (Vancouver Coastal Health 2012b). In each fiscal period there were an average of 3,361 active referrals open with the South Vancouver Community Health Center HHS team (note that this does not represent unique patients as each patient might have been open with more than one discipline). Table 2 provides information about caseloads across the five services over the fiscal year 2010/11 (Vancouver Coastal Health 2012b). The case management service had less patient turnover as a percentage of their total caseload, followed by nursing. This confirms a generally held belief that case management provides more long-term service, while nursing, occupational and physical therapy and nutrition tend to provide short term, episodic care.

Table 2: Total Numbers of Admissions, Discharges, and Unique Cases for Each Service, South Vancouver Home Health, for the Fiscal Year 2010/11

<table>
<thead>
<tr>
<th>Service</th>
<th>Admissions</th>
<th>Discharges</th>
<th>Unique Cases* (per service)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case Management</td>
<td>676</td>
<td>699</td>
<td>1640</td>
</tr>
<tr>
<td>Nursing</td>
<td>968</td>
<td>952</td>
<td>1185</td>
</tr>
<tr>
<td>Occupational Therapy</td>
<td>1074</td>
<td>1075</td>
<td>1235</td>
</tr>
<tr>
<td>Physiotherapy</td>
<td>646</td>
<td>694</td>
<td>755</td>
</tr>
<tr>
<td>Nutrition</td>
<td>145</td>
<td>159</td>
<td>161</td>
</tr>
</tbody>
</table>

* Patients may be admitted and discharged to a service more than once over the fiscal year, but are only counted once. These numbers represent unique cases for the service only; a case may be counted in more than one service where they were admitted to multiple services (e.g. case management and nursing). (Vancouver Coastal Health 2012)

Table 3 shows sources of new referrals to the South Vancouver Home Health team for the fiscal year 2010/11 (Vancouver Coastal Health 2012b). It is evident from the table that hospitals are the primary referral source, while FP referrals represent a relatively small proportion of new referrals. In addition over 47% of referrals to the specific services on the South Vancouver Home Health team were generated by one HHS team member referring a patient to another team member, referred to as “internal referrals.” For example, on the case management service, 745 (52%) referrals were new (through hospital, physician, self/family or other), and an additional 693 referrals (48%) came from other services on the Home Health team (internal referrals from nursing, occupational or physiotherapy, or nutrition), for a total of 1,438
case management referrals. This is significant because even if FPs were aware that their patient was referred to Home Health, there was a high likelihood that they would not be aware of the number of services their patient was receiving.

Table 3: Percentage of Total New Referrals by Source for South Vancouver Home Health Team for the Fiscal Year 2010/11

<table>
<thead>
<tr>
<th>From</th>
<th>Number (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital</td>
<td>1767 (59%)</td>
</tr>
<tr>
<td>Self or Family</td>
<td>385 (13%)</td>
</tr>
<tr>
<td>Physician</td>
<td>286 (10%)</td>
</tr>
<tr>
<td>Other (not specified)</td>
<td>548 (18%)</td>
</tr>
<tr>
<td>Total New Referrals</td>
<td>2986 (100%)</td>
</tr>
</tbody>
</table>

(Vancouver Coastal Health 2012)

4.4.3 Family Physicians Serving South Vancouver

All, or nearly all patients seen by HHS have a FP. As residents of BC may choose a FP without regard to geographic boundaries, HHS do not work only with FPs who practice in the South Vancouver geographic area, although it would be common for FPs to have more patients who live close to the location of their practice, and therefore South Vancouver HHS will likely have more patients in common with FPs physically located in South Vancouver. In 2005/6, there were 102 FPs who had practices physically located within the South Vancouver geographic boundaries (General Practice Services Committee 2007b).

4.5 Study Participants

4.5.1 South Home Health Staff (HHS)

All clinical staff of the South Vancouver HHS were included in this study. There were 48 full time equivalent clinical staff members (home care nurses, occupational and physical therapists, case managers and community nutritionists) at the time the study was launched, but personnel changes (resignations, retirements and recruitments) plus the ongoing use of casual staff for vacation relief and workload precludes a determination of the exact number of HHS members who were involved in this study.

In addition to the formal Vancouver Coastal Health Research Institute ethics approval, the researcher obtained permission from the relevant operational Director and from the Manager
responsible for HHS for the participation of the HHS in the study. On two occasions prior to the beginning of the study, the researcher was invited to attend HHS staff meetings to present and obtain feedback about the study questions and design. The South Vancouver Community Health Centre HHS cost centre was reimbursed through study funds for time spent by HHS in research-related activities such as research meetings, filling out surveys, focus group participation, and coordinating implementation of the intervention. The HHS manager used the funds to partially backfill staff to ensure that direct patient care was not affected due to staff participation in this research study.

4.5.2 Family Physicians (FPs)

All FPs providing service to residents of South Vancouver and having practices located within Vancouver city boundaries were eligible for recruitment into this study. This included FPs whose offices were located within the South Vancouver geographic boundaries, and also FPs practicing outside South Vancouver geographic boundaries but serving patients living within South Vancouver geographic boundaries. Although some South Vancouver residents are served by FPs who work outside of Vancouver city, these FPs were excluded.

FPs who participated in the study were paid through study funds for the time that was related to filling out surveys, participating in interviews, and any other administrative tasks associated with participating in the study. FPs were also reimbursed for any time their MOAs spent collecting study data and coordinating with South Vancouver Community Health Centre staff to ensure that the intervention went smoothly. FPs were not reimbursed for any time spent communicating with HHS about shared patients, as this time could be claimed through either the telephone fee code or the community conference fee code (discussed previously in Chapter 3).

Target recruitment for the study was 40 FPs. This was based on a number of factors, including how many FPs could be reasonably expected to join the study, the number of FPs that would be practical for South HHS to work with (20 intervention FPs), and the need for some degree of variability in demographic characteristics of FPs involved (sex, years in practices, languages used in practice, etc.) to ensure that there would be comparability between the control and intervention groups during the intervention phase. Although no previous studies provided sufficient information to generate power calculations, an attempt was made to determine power using the number of shared patients between FPs and HHS, based on the limited available data.
4.5.3 Power Calculations for Quantitative Analysis

Because no previous published studies were available specifically measuring changes in communication regarding shared clients, it was not possible to determine the effect size that could be anticipated by this intervention. There were no data sources that could quantify the number, type or quality of contacts between FPs and HHS about patients shared in common. However, internal planning documents quantifying shared patient load between FPs and HHS in SVCHC in 2003 showed that 382 physicians shared 1,036 patients with South HHS, with a mean of 2.7 shared patients per FP and a standard deviation of 3.02 patients (range of 1-26). The top twenty physicians who had patients served by SVCHC HHS shared 270 patients, with a mean of 12.3, a standard deviation of 4.28, and a range of 9-26 (Vancouver Coastal Health Authority, 2003). Assuming that the FPs participating in the study would have similar profiles, using a one-sided test with alpha = 0.05, the study power would have been 81% if mean shared patients (2.7 patients) were doubled (to 5.4 patients) for the 20 “intervention” FPs.

In addition, preliminary data obtained from Vancouver Island Health Authority about increases in shared caseloads between FPs and HHS engaged in GP Partnership pilots indicated that for six FPs, shared patient loads were increased from an average of 30 per FP before pilots were initiated to 49 part way through the pilots, for a 61% average increase in shared caseload (Dunderdale 2009). Although this information was considered, of note was the considerably higher average number of shared patients between FPs and HHS in Vancouver Island Health Authority compared to SVCHC, which suggested that the two areas were not comparable. However, the fact that an intervention to increase collaboration between FPs and HHS in Vancouver Island Health Authority resulted in increased shared patients did provide support for inclusion of increases in shared patients as an outcome measure in this study.

4.5.4 Recruitment of Family Physicians

Recruitment of FPs for this study was an anticipated challenge from the outset, and proved to be time consuming and labour intensive. Development of a sampling frame was an iterative process. At the time that the study received funding (March 2009), no list containing the names and office contact information for FPs working in Vancouver existed. The Vancouver Division of Family Practice (discussed in Chapter 3) was not incorporated as a non-profit society until 2010 (Vancouver Division of Family Practice 2013). The BC College of Family Physicians
and the BC Medical Association confirmed that there was no complete listing. Therefore an existing, out of date, list of FPs serving the South Vancouver catchment area was obtained (the list had been used to distribute information about seasonal influenza clinics some years prior). Each name on this list was matched against the College of Physicians and Surgeons of British Columbia electronic “Find a Doctor” listing (https://www.cpsbc.ca/node/263). Where other physicians who were in the South Vancouver catchment area showed up on the “Find a Doctor” listing, they were added to the list. This list of potential FP study participants was then sent to the South Vancouver Community Health Center HHS, who were asked to add FPs about whom they were aware and were not on the list, and eliminate any FPs whom they knew had retired or moved their practice out of the South Vancouver area. HHS also added names of a number of FPs whom they were aware of who served residents of the South Vancouver area, but whose office locations were outside of the South Vancouver geographical area. New names provided by the South staff were cross-referenced on the College of Physicians and Surgeons of BC “Find a Doctor” website, and added to the list. The list was once more provided to South staff for final verification.

Figure 5: Development of a Sampling Frame: Generating a List of Eligible Family Physicians for Recruitment into the Study

Original 2006 List of FPs Providing Service to South Vancouver Residents (N = 176)

Removed after Cross-checking with “Find a Doctor” (N = 50)

Added by South HHS and/or Additions Found within South Vancouver boundaries by chance on “Find a Doctor” (N = 37)

Final List Used to Send Out Contact Letters (N = 163)
This final list, which contained a total of 163 names, became the official version used as the basis of recruitment. Each physician on this list was mailed a Contact Letter (Appendix C) inviting participation in the study, at the beginning of April 2010. Four letters were returned as undeliverable. The researcher received three calls from physicians unable to participate in the study (one moving, one retiring and one for personal reasons), and two calls from physicians who were interested in following up. One of the physicians interested in participating, however, had moved his/her practice outside of VCH authority boundaries, so was excluded.

Between April and July 2010, the offices of each of the remaining 155 physicians were visited in person to follow up on the contact letter. During this recruitment phase, an additional two FPs who had practices situated in the South Vancouver area but were not on the list were located. Five of the addresses were discovered not to be FP offices, and two of the physicians turned out to be specialists rather than FPs. Therefore, in total, 150 FPs were followed up in person during this recruitment phase.

Generally on the first in-person visit, contact was made with the receptionist/medical office assistant (MOA). The researcher or research assistant explained that they were following up on a letter that had been sent inviting the physician to participate in a UBC study with the South Home Care staff to increase their ability to do joint collaborative care planning. In most cases, the receptionist/MOA was either unaware of the contact letter, or stated that the letter had been put in the physician’s box but they did not know whether the physician had read it. In these cases, a Consent Letter (Appendix D) and contact information for the researcher/research assistant was left, and the receptionist was told that the researcher would be back to follow up in person. In a few cases, the researcher or research assistant was able to speak directly to the physician, either because the receptionist asked them to wait to speak to the physician between patients, or because the receptionist provided a specific time to come back to the office (generally either the beginning or end of a lunch break, or the beginning or end of the work day). The research assistant continued to make in person contact with each office until a definitive response about participation was obtained, up until the end of July 2010.

In addition to direct contact, other strategies to recruit physicians were undertaken. A member of the dissertation committee who is also a practicing FP emailed colleagues with whom she had a personal connection, and encouraged them to read the study material and contact the researcher. The researcher and research assistant met with VCH’s Primary Health Care Practice
Support Team (discussed in Chapter 3). Members of this team regularly connect with FPs and MOAs who are involved in the Practice Support Program (a provincial program providing support to FP offices to facilitate office change and promote proactive chronic disease management). The coordinator of the Practice Support Team emailed FPs who were on both the study recruitment list and involved with the Practice Support Program, and encouraged them to participate in the study. In addition, for FPs who were connected to VCH through the global email address listing, the researcher sent email requests for involvement.

In the recruitment phase, several FPs and MOAs commented on the length of the UBC ethics approved Contact and Consent letters, and requested a shorter (one page or less) summary of the research project that provided the information most relevant to them. To aid in the recruitment process, a one-page summary was created, and was circulated along with the official UBC ethics approved Contact or Consent Letter where FPs or MOAs requested it (Appendix E). The one-page summary was never provided without also attaching one of the two UBC ethics-approved forms (Appendices C and D).

Six FPs declined participation for practical reasons that would have constrained their ability to participate (three as their practice was primarily based in another city or they were in the process of moving, and three as they were retiring imminently). Of the remaining 144 physicians, 24 were enrolled in the study, 48 provided a definitive response that they were not interested in participating in the study, and in 72 cases no definitive “yes” or “no” was obtained, in spite of multiple follow-ups, before the beginning of August 2010. Three of the 24 physicians who were enrolled in the study (two in the same office location) agreed to participate but on condition that they were assigned to the control arm. (See Figure 6).
4.6 Variables

4.6.1 Outcome Measures

Outcome variables included:

- Change in the “number of shared patients between FPs and HHS” over the intervention period. Shared patients included current patients who were on the caseloads of participating FPs and were also on the caseloads of South HHS.

- Change in the “number of contacts about shared patients between FPs and HHS” over the intervention period. Contacts about shared patients included in person, telephone,
fax and audio-conference communications between participating FPs and HHS about the care of shared patients.

- FP and HHS perceptions about collaboration between FPs and Home Health before and after the intervention, collected by survey and through interviews/focus groups.

4.6.2 Quantitative Data Sources

The number of patients receiving services from both HHS and FPs (shared patients) was retrieved through an extract from the VCH Community Information System (PARIS) used by HHS for charting. The number of contacts about shared patients between HHS and FPs was collected in two ways. A simple form completed by MOAs (Appendix F) was used, but due to issues discussed below, was not accurate enough for analysis. Therefore, contacts about shared patients between HHS and FPs were obtained through chart audit at the patient-specific level from PARIS (See Appendix G for procedure used in the chart review). Forms were developed to collect demographic information about FPs and HHS (Appendix H). Pre- and post-study perceptions of collaboration between HHS and FPs were collected using an adaptation of a previously published survey (Fairchild et al 2002) included in (Appendix I – original survey and J – adapted survey), and referred to in this document as “Communication and Collaboration Survey.”

4.6.3 Procedures Related to Obtaining Quantitative Data

4.6.3.1 Number of Shared Patients

In the case of numbers of patients HHS shared with a FP, a specified, retrievable field was available from PARIS. For each patient who is accepted for service by HHS, a staff member selects “the most responsible FP” for that patient, and therefore a report could be generated that matched the South HHS with patients belonging to the study FPs using the “most responsible FP” field. The amount of contact each patient had with HHS during the study period would be variable, both across patients and for each specific patient over time. All patients had at the very least a primary contact on the HHS team, but all patients may not have had regular contact with a HHS team member. For example, in the case of long term home health patients with relatively stable health status, the primary contact could have been community health workers (providing personal care through Home Support) and community health workers were not involved in this
intervention. If there were clinical or other issues affecting care of a patient receiving personal care by community health workers, the primary HHS member would be contacted to reassess the patient and adjust the care plan.

4.6.3.2 Number of Contacts About Shared Patients

For contacts between a HHS member and a FP about a shared patient clinical staff chart in free-form style using the case notes section of the PARIS record for each patient. It was determined that it would require time-intensive chart review to collect information through PARIS about all shared patient-related contacts with FPs by HHS. Therefore, although obtaining this information from PARIS would have been the preferred option in terms of collecting more accurate data (as all FP contacts are charted as part of the clinical work process), in the initial processes set up with the South Research Group the decision was made that contacts from HHS about shared patients would be collected by FPs and MOAs in FP offices.

To increase the likelihood that this was feasible, a simple form was developed (Appendix F) and tested with MOAs in the pre-baseline period (with recruited FP offices before official data collection began). It was determined that the form was simple to use and did not add a great deal of time to the MOA’s day, and participating MOAs agreed to fill it out. For the most part, MOAs were conscientious about collecting data on contacts with HHS during the baseline period, when the research assistant was visiting all offices on a regular basis to provide encouragement, reminders, and problem solving if required.

The original intent was that the research assistant would visit all FP offices on a monthly basis throughout the intervention period. In fact, this did not happen. Because of this, or for other reasons, when the forms were collected at the end of the intervention period, it turned out that most MOAs had either not kept up the data collection at all (especially in the control group), or else data collection was incomplete. This was a serious issue that jeopardized researchers’ ability to obtain data required to analyze contacts about shared patients between FPs and HHS.

In these circumstances, the original method of using PARIS chart reviews to obtain contacts between FPs and HHS about shared patients was revisited. A research assistant with training and authorization to use PARIS at the patient-specific level (a casual program assistant with Vancouver HHS who was also a graduate student at UBC) was recruited, trained, and performed chart reviews for each specific patient shared between HHS and the 24 FPs involved
in the study for the entire study period (baseline and intervention). She was also able to collect data about shared patient contacts for a three-month period prior to FP recruitment into the study (pre-study). She counted telephone, fax and conference communication by day (there were no in-person communications recorded for the 24 involved FPs during this time period) and entered these data into an excel spreadsheet. Subsequently, the logs for those MOAs who had diligently filled out the data collection forms were compared with the PARIS chart audits for the same FPs, and the data were found to be very similar (with PARIS recording slightly more contacts than the MOA, which would be expected, for example, in situations where the FP made a phone call about which the MOA would not have been aware). Therefore the PARIS chart review data about contacts were used in the data analysis. The research assistant documented the steps she used to extract these data (Appendix K) so that the procedure could be duplicated.

4.6.3.3 Demographic Information about FPs and HHS

For HHS information was collected about each participant’s sex, professional discipline (e.g. Registered Nurse, Social Worker), role on the HHS team (e.g. Home Care Nurse, Case Manager), years in practice, years practicing in Home Health, and years practicing in South Vancouver. In addition, in South Vancouver some staff members were hired with a language qualification, and therefore, information on languages used in practice was collected. For FPs, information was collected about sex, which of five South Vancouver neighbourhoods the FP office was located in, practice arrangement (e.g. solo or group), for group practices the number of FPs in the practice, hours worked per week, whether or not the FP had an on call arrangement, whether or not the FP used an electronic medical record, years practicing as a FP, years practicing in South Vancouver, and languages used in practice. In addition, information was collected about whether each FP’s MOA had training as an MOA, the MOA’s years in practice and the number of years the MOA had worked with this particular FP. Also collected were languages used in the practice by the MOA.

Demographic information was collected for HHS anonymously both pre- and post-study. This was necessary as the actual staff members working at SVCHC changed over the 11 months of the study. For FPs, demographic information was collected at the beginning of the study, and the FP was asked to update the information, if necessary, at the end of the study.
4.6.3.4 Communication and Collaboration Survey

To collect pre- and post-intervention perceptions about collaboration between FPs and HHS, a previously published survey (Fairchild et al 2002) was adapted for use in Canada. The survey had been initially used in a mail out to FPs and HHS in Boston, US, to assess communication and collaboration between primary care providers and HHS in one primary care network. The survey instrument was developed based on the clinical experience of the involved researchers. Separate surveys were developed for home care clinicians and for primary care providers. In reporting results, survey questions were clustered into the following themes: satisfaction with communication, control of utilization of home care services, potential impact of better communication, and improving communication. For the “satisfaction with communication” questions, a mean response for the survey items related to this theme was calculated to create one overall “satisfaction with communication” score. Because all survey items included within this theme asked for responses on a 5-point Likert scale where 5 represented the most satisfaction and 1 represented the least satisfaction, the “satisfaction with communication” scores were dichotomized to create “satisfied” (scores of 3.1 to 5.0) and “not satisfied” (scores of 1.0 to 3.0) categories to be used in Chi Square analyses. The researchers completed tests of internal consistency for the satisfaction questions for both the physician and home care versions (Cronbach coefficient alpha was 0.85 for each). With respect to the other three themes, percentages were reported, and comparisons were drawn between percentages for individual scale item scores relative to level of satisfaction with communication.

More importantly, the purpose for which the survey was originally designed parallels the aim of this study. Fairchild et al’s (2002) research aimed to measure and compare satisfaction with collaboration between FPs and home care staff, and the surveys were designed with this specific intent in mind. Therefore, the surveys provided a useable method of measuring changes in perceptions of collaboration between FPs and HHS in this study.

Some of the questions were specific to the US context so the surveys were adapted to the BC environment. Specifically, some of the wording was changed, and some questions that were not relevant to the Canadian health care environment were dropped (for example, Question 5 in the Home Health survey was changed from “MD understanding of Medicare requirements” to “MD understanding of services offered by the A/OA program”, and Question 8 asking the degree to which Home Health staff are involved in decision making about continuing home services was...
dropped, as in the Canadian context this decision is made by Home Health, not the physician). The adapted surveys were trialed on a convenience sample of FPs (3) and HHS (4), who suggested a small number of minor wording changes (for example, changing “485’s (certification/plan of care)” in the US survey to “orders/changes in orders” in the Canadian survey). The original survey published in Fairchild et al (2002) is included in Appendix I, and the adapted surveys used in this study can be found in Appendix J.

Prior to the beginning of the baseline period, copies of the demographic profile collection sheet (described above) and the Communication and Collaboration survey were left for distribution to all HHS. The South Vancouver HHS Clinical Coordinator distributed the surveys and kept an envelope at her desk for collection, then contacted the researcher when all surveys were complete. The same procedure was used for post-intervention surveys.

For FPs, surveys and demographic sheets were provided to each FP at the time that they agreed to be a study participant. An appointment was set up with the FP after (s)he had agreed to participate in the study, primarily to obtain signed consent and provide any additional information about the study required by the FP. During this meeting, the FP was asked to complete the demographic information and survey, and in most cases, FPs chose to do so on the spot. In a few cases, the FPs filled out the survey after the meeting and faxed it to the researcher. The same procedure was used for completion of the post-study surveys – again, meetings were set up to ensure the survey was completed and returned.

In three instances, FPs initially stated that they would not fill out the post-intervention survey. The FP thesis committee member used her influence as a FP to follow up by telephone and email to request that they participate, and in all instances this strategy was successful.

4.6.4 Qualitative Data Sources

The qualitative data sources included field notes and notes documenting informal interviews with FPs during the recruitment phase, and transcripts of semi-structured interviews and focus groups using an interview guide in the post-study period. The interview/focus group guide, included in Appendix K, was created to guide discussion and ensure all areas were explored. It provided guidance for the interviewer to probe areas such as the quality of patient related care planning (such as usual communication process and important factors in communication) and changes that participants experienced (including probing for information about the usefulness of the various aspects of the intervention such as the pre-scheduled time,
audio-conferencing, use of SBAR, and shared patient report). Participants were also probed for their perceptions about the impact of the intervention on their time (and for FPs on their billing procedures); the perceived impact of audio-conferencing on patient outcomes; and ideas about sustainability of the intervention after the study ended.

4.6.4.1 Procedures Related to Obtaining Qualitative Data

During the recruitment phase, field notes were kept by both the researcher and research assistant to capture initial thoughts about physicians who entered the study, those who definitively declined to participate, and those for whom a response was not obtainable. Field notes also captured any comments by FPs about barriers to collaboration between FPs and HHS. A contact log was kept to show the ongoing contact with offices, primarily for practical reasons such as communication between researcher and research assistant, and management of communication between doctors’ offices and researcher/research assistant. The log also provided a secondary source of information about the reasons for engagement or lack of engagement with family practices.

In addition, all FPs (both control and intervention) were provided with the opportunity to participate in a semi-structured interview after the study ended. The interview format was chosen for practical reasons; to attract study FPs to participate in post-study qualitative data collection, it was necessary to hold interviews in their office practice settings at times that were most convenient to each individual consenting FP. FPs are generally used to working independently and therefore, eliciting data from each FP independently (as opposed to focus groups with several FPs together) was the preferred research technique.

Where FPs agreed to a post-study interview, generally the researcher and research assistant both attended. All interviews took place at the FP’s office. Most interviews took approximately one half hour to complete. All loosely followed the Focus Group/Interview Guide (Appendix K). With the verbal permission of the participants, all were recorded and transcribed, and notes were taken to supplement the recording.

Through the South HHS manager, post-intervention focus groups were scheduled with HHS by discipline. Although semi-structured interviews with individual HHS members might have provided more detailed information and would have made data collection between FPs and HHS more consistent, focus groups were the most practical approach as they could be scheduled
into regular discipline-specific staff meetings, and allowed the highest percentage of participation among HHS. In addition, HHS are accustomed to being approached for information or data in group settings (generally in discipline specific meetings) and therefore discipline-specific focus groups were the chosen technique for HHS. In order to capture the diversity of disciplinary views, separate semi-structured focus groups were held with case managers, home care nurses, rehabilitation staff, and program assistants. All focus groups were held at South Vancouver Community Health Center. The researcher and research assistant attended all focus groups. One dissertation committee member with qualitative research expertise also attended the case managers’ focus group (the first one). Focus groups took between forty-five minutes to one hour to complete. To provide as much consistency as possible across FP and HHS data collection, all focus groups followed the general format of the same Focus Group/Interview Guide that was used for FP interviews (Appendix K). The focus groups took the form of group discussions, in which participants were encouraged to build on each others’ answers to the questions (from the guide) asked by the interviewer, and pose questions of each other. All were recorded and transcribed, and either the research assistant or the researcher also took notes. A summary of each focus group (broad categories capturing content covered in the focus groups) was provided to HHS (copies in Appendix L). This was requested by HHS, and provided, to give them an opportunity to validate that their content had been captured accurately, and to provide feedback if any participants felt that content has been incorrectly captured. No feedback was received for any of the four summaries.

4.7 Study Procedures

4.7.1 Research Partnership

This project required the participation of many individuals and organizations. The most intensive engagement was with South HHS. The HHS manager created a South Research Group, comprised of volunteers who represented a mix of disciplines and geographic teams, to assist in facilitating the study once it was funded. The South Research Group included a core of seven members, with other staff members participating as required, and essentially acted as the project working group. The core members included the manager, clinical coordinator (a nurse), clinical educator, Family and Social Support Practitioner, two case managers and an occupational therapist. Two program assistants and the Facility Coordinator (who manages
telecommunications and space for the facility) were added for the intervention phase. As explained in Chapter 1, this study involved a partnership with a business partner, and where required the TELUS Business Solutions research partner also attended South Research Group meetings.

Regular meetings were held with the South Research Group throughout the study. Agendas and informal meeting notes were kept and were circulated by email on a timely basis. The South Research Group was used as the resource group for problem solving as study implementation issues arose. The manager allocated a research room at South Vancouver Community Health Center, which became the main location for audio-conferences during the intervention phase. The research team provided a binder that included the research protocol, a selection of literature most applicable to HHS, and a research project timeline that listed activities that directly related to or affecting the HHS. With the South Research Group, details were worked out for collection of data (number of shared patients with each FP, and number of communications between FPs and HHS about shared patients, distribution and collection of demographic information and surveys, and schedules for focus groups).

4.7.2 Pre-Study Activities

4.7.2.1 Research Team

An initial meeting was held with the co-investigators (research team) to set up communication processes and ensure that the study project management functions were in place. The team decided to set up regular meetings approximately quarterly, with email updates from the researcher in between. The researcher worked with UBC staff to set up financial management of the project through UBC, and to create and post the research assistant job. A research assistant was hired at the end of May 2010 for a one-year period, signed confidentiality agreements with Vancouver Coastal Health, and was provided with Vancouver Coastal Health picture identification and email address. When his term ran out, a second research assistant was recruited over the summer of 2011 to assist with post-study activities (focus groups and interviews, surveys, and data collection). A third research assistant (who had been trained to use PARIS) was recruited for the purposes of completing the PARIS chart reviews to obtain the patient-specific contacts between HHS and FPs in the study during the summer of 2011.
4.7.2.2 Unanticipated Issue in the Pre-Study Period

There were two instances where FPs used the recruitment process as an opportunity to make specific complaints about Vancouver HHS. In both instances, the researcher recorded the information and involved the appropriate operational director or manager to connect back to the physician.

4.7.3 Baseline Data Collection Period

It was originally envisioned that all FPs would start baseline data collection in the same week, and would continue this for a period of three months. This proved to be impractical, due to the length of the recruitment period and staggered absences (e.g. vacation) of physicians. Therefore, a date for start of data collection was negotiated with each FP.

At the six week mark in the baseline phase for each FP, a package of information was provided that included: the names, disciplines and contact phone numbers for all HHS, and information from the General Services Practice Committee (GPSC) about fee codes that could be used for consultation with HHS (Appendix M). No other changes were made to data collection. If simply providing information about fee codes and direct staff contact information was enough to change practice in terms of increasing numbers of shared patients or increasing communication between FPs and HHS about shared patients, it was expected that there would be an increase at this point, during the observation period and prior to introducing the intervention.

4.7.4 Intervention Period

4.7.4.1 Dividing FPs into Control and Intervention Groups

The original research protocol, calling for 40 FPs to be involved in the study, envisioned use of a stratified allocation process to allocate each FP to a control or intervention arm, ensuring balance as much as possible between the two groups based on sex, language of practice and years of practice. In order to avoid contamination, where FPs were at the same address, they would be allocated to the same arm, even if they did not share patients or staff.

However, with a sample of 24 and only three female physicians, it was decided that randomization would be more appropriate. In order to avoid contamination, where FPs were at the same address, they were allocated to the same group.
In addition, in one instance two physicians were each working part-time and job sharing, therefore potentially sharing a complete caseload, and in this case, for purposes of the quantitative analysis, it was initially decided to treat the 2 FPs as one. However, in the analysis stage, it became apparent that the two FPs did not have overlapping caseloads, and they were therefore both included in the same study group (as they worked at the same address) but were considered separate FPs in the analysis. One further exception to randomization was that three physicians agreed to participate in the study only if they could be assigned to the control group. In order to achieve higher numbers in the study, this condition was accepted, so these physicians (two of whom would have had to be in the same group anyway as they were co-located at their office) were pre-assigned to the control group. Although this had clear implications for generalizability of the findings (because these FPs were not randomly assigned), the choice was made to include these FPs with their conditions rather than reduce the sample size even further (Figure 4).

The researcher randomized FPs to either the control or the intervention group until there were twelve physicians in the intervention group. During the intervention phase, the control group continued interacting with the South HHS as usual. Participants in the intervention group were offered the opportunity to have pre-scheduled, secure audio-conferences with South HHS about shared patients (See Table 4).

| Doctors in Intervention/Control Groups and Start Dates for Intervention Phase |
|-----------------------------------------------|----------------|----------------|----------------------------------|----------------|----------------|
|--------|-------------------------|----------------|----------------|----------------------------------|----------------|----------------|
| 7      | Control                 | April 12       | July 12         | August 23                        | June 4          |
| 21     | Control                 | April 12       | July 12         | August 23                        | June 4          |
| 13     | Control                 | April 12       | July 12         | August 23                        | June 4          |
| 14     | Control                 | April 12       | July 12         | August 23                        | June 4          |
| 17     | Control                 | April 12       | July 12         | August 23                        | June 4          |
| 19     | Control                 | April 12       | July 12         | August 23                        | June 4          |
| 22     | Control                 | April 12       | July 12         | August 23                        | June 4          |
| 10     | Control                 | April 12       | July 12         | August 23                        | June 4          |
| 5      | Control                 | May 3          | August 2        | Sept 13                          | June 25         |
| 6      | Control                 | May 3          | August 2        | Sept 13                          | June 25         |
| 4      | Control                 | May 31         | August 30       | October 11                       | July 22         |
|--------|-------------------------|-----------------------|-----------------------------------|-----------------------------------------------|------------------------------------------|-------------------------------|
| 23     | Control                 | June 2                | Sept 1                            | October 13                                    |                                          | July 24                       |
| 8      | Intervention            | April 12              | July 12                           | August 23                                     | October 4                                | June 4                        |
| 9      | Intervention            | April 12              | July 12                           | August 23                                     | October 4                                | June 4                        |
| 11     | Intervention            | April 12              | July 12                           | August 23                                     | October 4                                | June 4                        |
| 12     | Intervention            | April 12              | July 12                           | August 23                                     | October 4                                | June 4                        |
| 15     | Intervention            | April 12              | July 12                           | August 23                                     | October 4                                | June 4                        |
| 2      | Intervention            | April 19              | July 19                           | August 30                                     | October 11                               | June 11                       |
| 20     | Intervention            | April 19              | July 19                           | August 30                                     | October 11                               | June 18                       |
| 16     | Intervention            | April 26              | July 26                           | Sept 6                                        | October 18                               | June 18                       |
| 3      | Intervention            | May 3                 | August 2                          | Sept 13                                       | October 25                               | June 25                       |
| 18     | Intervention            | May 10                | August 9                          | Sept 20                                       | November 1                               | July 1                        |
| 24     | Intervention            | May 10                | August 9                          | Sept 20                                       | November 1                               | July 1                        |
| 1      | Intervention            | May 10                | August 9                          | Sept 20                                       | November 1                               | July 1                        |

### 4.7.4.2 Changes to Work Processes for HHS to Accommodate the Intervention

Normally, HHS teams do not meet based on a specific FP’s patient roster. There are two general types of clinical meetings that occur for HHS: role-specific meetings (i.e. case managers, home care nurses, rehabilitation staff and program assistants have specific meeting times), and neighbourhood team meetings (the staff who serve each of the neighbourhoods in South Vancouver may meet regarding health- and service-oriented issues specific to that neighbourhood). However, it is rare for a FP to serve primarily one neighbourhood in South Vancouver. Based on the shared patient reports that were produced in PARIS, it became clear that subsets of HHS would need to meet quickly before each scheduled audio-conference time to determine whether there were any issues for specific patients that required conferencing, and if so to plan for the audio-conference using the SBAR. For each FP, there were multiple sub-groupings of HHS for each audio-conference.

To address this issue, the HHS manager assigned two program assistants to coordinate the process for HHS and to act as the liaisons with the FPs and MOAs. The program assistants received the PARIS shared patient reports weekly via secure, password protected email. For HHS, they provided a photocopy to each HHS member who was listed on the report, so that they
could connect with other HHS involved with each patient to determine whether a conference was needed and, where appropriate, plan for it. The program assistants also sent the shared patient lists by fax to the appropriate FP’s office, with a fax cover sheet that included the date and time of the next scheduled conference, the conference number and pass code, and contact information so that the FP/MOA could call to confirm whether they had any patients about whom they wanted to conference.

At South Vancouver Community Health Center, a large whiteboard was mounted near the staff sign-in board and nursing station. A calendar showing 2 months was drawn onto the whiteboard, and pre-scheduled audio-conference times for the intervention FPs were marked on the calendar. As HHS determined that they wanted to conference about specific patients, they marked the patient name and a contact staff member on the white board on the square for the conference date.

Two days before the scheduled conference time, the program assistants would contact the MOA to confirm whether the FP had any patients he/she wished to conference about, and provide the names of any patients that HHS wished to conference about. If either HHS or the FP wanted a conference, it went ahead. If neither the FP nor HHS had any patients requiring conferencing, the MOA released the pre-scheduled conference time in the doctor’s schedule to be filled in with patient visits. It is important to note that if either the HHS (or both) identified that they wanted a conference, the conference went ahead.

The South Research Group planned some orientation/education for HHS to ensure they were able to participate. The clinical educator met with all HHS to orient them to use of the SBAR. The program assistants played a very important role in trouble shooting for staff (e.g. being available to show them how to dial in to the audio-conferences using the polycom, for example). One unique activity the South Research Group engaged in was to perform a skit, complete with costumes, at an All-Staff meeting in which they role-played all the steps involved in the process for a HHS member – from receiving the shared patient report, to discussing with other team members what needed to be covered in the audio-conference, filling out the SBAR, and then actually having an audio-conference with a FP.
4.7.4.3 Support to Family Physician Offices to Engage in the Intervention

For each FP/MOA, a package was provided that included: instructions about how to use the audio-conference number and pass code that were provided by TELUS, an up-to-date report showing their current shared patients with HHS including the names/roles of involved HHS, a copy of the template fax sheet that HHS team would be using to send new shared patient reports before pre-booked conference times, and an instruction sheet explaining the procedure to be used for the conferences. Also included, at the request of South Research Group, was a copy of the Adapted SBAR (see Intervention Tools section) for Community that the HHS would be using to structure the conference communications. Although the FPs were not expected to use the SBAR, the South Research Group believed that it would be useful for them to understand the format that HHS would be using. In addition, the same list of the billing fee codes that might be useful to FPs for billing conference time that had been provided at the six-week mark in the baseline period was once again included in the package.

4.7.4.4 Issues During the Intervention Phase

There were process issues with the audio-conferences, especially at the beginning, that required additional support and some clarifications to process. For example:

- One FP had not understood that he needed to call in using the audio-bridge number and pass code and waited to receive a call from HHS,
- HHS dialed into an audio-conference and waited, but the FP did not dial in. Later, the FP told them he had an urgent patient situation to deal with, but he had not asked his MOA let the HHS know,
- FP called into the audio-conference line for a conference that the program assistants at South had confirmed as canceled with the MOA in the FP office. When the researcher followed up, it turned out that the cancellation of the audio-conference had been left as a message on the FP’s answering machine because it had been so hard to get through to the MOA,
- FP asked for conferencing for one patient, and staff involved with that particular patient were on the audio-conference, but when the discussion about the identified patient was complete, the FP continued on down his list of shared patients. Staff
members involved with these other patients were not available, leaving the HHS on the audio-conference to try to answer questions based on the patients’ clinical record. These issues were discussed and root causes for misunderstanding were identified, and changes were made to the process. For example, the research assistant went to each intervention FPs office and went through the entire process again with each MOA/FP. The MOAs and FPs were given one direct line to call into if they were not going to be able to make the conference or were late. The program assistants at South Vancouver Community Health Center instituted a very structured process of calling MOAs to confirm or cancel the audio-conference, and then following up immediately with a confirming fax that said the same thing. A one-page sheet with these clarifications was created for FP offices and for HHS. Once these issues were resolved, audio-conferences went smoothly.

4.8 Data and Statistical Analysis

The variables, sources for obtaining data, and procedures used for obtaining information about the variables have been previously described. Variables are summarized in Table 5. This section will describe how each data source was assessed, and the methods of analysis used to obtain results.

Table 5: Variables, Source of Measure, Analysis

<table>
<thead>
<tr>
<th>Primary Dependent Variables</th>
<th>Measurement Method</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Change in number of shared patients</td>
<td>PARIS (information system) extract: Total numbers of patients for each FP by month</td>
<td>Mixed effects random intercept Poisson regression for longitudinal count data</td>
</tr>
<tr>
<td>2. Change in number of contacts about shared patients between HHS and FPs</td>
<td>PARIS (information system) extracted at patient specific level: Total number of fax, phone and conference contacts by day</td>
<td>Mixed effects random intercept Poisson regression for longitudinal count data</td>
</tr>
</tbody>
</table>

| Secondary Dependent Variables | | |
|-------------------------------| Communication and Collaboration Survey (Adapted from Fairchild et al 2002) | Wilcoxon Rank Sum (unpaired data) and Wilcoxon Signed Rank (paired data) tests |
Primary Dependent Variables | Measurement Method | Analysis
--- | --- | ---
2. Perceived usefulness of the intervention | Post-study interviews (FPs) and focus groups (HHS) | Thematic content analysis

**Independent Variable**

1. Frequency and quality of communication between FPs and HHS about patients they share in common

**Descriptive, Potentially Confounding Variables**

1. Demographic characteristics (sex, years of practice, languages used in practice, discipline, role) for HHS | Collected by survey pre- and post-study | Descriptive statistics

2. Demographic characteristics (sex, years in practice, languages used in practice, solo or group practice, paper or electronic record) for FPs | Collected pre-study | Descriptive statistics

4.8.1 **Demographic Characteristics**

The demographic data collected from HHS and FPs were transcribed from the participants’ forms to Microsoft Excel. FP data were obtained with the FP and MOA names attached. Data for FPs were transcribed by study ID number into excel to anonymize the data.

For HHS completion of the forms was anonymous. Descriptive statistics were used both to provide a picture of the HHS demographic profile, and to ensure that the pre- and post-samples were similar.

As their pre- and post-intervention data were matched, FPs were not asked to fill out the full demographic form twice but in the post-study period were simply asked to indicate if anything had changed. For example, changes that could have occurred might include a change in MOA staff, conversion to electronic medical record, or a change in after-hour call arrangement. None of the FPs in this study indicated any such changes and therefore the demographic data used for analysis were the pre-intervention data. Descriptive statistics were generated in excel.

4.8.2 **Number of Shared Patients**

Data were provided to the researcher via password protected email in an excel spreadsheet, and included the number of patients attached to the South HHS team, for each FP in the study, on the last day of each month from April 2010 to July 2011.
Data were formatted for each FP to match their start and end dates in the study (as per Table 4). The resulting dataset was then de-personalized by replacing the FP name with her/his FP study number. The formatted data included 14 months of data for each FP, including the number of patients as of the last day of the month, formatted according to the start date for each FP in the study rather than calendar date. In particular, the data were grouped in the following manner: number of patients per month were nested under phase of study (pre-study, baseline, intervention) which in turn were nested under study group (control or intervention). Line and bar graphs were created in Excel to explore the data (i.e. distribution of patients across FPs, differences in distribution between Intervention and Control groups, and variability in distribution across study phases).

Mixed effects random intercept Poisson regression for longitudinal count data was used to analyze both the FP-specific count data on shared patients between FPs and HHS and the count data of frequency of contacts between HHS and FPs about shared patients. This technique provided a model framework that interpreted the mean response (i.e. the average number of shared patients, or the average number of contacts about shared patients) across all FPs, and also accounted for the within-subject variation (variation for each FP in the sample) and over-dispersion\(^3\) in the longitudinal count data (Fitzmaurice et al 2004). In this case, the small numbers available in terms of the number and distribution of patients shared between FPs and HHS (discussed above in the section on power calculations) suggested, on preliminary examination, that there was wide variation in the observed number of shared patients across FPs; using a random effects approach allowed the intercept at the individual level to vary. Given the small sample size, statistical inference was focused on the point and interval estimation and significance tests with respect to the fixed effects/parameters.

Specifically, we let \(Y_{it}\) represent the number of patients for the \(i\)th FP at time (month) \(t\), and assume \(Y_{it} \sim \text{Poisson} (\mu_{it})\), and the following Poisson mixed effects model was fit:

\[
\log(\mu_{ij}) = (\beta_0 + b_{0i}) + \beta_1 \text{Group} + \beta_2 \text{Pre-study phase P} + \beta_3 \text{Intervention phase I},
\]

\(^3\) The Poisson distribution assumes that the variance of the \(Y_i\)’s is equal to the mean. Overdispersion is the term used when the variance is greater than the mean. Failing to account for overdispersion may result in underestimation of the standard error for the regression parameters, with confidence intervals that are too narrow, or \(p\)-values that are too small (Fitzmaurice et al 2004).
where the random effects $b_{0i}$s were assumed to be independent and normally distributed with mean 0 and variance $\sigma^2$. In this model, the response $Y_{it}$ represented the number of shared patients between the specific FP and HHS as counted on the last day of each month, the Group variable was 0 for control group or 1 for intervention group (reference group was the control). There were three phase periods, Pre-study, Baseline, and Intervention phase, characterizing the 14-month study period (reference group was the baseline).

Data were then imported into R. Using version 2.14.2 for Mac and the package “lme4”, a mixed effects nested longitudinal model was run using “lmer” for “family = Poisson”.

4.8.3 Number of Contacts About Shared Patients

Contacts were gathered through chart review at a patient-specific level and collected on an Excel worksheet by calendar day for each FP. Telephone, fax, in person and audio-conference contacts were collected as separate variables. During the chart review, data were collected using the FP’s name (their identifier in PARIS), but the FP name was then changed on the Excel spreadsheet to FP study ID number to de-personalize the data.

Data were then collated to capture contacts by week rather than by day, and formatted to match each FP’s start and end dates in the study (as per Table 4). Therefore, when formatted the data included 14 months (including pre-study, baseline and intervention phases) of data for each FP, showing fax, telephone, in person and audio-conference contacts between HHS and that FP for shared patients by week. The four types of contacts (fax, telephone, in person and audio-conference) were then summed to create a new variable: Total contacts per week. The weekly contacts data were then aggregated to monthly data due to excessive occurrences where the Total Contacts were “0” in the weekly data, as well as the availability of monthly data on number of shared patients between the FPs and HHSs.

Again, the following random intercept Poisson regression model was fit to the monthly contact data:

$$\log(\mu_{it}) = \log (\text{Patients}) + \beta_0 + b_{0i} + \beta_1 \text{Group} + \beta_2 \text{Pre-study phase} + \beta_3 \text{Baseline II} + \beta_4 \text{Intervention phase I},$$

where $\mu_{it} = E(Y_{it})$, where $Y_{it}$ represented the number of total contacts for the ith FP at time (month) t, $b_{0i}$s were random effects, (i.e. independent normal variates with zero mean and
variance $\sigma^2$. In the regression model, log(Patients) was used as an offset term\(^4\) so that comparison of contacts between groups, as well as between pre- and post-intervention, could be considered as average numbers of contacts per patient.

Two FPs were excluded from the model as they had no patients in common with HHS for several study months, leaving a sample size of 20 (10 control and 10 intervention FPs). As patients were used as an offset and “contacts per patient” cannot be calculated when there are no patients, the two FPs who had “0” values in the “Patients” variable had to be excluded from the analysis.

### 4.8.4 Communication and Collaboration Survey

For FPs, the pre- and post-intervention results were paired for each FP and data were transcribed as paired data. For HHS, surveys were completed anonymously and could not be matched pre- to post, so data were unpaired.

The Likert scales used in the survey generally had both descriptive words and a number scale attached to them (for example, 5 = Excellent, or Strongly Agree; 4 = Very Good, or Agree Somewhat; 3 = Good, or Neither Agree Nor Disagree; 2 = Fair, or Disagree Somewhat; 1 = Poor, or Disagree Strongly).

As with the original Fairchild et al (2002) survey, the survey items that were described as “satisfaction with communication” were summed to create one score. For the HHS survey, items 1-8 were collapsed and for the FP survey, items 1-5 were collapsed into the “satisfaction with communication” score.

For the rest of the survey items, the mean and standard deviation were calculated for items that used Likert scale responses. For survey items that did not lend themselves to this approach (e.g. questions that required responses such as “yes”, “no” or “unsure”), data were summarized but no attempt was made to evaluate the data, because the values in each cell were in many cases too small to perform any statistical calculations (e.g. Chi-Square tests). Data were then imported into R (version 2.14.2 for Mac) statistical software. Items were grouped for presentation purposes according to the categories used in the original survey (satisfaction with communication).

---

\(^4\) An offset allows the outcome variable (in this case Average Contacts per Month) to be considered as a rate (turning the outcome variable into Average Contacts per Month per Patient) by adding the “offset” term to the right hand side of the equation with the parameter estimate (log(Patients) constrained to “1”).
communication scale; potential impact of better communication; and improving communication) (Fairchild et al 2002).

Because answers to the surveys could not be assumed to have come from a normal distribution, non-parametric tests, the Wilcoxon Rank Sum Test (for unpaired data) or Wilcoxon Signed Rank Test (for paired data) in particular, were used to compare the survey results.

For HHS surveys, which were unpaired, the “exactRankTests” package was downloaded and installed, and the “wilcox.exact” test was run for unpaired data, using two sided tests. This particular test was used because of its ability to handle “0s” in the data.

For FP surveys, all 11 control FPs’ pre-study survey results were compared to their own paired post-study survey results, and all 11 intervention FPs’ pre-study survey results were compared to their own paired post-study results, using Wilcoxon Signed Rank Tests for paired data. In R, these tests were run using “wilcox.exact” for paired data.

4.8.5 Interviews and Focus Groups

A coding schema was developed based on independent reading and re-reading of transcripts by Berg and two committee members. Committee members chosen to assist in this portion of data analysis had both health care (one was a family physician by profession, and the other was a registered nurse) and research expertise (experience with qualitative research). Portions of the transcripts were then independently coded by the three co-investigators, followed by discussion leading to consensus on a draft coding scheme. Using this draft coding scheme, new portions of the transcript were independently coded by all three co-investigators, and changes to the coding scheme were discussed and agreed upon. Based on this iterative process a final coding scheme (Appendix N) was developed. The researchers used in person and telephone meetings, as well as email discussions to assess inter-rater reliability, resolve discrepancies and ensure consistency. Discrepancies were discussed and addressed as the themes reflected in the codes were further refined.

Anonymized transcripts were then organized and coded using HyperRESEARCH 3.0, qualitative software compatible with Mac computers. Coding reports were generated and thematic content analysis was undertaken. To accomplish this, the coding reports were reviewed by Berg and the two committee members, and themes emerged from the data. Systems theory was used by the three researchers as a lens through which to analyze the thematic data.
The credibility of the analysis, as a criterion for rigour in qualitative research, was evaluated in a number of ways. This included the involvement of three researchers throughout the process, one of whom was an expert in qualitative methods. The expertise of the full research committee (including the TELUS Business Solutions participant and the South Vancouver Community Health Center manager, as well as thesis committee members) was called upon to assist in validating findings, which assisted in ensuring the data were analyzed through the agreed upon conceptual framework (discussed in Chapter 2). At several stages, feedback and input was sought from the South Research Group and the leadership team at South Vancouver Community Health Centre (through feedback on drafts of the results and through in person meetings to discuss the results). Finally, the dissertation committee reviewed the interpretation of the thematic content. The use of mixed methods allowed for triangulation of the quantitative and qualitative data to ensure the analysis of data provided a more fulsome portrait of collaboration between FPs and HHS.

4.9 Ethical Considerations

Ethics approval was applied for and received through University of British Columbia as a Behavioural Research study. In addition, ethics approval was applied for and received through Vancouver Coastal Health Research Institute for conducting the study in the Vancouver Community Health Service Delivery Area of Vancouver Coastal Health.
5 Results

5.1 Introduction

This chapter begins with some general descriptive information and statistics. This is followed by reporting of results, organized around each of the four research questions, including both quantitative and qualitative results that relate to each research question.

5.2 Demographic Characteristics

5.2.1 Home Health Staff Demographic and Work Characteristics

A total of 46 HHS members provided demographic information pre-study, compared to 36 who completed the demographic information post-intervention. As previously stated, it is not possible to provide exact response rates for several reasons. Staffing levels provided are in full time equivalents rather than bodies, and therefore do not account for part-time staff. In addition, there are casual staff members who would not be included in the staffing base but would have potentially been involved in audio-conferences, and they may or may not have participated in the survey. However, using the full time equivalent level clinical staff (nurses, case managers, occupational and physiotherapists and nutritionist) of 41.87 as a means of comparison, it is fair to say that there was full (or close to full) participation of HHS in the pre-study survey, and at least 80% participation in the post-study survey. The decrease in participation rate post-study may have been due at least in part to the fact that data collection occurred during the high vacation period in the summer. Table 6 summarizes HHS characteristics pre- and post-study.

The composition of staff completing the forms reflected the actual composition of staff members employed at South Vancouver Community Health Centre in both the pre-study and the post-study survey based on the full time equivalent staffing levels as discussed in the Study Setting section of the Methodology chapter.

There was wide variation in years of practice for SVCHC HHS, but the average years of practice (15.4 for the pre-study group and 17.2 in the post-study sample). The majority of HHS members had worked in home health for five years of less, but a small number of staff members had long service in Home Health.
To determine whether there was a significant difference between staff who completed the demographic forms pre- and post-study, unpaired t-tests were completed for years in practice, years practicing in home health, and years practicing in South Vancouver. There were no statistically significant differences between the pre- and post-study responses; therefore, pre- and post Communication and Collaboration survey results were likely not influenced by the small differences in demographic characteristics of the respondents responding in the pre-and post-study periods.

English was the primary language used, although a wide variety of alternate languages were also used in practice by South HHS. The most common were Chinese dialects, followed by Punjabi.

### Table 6: Home Health Staff Demographic and Work Characteristics (Based on Pre- and Post-Survey Respondents)

<table>
<thead>
<tr>
<th></th>
<th>Pre-Survey Results (n=46)</th>
<th>Post-Survey Results (n=36)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>43 (93.5%)</td>
<td>33 (91.7%)</td>
</tr>
<tr>
<td>Male</td>
<td>3 (6.5%)</td>
<td>3 (8.3%)</td>
</tr>
<tr>
<td><strong>Discipline</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registered Nurse</td>
<td>30 (65.2%)</td>
<td>23 (63.9%)</td>
</tr>
<tr>
<td>Occupational Therapist</td>
<td>5 (10.9%)</td>
<td>3 (8.3%)</td>
</tr>
<tr>
<td>Physiotherapist</td>
<td>4 (8.7%)</td>
<td>3 (8.3%)</td>
</tr>
<tr>
<td>Social Worker</td>
<td>6 (13.0%)</td>
<td>5 (13.9%)</td>
</tr>
<tr>
<td>Dietician</td>
<td>1 (2.2%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Licensed Practical Nurse</td>
<td>0 (0.0%)</td>
<td>1 (2.8%)</td>
</tr>
<tr>
<td>Other</td>
<td>0 (0.0%)</td>
<td>1 (2.8%)</td>
</tr>
<tr>
<td><strong>Role</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home Care Nurse</td>
<td>25 (54.3%)</td>
<td>20 (55.6%)</td>
</tr>
<tr>
<td>Case Manager</td>
<td>11 (23.9%)</td>
<td>8 (22.2%)</td>
</tr>
<tr>
<td>Occupational Therapist</td>
<td>4 (8.7%)</td>
<td>3 (8.3%)</td>
</tr>
<tr>
<td>Physiotherapist</td>
<td>4 (8.7%)</td>
<td>3 (8.3%)</td>
</tr>
<tr>
<td>Nutritionist</td>
<td>2 (4.3%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Other</td>
<td>0 (0.0%)</td>
<td>2 (5.6%)</td>
</tr>
<tr>
<td><strong>Home Health Staff Years in Practice</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>2 – 35</td>
<td>3 – 40</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>15.4 (10.25)</td>
<td>17.2 (10.97)</td>
</tr>
<tr>
<td>Median</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td><strong>Home Health Staff Years Practicing in Home Health</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>1 – 31</td>
<td>1 – 32</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>9.15 (9.03)</td>
<td>8.26 (7.11)</td>
</tr>
<tr>
<td>Median</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>
Pre-Survey Results (n=46) | Post-Survey Results (n=36)
---|---
Home Health Staff Years Practicing in South Vancouver
Range | 0 – 31 | 1– 29
Mean (SD) | 6.93 (7.48) | 7.57 (6.89)
Median | 4 | 4

Languages Other than English Used in Practice
Chinese (Cantonese, Mandarin, Unspecified) | 10 (21.8%) | 11 (30.6%)
Punjabi, Hindi, Gujurati | 4 (8.7%) | 4 (11.1%)
French, Italian, German, Spanish | 6 (13.0%) | 3 (8.3%)
Ukrainian, Russian, Albanian | 2 (4.3%) | 3 (8.3%)
Japanese | 1 (2.2%) | 0 (0.0%)
Hebrew | 1 (2.2%) | 0 (0.0%)

5.2.2 Family Physician Demographic and Practice Characteristics

The response rate for FPs completing demographic surveys was 100% of the 24 initial FPs for the pre-study surveys, and 92% of the total sample taking drop-outs in the post-study period into account. Table 7 summarizes FP characteristics for the total sample (22), the intervention group (11) and the control group (11).

More FPs reported working in a group practice (versus a solo practice). The mean reported number of FPs per practice was 2.05. For the total sample and for the control group, the mean was skewed by the small numbers; all practices except one with six physicians had three or fewer physicians. Like the HHS participants, those in the FP study sample had considerable years of experience, as did their medical office assistants. Medical office assistants had worked with the FP they were employed by for much of their career. To determine whether there was a significant difference between intervention and control group FP offices, unpaired t-tests were completed for FP years in practice, FP years practicing in South Vancouver, years of practice for medical office assistants and years that the medical office assistant had been working with this FP. The null hypothesis that the two groups were from the same population was not rejected, thus the control and intervention results presented in the following discussion were likely not

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5 Of the original 24 FPs enrolled in the study, one intervention and one control FP were lost for purposes of consideration in the intervention phase. Both were excluded from the intervention data, but included in the pre-study and baseline periods, as they participated in all pre-study and baseline activities.
influenced by the small difference in demographic characteristics of the respondents, with the possible exception of the issue discussed below with regard to language skills within practices.

Overall, these practices were very rich in terms of language capacity. Chinese (Cantonese, Mandarin and/or unspecified Chinese dialects) was used in 10 of the 22 practices, as were Punjabi and/or Hindi, also used in 10 practices. To determine whether there was a possible difference between control and intervention groups in terms of language usage, the practices using these two major language groupings (very prevalent in South Vancouver, as discussed in Methodology chapter) were compared between the two groups. If either the FP or the medical office assistant reported using a language other than English in the practice, the practice was considered to have capability for that particular language. For both Chinese and for Punjabi/Hindi, seven practices in the control group had language skills compared to three of the practices in the intervention group. This is a fairly significant difference that may have implications in terms of whether the control and intervention groups were comparable, if there were cultural/lingual issues that might predispose FPs to innovation, or to uptake of this particular intervention.

Table 7: Family Physician Demographic and Practice Characteristics (Total Sample, Intervention and Control Groups)

<table>
<thead>
<tr>
<th></th>
<th>All Family Physicians (n=22)</th>
<th>Intervention Group (n=11)</th>
<th>Control Group (n=11)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>19 (86.4%)</td>
<td>11 (100.0%)</td>
<td>8 (72.7%)</td>
</tr>
<tr>
<td>Female</td>
<td>3 (13.6%)</td>
<td>0 (0.0%)</td>
<td>3 (27.3%)</td>
</tr>
<tr>
<td><strong>Location of Practice</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fraserview</td>
<td>1 (4.5%)</td>
<td>1 (9.1%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Killarney</td>
<td>2 (9.1%)</td>
<td>1 (9.1%)</td>
<td>1 (9.1%)</td>
</tr>
<tr>
<td>Marpole</td>
<td>1 (4.5%)</td>
<td>1 (9.1%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Oakridge</td>
<td>2 (9.1%)</td>
<td>1 (9.1%)</td>
<td>1 (9.1%)</td>
</tr>
<tr>
<td>Sunset</td>
<td>10 (45.5%)</td>
<td>4 (36.4%)</td>
<td>6 (54.5%)</td>
</tr>
<tr>
<td>Outside South Vancouver</td>
<td>6 (27.3%)</td>
<td>3 (27.3%)</td>
<td>3 (27.3%)</td>
</tr>
<tr>
<td><strong>Practice Arrangement</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>14 (63.6%)</td>
<td>5 (45.5%)</td>
<td>9 (81.8%)</td>
</tr>
<tr>
<td>Solo</td>
<td>8 (36.4%)</td>
<td>6 (54.5%)</td>
<td>2 (18.2%)</td>
</tr>
<tr>
<td><strong>Number of FPs in Practice</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>1–6</td>
<td>1–3</td>
<td>1–6</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>2.05 (1.17)</td>
<td>1.66 (0.81)</td>
<td>2.45 (1.36)</td>
</tr>
<tr>
<td>Median</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>On Call Arrangements?</strong></td>
<td><strong>All Family Physicians (n=22)</strong></td>
<td><strong>Intervention Group (n=11)</strong></td>
<td><strong>Control Group (n=11)</strong></td>
</tr>
<tr>
<td>--------------------------</td>
<td>----------------------------------</td>
<td>------------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>No</td>
<td>5 (22.7%)</td>
<td>2 (18.2%)</td>
<td>3 (27.3%)</td>
</tr>
<tr>
<td>Yes</td>
<td>17 (77.3%)</td>
<td>9 (81.8%)</td>
<td>8 (72.7%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Family Physician Years in Practice (1 not reporting)</strong></th>
<th><strong>Range</strong></th>
<th><strong>Mean (SD)</strong></th>
<th><strong>Median</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>On Call Arrangements?*</td>
<td>7 – 42</td>
<td>24.14 (9.54)</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>7 – 35</td>
<td>23.3 (9.51)</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>7 – 42</td>
<td>24.91 (9.96)</td>
<td>22</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Family Physicians Years practicing in South Vancouver</strong></th>
<th><strong>Range</strong></th>
<th><strong>Mean (SD)</strong></th>
<th><strong>Median</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>On Call Arrangements?*</td>
<td>2 – 42</td>
<td>17.55 (11.8)</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>2 – 32</td>
<td>16.36 (11.44)</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>4 – 42</td>
<td>18.73 (12.59)</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Medical Office Assistant Years in Practice</strong></th>
<th><strong>Range</strong></th>
<th><strong>Mean (SD)</strong></th>
<th><strong>Median</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>On Call Arrangements?*</td>
<td>1 – 32</td>
<td>12.92 (10.0)</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>1 – 29</td>
<td>13.8 (10.98)</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>1 – 32</td>
<td>11.94 (9.34)</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>MOA Years with this Family Physician</strong></th>
<th><strong>Range</strong></th>
<th><strong>Mean (SD)</strong></th>
<th><strong>Median</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>On Call Arrangements?*</td>
<td>0 – 30</td>
<td>9.43 (9.85)</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>1 – 27</td>
<td>10 (10.74)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>0 – 30</td>
<td>8.85 (9.42)</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Electronic Health Record</strong></th>
<th><strong>No (n=14)</strong></th>
<th><strong>Yes (n=8)</strong></th>
<th><strong>No (n=14)</strong></th>
<th><strong>Yes (n=8)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>On Call Arrangements?*</td>
<td>14 (63.6%)</td>
<td>7 (63.6%)</td>
<td>7 (63.6%)</td>
<td>4 (36.4%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Languages Used in Practice (FPs)</strong></th>
<th><strong>Chinese (Cantonese, Mandarin, unspecified)</strong></th>
<th><strong>Punjabi, Hindi</strong></th>
<th><strong>Gujurati, Urdu, Bangla</strong></th>
<th><strong>French, Spanish</strong></th>
<th><strong>Other (Vietnamese, Afrikaans, Arabic)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>On Call Arrangements?*</td>
<td>9 (40.9%)</td>
<td>8 (36.4%)</td>
<td>4 (18.2%)</td>
<td>2 (9.1%)</td>
<td>4 (18.2%)</td>
</tr>
<tr>
<td></td>
<td>3 (27.3%)</td>
<td>3 (27.3%)</td>
<td>3 (27.3%)</td>
<td>2 (18.2%)</td>
<td>4 (36.4%)</td>
</tr>
<tr>
<td></td>
<td>6 (54.5%)</td>
<td>5 (45.5%)</td>
<td>5 (45.5%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Languages Used in Practice (Medical Office Assistants)</strong></th>
<th><strong>Chinese (Cantonese, Mandarin, unspecified)</strong></th>
<th><strong>Punjabi, Hindi</strong></th>
<th><strong>Gujurati, Urdu</strong></th>
<th><strong>Spanish</strong></th>
<th><strong>Other</strong>**</th>
</tr>
</thead>
<tbody>
<tr>
<td>On Call Arrangements?*</td>
<td>5 (22.7%)</td>
<td>8 (36.4%)</td>
<td>2 (9.1%)</td>
<td>3 (13.6%)</td>
<td>7 (31.8%)</td>
</tr>
<tr>
<td></td>
<td>2 (18.2%)</td>
<td>3 (27.3%)</td>
<td>2 (18.2%)</td>
<td>2 (18.2%)</td>
<td>4 (36.4%)</td>
</tr>
<tr>
<td></td>
<td>3 (27.3%)</td>
<td>5 (45.5%)</td>
<td>0 (0.0%)</td>
<td>1 (9.1%)</td>
<td>3 (27.3%)</td>
</tr>
<tr>
<td>All Family Physicians (n=22)</td>
<td>Intervention Group (n=11)</td>
<td>Control Group (n=11)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------------------</td>
<td>---------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* On Call Arrangements referred to whether or not the FP had an available after hours service for patients. At the time, not all FPs provided after-hours arrangements; some left a message on their answering machine referring their patients to the nearest emergency.

** Other languages used in the practices by medical office assistants included Philippino/Tagalog, Vietnamese, Kirpac, Kawai, Lillian, Serbian, and Romanian.

5.2.2.1 Impact of Drop-outs on the Family Physician Demographic and Practice Characteristics

Both FPs who dropped out of the study were male, practicing in Sunset neighbourhood, and multi-lingual. Both were at the higher range of hours worked per week and years in practice. The FP who had been assigned to the intervention group had practiced in South Vancouver for longer than average; including him into the average years practicing in South Vancouver for the Intervention FPs would have increased the average from 16.4 years to 17.7 years. For one FP, the reason given for not completing the post-study activities was workload and for the other FP, the reason given was personal and not related to the study.

5.3 Uptake of Intervention

Within the intervention FP group, a total of 22 audio-conferences were scheduled over the eight-month intervention period. Two were cancelled prior to the scheduled date (one for patient-related reasons, the other because of a scheduling challenge between the involved HHS member and the FP). Therefore, 20 audio-conferences took place across the 11 intervention FPs. In addition, as described in the Methodology section, partway through the intervention phase the South HHS asked for an extra audio-conference code that they could use for FPs who were not part of the study, and for other agencies involved in patient care (e.g. Mental Health team). Among the extra audio-conferences held by HHS, one involved a control FP, although the HHS members were not necessarily aware that the FP was part of the study (while HHS members were not blinded to the control FP names, the names were not widely available and most South HHS were unaware of who the control FPs were). The fact that a conference occurred with a control FP was discovered through the chart review collecting contacts between HHS and FPs about shared patients.
Six of eleven (54.5%) intervention FPs had at least one audio-conference, and the range of audio-conferences among the users was 1 to 7, with a mean of 3.3 per FP among those who attended at least one audio-conference.

During the twenty audio-conferences, 37 patients were discussed. 38 HHS members participated in these conferences, with case managers most frequently involved (16 times, or for 42% of the patients discussed), followed by home care nursing (10 times or 26% of the time), and occupational and physiotherapy (6 times each, or 16% of the time).

| Table 8: Information About Audio-Conferences Between Family Physicians and Home Health Staff During Intervention Period |
|-----------|-----------------|----------------------------------------------------------|
| **Conferences** | 20 | 22 booked, 1 cancelled due to time conflict for FP, one cancelled for patient related reasons 1 additional conference was with a control FP Range 1-5 patients discussed in one conference |
| **FPs involved** | 6 (54.5% of intervention FPs) | One control FP also had a conference (involved FP, 1 staff member and 2 family members) |
| **Patients discussed** | 37 (1.9 patients / conference) | |
| **Staff involved** | 41 (2.1 HHS members / conference) | 16 case management 10 home care nursing 6 Occupational Therapy 6 Physiotherapy 3 Other (nutrition, practice support) |

5.4 Interviews and Focus Groups

As relevant results from the qualitative data sources will be integrated into the results for each research questions, it is useful to provide some initial context for the qualitative results here.

Four focus groups with HHS were conducted, and all took place at South Vancouver Community Health Centre, each taking between ¾ hour and one hour to complete. The four focus groups were held during (or concurrently with) regularly scheduled discipline-specific meetings for the following groups: home care nursing (14 participants), rehabilitation (occupational and physiotherapy, 10 participants), case managers (13 participants) and program assistants (4 participants). Participation rates are estimates because some participants may have been casual or part-time. However, using the base of full-time equivalent (FTE) staffing levels, for the home care nursing focus group this would represent approximately half of the 23.16 FTE
nursing staff; close to full participation by case managers on a base of 10.16 FTEs (some participants in the case manager focus group, such as the HHS manager and the Family and Social Support Consultant, were not, in fact, case managers); close to full participation by occupational and physiotherapy on a base of 8 FTE staff members (this group also included a regional professional practice consultant); and approximately 75% participation by program assistants.

Twelve of the 22 FPs (54.5%) agreed to be interviewed at the end of the study; 4 were control FPs and 8 were intervention FPs. However, one of the control FPs was unable to accommodate the interview on the date scheduled, so 11 interviews took place. All FP interviews were held in their offices, and most followed the format of the Focus Group/Interview Guide. In two cases, the FPs discussed the survey questions as they were completing them, and in these cases permission was obtained to tape their comments as they filled out the surveys. The material obtained through this method was then supplemented with probing questions to cover questions from the Focus Group/Interview Guide missed as the FPs talked through the survey completion. FP interviews varied in length, generally taking approximately ½ hour, but in three cases taking closer to one hour to complete.

5.5 Number of Shared Patients

Research Question 1: Will use of a structured, targeted communication strategy of secure audio-conferencing at pre-scheduled times increase the number of “shared patients” between FPs and HHS?

The original research question was designed to determine whether there was an increase in the numbers of shared patients for each HHS discipline. However, examination of the data showed that the number of shared patients for each FP was small overall and did not vary greatly over the study period. Thus, to break the data down to examine each discipline would have introduced numbers too small from which to draw any conclusions. In addition, the degree of overlap between HHS disciplines is high and (as reported in the Study Context) the most frequent source of referred patients is among disciplines within the HHS team. As a result, only shared patients between FPs and any HHS member are reported.

For the 22 FPs in the study, the number of shared patients per month for each FP was used as the unit for analysis. Overall, there was large variability in the range of shared patients
per FP across the fourteen-month period (0 – 38 patients, with a mean of 10 patients). The 11 FPs in the control group had more variability in shared patients per month than did those in the intervention group. Chart 1 portrays each of the 22 FPs in the study (identified by their study identification number), separating pre-study, baseline and intervention phases, and identifying the Control and Intervention FPs. The multiple dots for each FP within each study phase show the variability in numbers of shared patients across months. This graph clearly shows the large variability in average numbers of shared patients per month across FPs. In particular, one FP in the control group (14) had considerably more patients in common with South HHS across all study phases. Chart 2 shows shared patients per month for all FPs in the study, divided out by study phase (pre-study, baseline and intervention), and highlights the variability across all FPs, but several data points related to control FP 14 are well above the third quartile. This control FP had an average of 35.8 shared patients per month across the 14 months. For all other FPs in the sample, the average shared patients per month ranged from a low of 0.8 patients to a high of 19.9 patients.

**Chart 1: Average Monthly Patients Shared with Home Health Services for Each Family Physician by Study Phase**
Table 9 provides summary statistics for the number of shared patients for intervention and control FPs for each study period. In addition, Table 9 provides summary statistics for the Control FPs with the outlier FP excluded, and also divides out the six FPs who engaged in at least one audio-conference. This further breakdown of the data shows that although there was a difference in the mean number of shared patients between the intervention and control groups, the mean number of shared patients for each FP group remained relatively consistent from pre-study to base-line and intervention phases. When the outlier control FP is excluded, the difference in average patients between the control and intervention groups is evident: this may have implications for interpretation of results between the groups. In addition, the break-out of the six FPs who used the audio-conference intervention at least once during the intervention phase reveals that these intervention FPs had a larger number of shared patients and had less variation in the mean number of shared patients in each phase of the study than the other intervention FPs.
Table 9: Average Shared Patients per Month per Family Physician Between South Home Health Staff and Family Physicians Participating in the Study

<table>
<thead>
<tr>
<th></th>
<th>Control Family Practitioners (n = 11)</th>
<th>Control Family Practitioners Excluding Outlier with High Patients per Month (n=10)</th>
<th>Intervention Family Practitioners (n = 11)</th>
<th>Intervention Family Practitioners Having At Least 1 Conference (n = 6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Study Range</td>
<td>0 – 38</td>
<td>0 – 18</td>
<td>0 – 21</td>
<td>6 – 21</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>9.73 (10.24)</td>
<td>6.67 (5.5)</td>
<td>10.42 (6.22)</td>
<td>14.2 (4.91)</td>
</tr>
<tr>
<td>Baseline Phase</td>
<td>0 – 37</td>
<td>0 – 21</td>
<td>0 – 21</td>
<td>8 – 21</td>
</tr>
<tr>
<td>Range</td>
<td>9.36 (9.58)</td>
<td>6.36 (5.3)</td>
<td>10.88 (6.27)</td>
<td>14.67 (4.92)</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>9.55 (9.02)</td>
<td>6.57 (4.97)</td>
<td>10.44 (5.59)</td>
<td>13.42 (4.5)</td>
</tr>
<tr>
<td>Intervention Phase</td>
<td>0 – 35</td>
<td>0 – 17</td>
<td>1 – 23</td>
<td>7 – 23</td>
</tr>
<tr>
<td>Range</td>
<td>9.55 (9.02)</td>
<td>6.57 (4.97)</td>
<td>10.44 (5.59)</td>
<td>13.42 (4.5)</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>9.55 (9.02)</td>
<td>6.57 (4.97)</td>
<td>10.44 (5.59)</td>
<td>13.42 (4.5)</td>
</tr>
</tbody>
</table>

Chart 3 shows the average patients per month per FP for the intervention and control groups. For the most part, the linear graph is consistent with the information in Table 9, showing that intervention FPs, on average, shared more patients with South HHS than control FPs did throughout the study period. However, in the last two months of the intervention phase, the average patients that intervention and control FPs shared with HHS per month converged. For both intervention and control FP groups, the average number of patients per month remained relatively stable across the entire study period.

Chart 3: Average Patients per Family Physician per Month Shared With South Vancouver Home Health Staff, Across Study Phases

![Chart 3: Average Patients per Family Physician per Month Shared With South Vancouver Home Health Staff, Across Study Phases](image-url)
As described in the methodology section, a mixed effects Poisson regression model for longitudinal count data was fit for the shared patients data, using R software version 2.14.2 for Mac. The model formula resulted in the following output:

$$\log(\mu_{ij})\text{Average Patients per month for Control FP in the Baseline Phase} = (1.7(\text{Patients}) + 1.13(\text{Random Effects per FP}) + 0.43(\text{Intervention Group}) - 0.01(\text{Pre-study Phase}) - 0.01(\text{Intervention Phase})$$

The regression model confirmed what can be seen in Chart 3; there was no statistically significant increase in average patients per month for either group in either the baseline or the intervention phases of the study. The complete model summary generated by R software is included in Appendix O.

Table 10: Results of Mixed Effects Poisson Regression for Longitudinal Count Data: Average Number of Shared Patients per Month for Intervention and Control Family Physicians by Study Phase

<table>
<thead>
<tr>
<th>Random Effects (intercept): Coefficient ($\sigma^2$)</th>
<th>Exponentiated Coefficients [95% Confidence Intervals]</th>
<th>Model Coefficients (Standard Error)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept (Average Number of Shared Patients Per Month Between Family Physicians and HHS at Baseline for Control Group)</td>
<td>5.49 [3.99, 7.55]*</td>
<td>1.7 (0.33)</td>
</tr>
<tr>
<td>Average Increase in Number of Shared Patients Per Month Between Intervention Group Family Physicians and HHS</td>
<td>1.54 [0.99, 2.41]</td>
<td>0.43 (0.46)</td>
</tr>
<tr>
<td>Average Increase in Number of Shared Patients Per Month for all Family Physicians During the Intervention Phase of the Study</td>
<td>0.99 [0.63, 1.54]</td>
<td>-0.01 (0.45)</td>
</tr>
<tr>
<td>Average Increase in Number of Shared Patients Per Month for all Family Physicians During the Pre-Study Period</td>
<td>0.99 [0.94, 1.05]</td>
<td>-0.01 (0.05)</td>
</tr>
</tbody>
</table>

Observations
AIC 218.6
BIC 237.3

Formula: Patients ~ Group + Phase + (1|FP), data = ContactsPatients, family = “poisson”
Reference Categories: Control Group; Baseline Phase
5.5.1 Qualitative Information About Potential Change in Shared Patients

During the interviews with FPs who were in the intervention group, each was asked whether they felt that participation in the intervention had in any way changed their referral patterns. Without exception, the interviewed FPs stated that they referred the same types and numbers of patients to HHS at the end of the study as they did prior to the study. Therefore, both quantitative and qualitative results support the same result; there was no difference in patient referrals (frequency or reason) to South HHS by intervention FPs in the intervention phase.

5.6 Number of Contacts About Shared Patients

Research Question 2: Will use of a targeted communication strategy increase the quantity of patient-related care planning and coordination between FPs and HHS?

There were no ‘in person’ contacts recorded for any FPs (control or intervention). Data were collated and grouped by week. Examination of the raw data showed that by far the most common value for communication about shared patients between FPs and HHS was ‘0’, with a range of 0 to 5 contacts in any given week. Due to the number of “0” values, it was decided to aggregate the data by month for analytic purposes. Chart 4 shows the range and density of contacts for shared patients for each FP in the study. Table 11 displays a sample of data showing contacts about shared patients for one FP in the study.

Chart 4: Scatter Plots Showing Contacts Per Month About Shared Patients for Each Family Physician in the Study, by Study Group (Control or Intervention) and Phase (Pre-Study, Baseline and Intervention)
Table 11: Sample of Data Showing Shared Patients Between Family Physicians and Home Health Staff (By Month)

<table>
<thead>
<tr>
<th>ID</th>
<th>Group</th>
<th>Phase</th>
<th>Month</th>
<th>Fax</th>
<th>Telephone</th>
<th>Conference</th>
<th>Total</th>
<th>Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>I</td>
<td>P</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>24</td>
<td>I</td>
<td>P</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>24</td>
<td>I</td>
<td>P</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>0</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>24</td>
<td>I</td>
<td>B</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>24</td>
<td>I</td>
<td>B</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>24</td>
<td>I</td>
<td>B</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>24</td>
<td>I</td>
<td>I</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>24</td>
<td>I</td>
<td>I</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>24</td>
<td>I</td>
<td>I</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>24</td>
<td>I</td>
<td>I</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>24</td>
<td>I</td>
<td>I</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>24</td>
<td>I</td>
<td>I</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>24</td>
<td>I</td>
<td>I</td>
<td>7</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>24</td>
<td>I</td>
<td>I</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>7</td>
</tr>
</tbody>
</table>

To examine potential differences between FPs in the intervention or control groups with regard to contacting HHS about patients they shared, the average number of contacts that occurred in each phase of the study (pre-study, baseline and intervention) was calculated for each of the groups (intervention and control). The average number of contacts for each study phase were divided by the average number of shared patients in each phase for each group (average shared patients are shown in Table 9). In addition the subset of intervention FPs who used the audio-conference intervention at least once (n = 6) were separated out to see if there were any differences between the subset of intervention FPs and all intervention FPs. Chart 5 shows that, overall, the control FP group had a lower rate of contacts per shared patient in each of the phases of the study. Both control and intervention FP groups had a higher rate of contacts per shared patient in the intervention phase than they did before the study began, or in the baseline period. In contrast, the six FPs participating in at least one audio-conference with the HHS during the intervention phase had a lower contact rate per shared patient than the intervention group as a whole, and a lower contact rate per shared patient than the control group. However, their average number of contacts per shared patient in the intervention phase was higher than the pre-study and baseline phase.
Data were imported into R (version 2.14.2 for Mac) and a mixed effects Poisson regression model for longitudinal count data was fit. The model output was:

$$\log(\mu_{it}) = \log(\text{Patients}) + (-2.26 \text{(Total Contacts per patient for Control FPs in Baseline phase)}) + 0.21 \text{(Random effects FP)} + 0.44 \text{(Intervention group)} + 0.43 \text{(Pre-study phase)} + 0.19 \text{(Intervention phase)}$$

Table 12 displays the results of the model that was chosen. The average number of contacts per shared patient was very small. Although the model shows a statistically significant increase in the average number of contacts per shared patient for all FPs in the intervention phase, the small sample size and large amount of variation between FPs (as can be seen by the large confidence intervals in the exponentiated coefficients) suggests that this difference cannot be attributed to the intervention. The complete model summary generated by R software is included in Appendix O.
| Table 12: Results of Mixed Effects Poisson Regression for Longitudinal Count Data: Average Number of Contacts per Shared Patient per Month for Intervention and Control Family Physicians by Study Phase |
|---------------------------------------------------------------|-----------------|-----------------|
| **Random Effects (intercept):** Coefficient ($\sigma^2$)        | **Exponentiated Coefficients [95% Confidence Interval]** | **Model parameter (Standard Error)** |
| Fixed Effects:                                                |                 |                 |
| Intercept (Average Number of Contacts Per Shared Patients Per Month Between Control Family Physicians and HHS During the Baseline phase) | 0.1 [0.09, 0.13]* | -2.26 (0.19) |
| Average Increase in Number of Contacts Per Shared Patient Per Month Between Intervention Group Family Physicians and HHS | 1.55 [1.24, 1.94] | 0.44 (0.23) |
| Average Increase in Number of Contacts Per Shared Patient Per Month for all Family Physicians During the Intervention Phase of the Study | 1.53 [1.38, 1.71]* | 0.43 (0.11) |
| Average Increase in Number of Contacts Per Shared Patient Per Month for all Family Physicians During the Pre-Study Period | 1.2 [1.06, 1.37] | 0.19 (0.13) |
| Observations | AIC | BIC | 674.2 | 692.4 |
| Formula: Total Contacts ~ Group + Phase + (1|FP), offset = log(Patients), data = ContactsPatients20, family = “poisson” |
| Reference Categories: Control Group Family Physicians; Baseline Study Phase |

### 5.6.1 Qualitative Information About Potential Changes in Number of Contacts About Shared Patients

In the interviews with FPs, it was noted that use of audio-conferences to coordinate care might, in the end, result in fewer overall contacts due to increased efficiency of communication. For example, Intervention FP Respondent 12 noted that when he had an audio-conference with HHS, there was less need for subsequent back and forth faxing and telephoning because there was a specific plan in place. Another example was provided by Intervention FP Respondent 18, who stated,
“I think it’s a good idea. And being able to talk to people, because when you get it on a piece of paper (instead of talking) you say this, it goes back, they comment on it, it goes back, whereas if you can do it verbally, you can bounce things off each other and get the feedback right away.”

On the surface, the quantitative results and the perceptions of some HHS expressed in focus groups seem contradictory. In the case managers’ focus group and the rehabilitation staff focus group, comments were made that the FPs who used the conferences were physicians who were more likely to communicate with HHS anyway. For example, in the case managers’ focus group, one of the respondents remarked,

“I think the [FPs] that were not as responsive were not one of the listed ones to begin with, right?”

However, as seen in Chart 4, the FPs who engaged in audio-conferences actually communicated less per shared patient than the control FPs or the intervention FPs who did not engage in audio-conferences. This might also suggest that when audio-conferences occurred they allowed for a clearer clinical picture of future care requirements, reducing the need for post-conference clarification by fax or phone.

Given these observations, the counts of contacts per month about patients between FPs and HHS was revisited to determine if there was evidence of a drop in fax contacts for intervention FPs in the intervention phase. Although subdividing the total contacts about shared patients per FP results in very small numbers, the patterns for intervention FPs compared to control FPs in the intervention phase, when comparing telephone/conference contacts to fax contacts, is very interesting. Chart 6 breaks out average fax contacts per patient from average telephone/conference contacts per patient for intervention and control FPs over the three phases. For intervention FPs, the average fax contacts per patient dropped and the average telephone/conference contacts per patient increased for the intervention phase. For control FPs, both average fax and average telephone/conference contacts per patient increased in the intervention phase.
5.7 Perception of Collaboration

Research Question 3: Will use of a targeted communication strategy increase the quality of patient-related care planning and coordination between FPs and HHS?

5.7.1 Home Health Staff Communication and Collaboration Survey Results

The response rate for HHS for pre-and post-surveys was the same as response rate for demographic and work information, and discussed above in Section 5.2.1. To recap, for the pre-survey, response rate was close to 100% and for the post-survey it was at least 80%.

Tables 13a, b and c summarize the responses for HHS perceptions of collaboration with FPs pre- and post-study, and indicate items for which the Wilcoxon Rank Sum Test results showed a statistically significant difference at the $p < .05$ level. In general, the mean response score for each item did not change significantly from pre-study to post-study, and for the majority of the questions mean ratings were at the middle or lower end of the scale at both the pre- and post-study survey points, indicating generally poor agreement that there is sufficient collaboration between FP and HHS about shared patients.
Table 13a: Communication and Collaboration Survey: Comparison of Home Health Staff Pre- and Post-Satisfaction with Communication Score Results

<table>
<thead>
<tr>
<th></th>
<th>Pre- n = 46</th>
<th>Post- n = 35</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual Range</td>
<td>1.0 – 5.0</td>
<td>1.0 – 5.0</td>
</tr>
<tr>
<td>Observed Range</td>
<td>1.13 – 3.38</td>
<td>1.0 – 3.88</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>2.25 (0.80)</td>
<td>2.56 (0.96)**</td>
</tr>
</tbody>
</table>

A higher score is equated with higher satisfaction
* Scale score (Items 1-8)
** p <= .05, Wilcoxon Rank Sum Test with Continuity Correction (two tailed)

Table 13b: Communication and Collaboration Survey: Comparison of Home Health Staff Pre- and Post-Score Results Related to Potential Impact of Better Communication

<table>
<thead>
<tr>
<th>If we had greater coordination with physicians, do you feel that some inpatient re-adsmissions and ER visits could be avoided without compromising quality or patient outcomes?</th>
<th>Pre- N = 46</th>
<th>Post- N = 36</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>28 (60.9%)</td>
<td>19 (54.3%)</td>
</tr>
<tr>
<td>No</td>
<td>3 ( 6.5%)</td>
<td>3 ( 8.6%)</td>
</tr>
<tr>
<td>Unsure</td>
<td>15 (32.6%)</td>
<td>13 (37.1%)</td>
</tr>
</tbody>
</table>

If "yes" please estimate what percentage of ER visits or inpatient re-admissions might be avoided

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Pre-</th>
<th>Post-</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 10%</td>
<td>3 (11%)</td>
<td>3 (16%)</td>
</tr>
<tr>
<td>11 – 25%</td>
<td>11 (39%)</td>
<td>7 (37%)</td>
</tr>
<tr>
<td>26 – 40%</td>
<td>8 (29%)</td>
<td>6 (32%)</td>
</tr>
<tr>
<td>41 – 60%</td>
<td>4 (14%)</td>
<td>3 (16%)</td>
</tr>
<tr>
<td>61 – 80%</td>
<td>2 ( 7%)</td>
<td>0 ( 0%)</td>
</tr>
<tr>
<td>81 – 100%</td>
<td>0 ( 0%)</td>
<td>0 ( 0%)</td>
</tr>
</tbody>
</table>
### Table 13c: Communication and Collaboration Survey: Comparison of Home Health Staff Pre- and Post-Score Results Related to Improving Communication

<table>
<thead>
<tr>
<th>Question</th>
<th>Pre-* N = 46</th>
<th>Post-* N = 36</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home care clinicians often have suggestions regarding types and duration of services for patients. What percentage of time do physicians consider your suggestions?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 – 10%</td>
<td>4 (9%)</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>11 – 25%</td>
<td>7 (15%)</td>
<td>2 (6%)</td>
</tr>
<tr>
<td>26 – 40%</td>
<td>4 (9%)</td>
<td>12 (33%)</td>
</tr>
<tr>
<td>41 – 60%</td>
<td>13 (28%)</td>
<td>7 (19%)</td>
</tr>
<tr>
<td>61 – 80%</td>
<td>12 (26%)</td>
<td>8 (22%)</td>
</tr>
<tr>
<td>81 – 100%</td>
<td>3 (7%)</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>NA</td>
<td>2 (7%)</td>
<td>5 (14%)</td>
</tr>
</tbody>
</table>

| Do you feel that there is a common understanding between MDs and home health clinicians about reasons for telephone calls? |              |               |
| Yes                                                                      | 12 (27.3%)   | 10 (29.4%)    |
| No                                                                       | 9 (20.5%)    | 10 (29.4%)    |
| Unsure                                                                   | 23 (52.3%)   | 14 (41.2%)    |

| If your answer to 11 (above) was "no" or "unsure", do you feel that with clearly defined parameters regarding when to call MDs, the number of phone calls you make to physicians would: (5 - decrease a lot; 4 - decrease a little; 3 – stay the same; 2 – increase a little; 1 – increase a lot) | Mean (SD)    |               |
|                                                                          | 3.20 (0.96)  | 2.9 (0.95)    |

| MDs (or their designated staff) promptly update home care clinicians regarding issues or changes that impact delivery of home care services | Mean (SD)    |               |
|                                                                                   | 2.03 (1.04)  | 2.5 (0.97)**  |

| Quality and efficiency of home care delivery could be enhanced with greater use of clinical pathways/care maps for specific diagnoses | Mean (SD)    |               |
|                                                                                   | 3.65 (0.82)  | 3.86 (0.76)   |

| Case conferencing on complex cases would be helpful to us to improve outcomes for our patients | Mean (SD)    |               |
|                                                                                   | 4.19 (0.95)  | 4.25 (0.73)   |

| Having general standardized parameters about when to call physicians re: blood glucose, BP level, etc. Would make patient management easier | Mean (SD)    |               |
|                                                                                   | 4.02 (-.93)  | 4.47 (0.74)** |

| If it were possible to provide home health practitioners with electronic access to physicians, how useful do you think this would be? | Mean (SD)    |               |
|                                                                                   | 1.83 (0.65)  | 1.58 (0.60)   |
Overall, HHS responded more favourably to questions related to ‘improving communication’ than they did to those related to ‘satisfaction with communication’ scale items or ‘potential impact of better communication’ questions. Mean responses were above the middle of the range for most questions related to improving communication. The notable exception was that HHS overall did not believe that electronic access to FPs would be useful, with mean responses at the lower end of the 5-point scale.

HHS scores showed statistically significant positive change in post-compared to pre-study scores, using Wilcoxon Rank Sum tests, for the following:

- Satisfaction with communication score
- “Having standardized parameters about when to call physicians re blood glucose, BP level, etc. would make patient management easier”.

5.7.1.1 Relating HHS Survey Results to Qualitative Data

In the focus groups and interviews, HHS and FPs universally identified telephone and fax as their usual communication methods about patient care issues. Telephone was identified as a more appropriate method for communicating if there was urgency, however both HHS and FPs identified that there were sometimes problems with telephone communication. FPs stated that telephone calls interrupt seeing patients in their offices, and tend to put them behind schedule. HHS noted that it can be very difficult to get hold of a FP by telephone (even with multiple calls), and that FP response time can be slow. For more urgent situations, the perception by HHS was that response time might be better, as receptionists were more willing to interrupt a FP if the call is identified as urgent.

In addition to use of telephone, fax was identified as a common form of communication. Fax was chosen over telephone when more detail was required, and to confirm information such as lists of medications or FP orders. For FPs, there was some indication that faxes were believed to be more reliable with regard to documentation for clinical record purposes. Fax was also seen
as a way to avoid telephone tag. On the other hand, that faxes were a more reliable form of communication was challenged by those participating in the rehabilitation focus group: one participant noted that she could not necessarily trust that a FP had read the information in a fax, whereas by telephone she knew that the FP had heard the information she provided. Other HHS issues with faxes were: having faxes returned in a timely manner; that some FPs do not turn on their fax machines, and there was at least one FP who HHS dealt with frequently who did not have a fax machine at all.

HHS and FPs were fairly consistent in their identification of the kinds of patient-related issues about which they traditionally communicate with each other. The list included changes to wound care, confirmation of or changes in medication, changes in cognition/behaviour or functional status, managing palliative patients, catheterization issues, need for residential care or hospice admission, confirming Levels of Intervention status (e.g. code status), unstable blood sugar levels for diabetics, changes in levels of consciousness (e.g. hallucinating), patients who are in the hospital, communicating lab results, weight bearing orders, and querying changes in patient status such as a suspected deep vein thrombosis. Both FPs and HHS showed some awareness that the manner in which issues are generally dealt with is primarily reactive, with little anticipatory care planning taking place. Intervention FP Respondent 11 stated,

“If the catheter care is not going well, they’re going to let me know… But they might not tell me more subtle things, whether the caregiver’s looking worn out…”.

Relating this to the survey results, the ‘satisfaction with communication’ scale score that showed a positive statistically significant change between pre- and post-study results is more likely related to the time-sensitive updates referred to in the focus groups and interviews. These were seen to be working reasonably well (i.e. usefulness of the written information; ease of getting orders signed and returned; MDs promptly updating home care about changes that affect delivery of home care service).

5.7.2 Family Physician Pre- and Post- Communication and Collaboration Survey Results

Tables 14a, b and c summarize the survey results by intervention group (control and intervention) for pre- and post-survey results. The pre- and post-test score results for the ‘satisfaction with communication’ scale for both control and intervention FPs were in the
positive range (good to very good), indicating that overall FPs were satisfied with the quality of collaboration with HHS. For intervention FPs, there was a greater increase in satisfaction with communication between pre-and post-testing than there was for control FPs; however the increase was not statistically significant. The item (within the “improving communications grouping) “Home care providers anticipate problems and are proactive in management of patients” had increases in mean values for both intervention and control FPs, and showed a statistically significant increase for the intervention FPs.

Table 14a: Communication and Collaboration Survey: Comparison of Pre- and Post-Survey Satisfaction with Communication Scores by Intervention Group for Family Practitioner Participants

<table>
<thead>
<tr>
<th></th>
<th>Intervention FPs</th>
<th>Control FPs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre- (12)</td>
<td>Post- (11)</td>
</tr>
<tr>
<td></td>
<td>Pre- (12)</td>
<td>Post- (11)</td>
</tr>
<tr>
<td>Satisfaction with Communication*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual Range</td>
<td>1.0 – 5.0</td>
<td>1.0 – 5.0</td>
</tr>
<tr>
<td>Observed Range</td>
<td>2.2 – 3.8</td>
<td>2.6 – 5.0</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>3.15 (0.51)</td>
<td>3.86 (0.52)</td>
</tr>
<tr>
<td></td>
<td>1.0 – 5.0</td>
<td>1.0 – 5.0</td>
</tr>
<tr>
<td></td>
<td>1.4 – 4.0</td>
<td>2.2 – 4.0</td>
</tr>
<tr>
<td></td>
<td>3.03 (0.80)</td>
<td>3.20 (0.73)</td>
</tr>
</tbody>
</table>

A higher score is equated with higher satisfaction
* Scale score items 1-5

Table 14b: Communication and Collaboration Survey: Comparison of Pre- and Post-Survey Potential Impact of Better Communication Scores by Intervention Group for Family Practitioner Participants

<table>
<thead>
<tr>
<th></th>
<th>Intervention FPs</th>
<th>Control FPs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre- (12)</td>
<td>Post- (11)</td>
</tr>
<tr>
<td></td>
<td>Pre- (12)</td>
<td>Post- (11)</td>
</tr>
<tr>
<td>On average, how thoroughly do you read the forms sent to you by home care staff for your signature?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Always</td>
<td>11 (91.7%)</td>
<td>9 (81.8%)</td>
</tr>
<tr>
<td>Occasionally</td>
<td>1 ( 8.3%)</td>
<td>1 ( 9.1%)</td>
</tr>
<tr>
<td>Rarely</td>
<td>0 ( 0.0%)</td>
<td>1 ( 9.1%)</td>
</tr>
<tr>
<td>No answer</td>
<td>0 ( 0.0%)</td>
<td>0 ( 0.0%)</td>
</tr>
<tr>
<td></td>
<td>12 (100%)</td>
<td>9 (81.8%)</td>
</tr>
<tr>
<td></td>
<td>0 ( 0.0%)</td>
<td>1 ( 9.1%)</td>
</tr>
<tr>
<td></td>
<td>0 ( 0.0%)</td>
<td>0 ( 0.0%)</td>
</tr>
<tr>
<td></td>
<td>1 ( 9.1%)</td>
<td>1 ( 9.1%)</td>
</tr>
</tbody>
</table>
If we had greater coordination with home care staff facilitating closer management of our patients at home, do you feel that we could avoid some inpatient hospital admissions without compromising quality or patient outcomes?

<table>
<thead>
<tr>
<th></th>
<th>Intervention FPs</th>
<th>Control FPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>11 (91.7%)</td>
<td>9 (81.8%)</td>
</tr>
<tr>
<td>No</td>
<td>0 (0.0%)</td>
<td>2 (1.7%)</td>
</tr>
<tr>
<td>Unsure</td>
<td>1 (8.3%)</td>
<td>0 (0.0%)</td>
</tr>
</tbody>
</table>

If you answered “yes” to 7 (above): What percentage of inpatient admissions do you think might be prevented if we had greater coordination with home care staff?

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Intervention FPs</th>
<th>Control FPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10%</td>
<td>3 (25.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>11-25%</td>
<td>3 (25.0%)</td>
<td>5 (41.7%)</td>
</tr>
<tr>
<td>26-40%</td>
<td>2 (18.2%)</td>
<td>1 (8.3%)</td>
</tr>
<tr>
<td>41-60%</td>
<td>2 (18.2%)</td>
<td>3 (25.0%)</td>
</tr>
<tr>
<td>61-80%</td>
<td>1 (8.3%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>81-100%</td>
<td>0 (0.0%)</td>
<td>3 (25.0%)</td>
</tr>
<tr>
<td>No answer</td>
<td>1 (8.3%)</td>
<td>4 (36.4%)</td>
</tr>
</tbody>
</table>

Table 14c: Communication and Collaboration Survey: Comparison of Pre- and Post-Survey Improving Communication Scores by Intervention Group for Family Practitioner Participants

<table>
<thead>
<tr>
<th></th>
<th>Intervention FPs</th>
<th>Control FPs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre- (12)</td>
<td>Post- (11)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regarding the clinical appropriateness of telephone calls from home care providers, do you feel that you get called:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Much or slightly too often</td>
<td>1 (8.3%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>About the right amount</td>
<td>5 (41.7%)</td>
<td>10 (83.3%)</td>
</tr>
<tr>
<td>Slightly or much too infrequently</td>
<td>6 (50.0%)</td>
<td>2 (16.7%)</td>
</tr>
<tr>
<td>No answer</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>On average, how many calls from home care staff do you personally receive in a week?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-1</td>
<td>5 (41.7%)</td>
<td>6 (50.0%)</td>
</tr>
<tr>
<td>2-3</td>
<td>5 (41.7%)</td>
<td>3 (25.0%)</td>
</tr>
<tr>
<td>4-5</td>
<td>0 (0.0%)</td>
<td>1 (8.3%)</td>
</tr>
<tr>
<td>6-10</td>
<td>2 (16.7%)</td>
<td>1 (8.3%)</td>
</tr>
<tr>
<td>11-15</td>
<td>0 (0.0%)</td>
<td>1 (8.3%)</td>
</tr>
</tbody>
</table>
### Table

<table>
<thead>
<tr>
<th></th>
<th>Intervention FPs</th>
<th>Control FPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home care providers anticipate problems and are proactive in the management of patients</td>
<td>3.18 (0.87)</td>
<td>4.09 (0.83)**</td>
</tr>
<tr>
<td>Quality and efficiency of home care delivery could be enhanced with greater use of clinical pathways/care maps for specific diagnoses</td>
<td>3.81 (0.87)</td>
<td>3.18 (1.17)</td>
</tr>
</tbody>
</table>

* Unless otherwise specified, all item responses used a 5-point Likert scale (5 – Excellent, or Strongly Agree; 4 – Very Good, or Agree Somewhat; 3 – Good, or Neither Agree Nor Disagree; 2 – Fair, or Disagree Somewhat; 1 – Poor, or Disagree Strongly)

** p <= .05 Wilcoxon Signed Rank Test with Continuity Correction for difference in pre- and post-test scores within each group

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### 5.7.2.1 Relating Family Physician Communication and Collaboration Survey Results to the Qualitative Results

Although the differences between pre- and post-survey results for FPs, overall, did not achieve statistical significance, the general trend was for increases in satisfaction with communication and collaboration after the intervention phase of the study. The qualitative data also suggest a change in perceptions about collaboration with HHS for the intervention FPs, with particular reference to the South Vancouver HHS team.

For example, Intervention Respondent 12 referred to consistency in comparing South HHS (with whom he had conferences) to his experience with other HHS teams,

> “When I contacted South unit about patients there was a consistency in that they understood what I was talking about.”

As well, in the interviews with the FPs who had participated in the audio-conferences, there was some indication that they developed a more comprehensive understanding of the variety of services provided by HHS. For example, Intervention FP 18 stated:

> “You see what all is available, who’s all interacting with the patient other than just the primary home care nurse.“

Also supporting this were comments from the HHS focus groups that the FPs involved in the audio-conferences seemed to appreciate having more than one discipline involved (e.g. having the nurse, case manager and physiotherapist all present at the same time).
Because HHS are co-located, they have opportunities to communicate informally on a regular basis. This informal communication happens within the daily HHS routine. Comments from intervention FPs during the interviews suggest that the intervention FPs may have developed some awareness of the gap between the two worlds during the intervention phase. For example, Intervention FP Respondent 11 noted,

“I think my frustration, not even frustration but recognition, is [that] there probably is a lot of information that I’m not accessing on a regular basis. Just kind of day-to-day feedback in terms of how the patient is doing. And I’m sure there’s information that they’re [HHS] not getting from me from my physician visit.”

Moreover, the audio-conferences may have provided an opportunity to partially bridge this gap. Control FP Respondent 19 commented,

“I don’t make too many home visits so they [HHS] can inform me about the living condition because they are there and see it. So that’s very informative. And you can’t really express that in a short phone call. With conference calls, in ten minutes so many things can come up.”

5.8 **Qualitative Analysis: Aspects of the Intervention Used in this Study**

Research Question 4: What parts of the targeted communication strategy do FPs and HHS evaluate as most useful, and what would they require in order to sustain the strategy after the study is complete?

Based on analytic process for the interviews and focus groups as described in Chapter 4, themes emerging from the analysis of coded data initially included: Structural Barriers; Differences in Workflow; Across System Silos: Relationships and Assumptions; Audio-conferences as Proactive Means of Communicating; Tools as Bridges Across Systems; Criteria for Audio-conferencing; Change is Hard at First and Requires Logistical Support; and Imagining the Future. All research team members reviewed material that generated these themes. Feedback was provided to tighten up the themes, as in some places they were overlapping. For example, the earlier versions considered tools in a somewhat repetitive manner between two themes of “structural supports” and as “bridges across silos”; these were consolidated into a “shared tools” theme. The final list of themes used included:
• Working in Silos
  • Relationships and Assumptions
• Change is Hard at First
  • Structural Barriers
  • Requires Logistical Support
• Bridging Silos
  • Scheduled Audio-conferences
  • Tools as Bridges
• Imagining the Future
  • Criteria for Audio-conferencing
  • Necessary Supports for Audio-conferencing
  • Unintended Impacts of the Study

The themes were discussed with the South Research Group to ensure that their perspectives were reflected in the analyses.

5.8.1 Working in Silos

5.8.1.1 Relationships and Assumptions

Both HHS and FPs lacked knowledge about the procedures and processes in each other’s systems that led to potentially erroneous assumptions about communication and clinical practices. For example, a lack of knowledge about FP fee structure led to the assumption that FPs would not participate in conferences because the time would not be billable (home care nursing focus group). As discussed previously, FPs are able to bill for communication with HHS about shared patients.

In addition, as discussed in the previous section, there seemed to be a lack of awareness on the part of HHS that the interdisciplinary communication benefits they share because of their co-location excludes FPs. This lack of awareness by HHS that FPs are not privy to the interdisciplinary communication that occurs among HHS may lead to the erroneous assumption that there is no information to share with the FP. For example, in the case managers’ focus group, one of the respondents observed that during a conference call about some of his patients no new information was shared. Another respondent stated that a FP “just wanted to recap where things are at” with his patient, and went on to observe that because of this (i.e. no information that was
new to the HHS member shared) and fact that the conferences were at pre-set times, the
conferences were not particularly useful to him (displaying a lack of awareness that what was
considered a recap to him may have included new information for the FP). The same theme arose
in the rehabilitation focus group, with one of the respondents reporting that both times she was
involved with a conference the FP had requested it and the conference consisted of the FP asking
questions (which may have been repetitive for the HHS, while at the same time useful for the
FP).

There were a few instances in the HHS focus groups that highlighted the HHS members’
limited recognition and understanding of FP isolation. For example, in the rehabilitation focus
group, one of the respondents observed that FPs are probably not aware of which HHS
disciplines are involved with their patients, because the HHS practice of referring back and forth
to each other within the team does not include a process to provide FPs with notice that another
service is involved.

HHS and FPs worked with different definitions and assumptions about what anticipatory
care planning means. Rarely were these assumptions explicit. Control FP Respondent 4 stated
that in his opinion, for complex patient cases, exchanging written information would generally
be more valuable than talking on the phone. This statement suggests that two-way but
asynchronous passing of information is preferable to interprofessional discussion. Another
example came from Intervention FP Respondent 8, discussing a patient with diabetes and
psychiatric issues, who presumed that the community mental health team would be managing his
patient’s diabetes as well as the patient’s mental health condition, although he did not know and
had not confirmed this with the mental health team.

“And I believe they are looking after his diabetes, too, but I don’t know.”

An association between having a relationship with a clinician and trusting the judgment
of that clinician emerged a few times. For example, control FP Respondent 23 described a
situation in which a home care nurse he did not know phoned him to suggest antibiotic treatment
for a patient with diabetes and complicated decubitus ulcers.

“I don’t know if she knows what she’s talking about. She phoned to ask
about getting antibiotics for somebody, and anybody who knows wound care
knows that antibiotics are usually forbidden. So you kind of spend quite a bit of
time relationship building and finding out what the quality of the person you’re
dealing with [is]. And I don’t know them personally, I have never met them, so it’s a phone call I’m having to use.”

Across Vancouver Coastal Health, all home care nurses use the same protocols and electronic documentation system for wound care, and all have access to wound care clinicians for complex wound cases. Nevertheless, this FP seems to have been trying to determine whether the recommendation of antibiotics was appropriate, and seemed to feel that developing a relationship with the home care nurse was central to that determination, when in fact the two could simply have referred to the wound care protocol in their consultation. The FP was clearly unaware of the process and tools home care nurses use to make treatment decisions, and the home care nurse may have been unaware that the FP did not know about Vancouver Coastal Health standardized approach for wound care.

A similar example emerged from the observation by Intervention FP Respondent 20 that he believed some HHS teams in Vancouver were more proactive in getting him involved, and he associated this observation with better patient care. At the time the study was taking place, South HHS members were complying with the health authority policy forbidding the use of email to communicate patient-related information, while some HHS on other teams, in spite of the policy, emailed patient-related information to this FP. The inability to use email, texting, and other electronic forms of communication is certainly a structural barrier to collaboration. However, in the case of this FP, even though he was aware that email was not an approved means of communicating about patients, he nevertheless attributed a more proactive, collaborative style of practice to HHS members who used email. In this particular case, the policy was not just a structural barrier; the fact that South HHS followed the policy while some other HHS teams did not led to this FP’s assumption that South HHS were not proactive.

Intervention FP Respondent 20: “I also use email quite a bit, so if I know who is involved actively, I will shoot them an email… I actually really like emails

6 The protocol states that for clients who are diabetic, unlike other wounds, visible evidence of localized infection may be muted or non-existent due to compromised arterial blood flow, blunting of the inflammatory process and diminished sensation; nursing staff are directed to notify the Physician/Nurse Practitioner or Wound Clinician should signs or symptoms of infection be present as any infection in a diabetic foot ulcer needs to be treated aggressively.
because I can sort of sort through it at my own pace, and I can think about it and sort of look at the chart and give a more measured response.”

Interviewer: “And you made a comment earlier about how your communication with South specifically seemed a little bit different, can you just…”

Intervention FP Respondent 20: “Yeah, I guess historically I haven’t had much sort of direct input about patients. Where I think that other places, specifically [another HHS team in Vancouver], I’ve found that they’re very pro-active in getting the GP involved. And whether that is a cultural thing, I’m not sure, but I have noticed that South, and I’m not saying it’s just South, but there may be another one or two [HHS teams] that are like that as well.”

Sometimes conflict between FPs and HHS with regard to a patient’s care plan was based on underlying different approaches to clinical management that had not been made explicit. Several FPs (in pre-study and in the post-study interviews) mentioned lack of support from Home Health for insulin injections for diabetic patients as a frustration. Providing insulin injections is not a task that can be delegated from registered nurses or licensed practical nurses to an unregulated health care worker (such as a Community Health Worker or Home Support Worker), and because home care nursing is a limited resource, the accepted protocol is for home care nurses to teach patients and families how to provide insulin injections (and provide ongoing support as required) rather than providing injections on an ongoing basis. Supporting family members by telephone and occasional visits allows more time to be allocated to the admission and treatment of new patients. Although several FPs mentioned their frustration with this policy, Intervention FP Respondent 15 related the story of doing daily home visits to provide the insulin injections for an elderly gentleman. HHS had identified that there were a lot of family members available who could have been organized to ensure the patient was taken care of, and saw FP 15 as assisting the family to avoid their responsibility toward the elderly gentleman. FP 15’s view was that the family had no intention of doing this task, and therefore the elderly couple was going to end up in acute care and/or residential care. In this instance, his preferred criteria for prioritizing scarce home care resources were different from Vancouver Coastal Health’s criteria. For HHS, the criteria were based on ‘supplementing/complementing rather than replacing’
patients’ self-care and care provided by informal caregivers, in order to make efficient use of scarce resources. This FP expressed his criterion as,

“We should provide services to very old [people], [and people where] nobody [is] caring, right? We can actually prevent some admissions and delay their death.”

5.8.2 Change is Hard at First

In their focus group, the program assistants noted that there was initial confusion and resistance on their part, and on the part of clinicians and Medical Office Assistants. They described their initial resistance dissipating, and once they began getting some positive feedback from clinicians they became champions. For example, respondent 3 stated,

“Even me, personally, … this is just going to be added work, or is it even worth it, because people just pick up the phone and call. And once I started hearing good feedback I was, ‘oh, okay, it’s worth it, people are liking it’.”

Program assistant respondent 4 noted that clinicians, also, responded well to initial success:

“In the beginning some were really not on board, like it’s something new, right? And then eventually it did get better, … the doctors that did try it out tried doing it with their other patients, too. So we did have regulars [who] would always look forward to it, and actually appreciated what was going on. And … some of the clinicians, there were a lot of repeats. If they tried it once most of them did it again.”

The experience of one intervention FP respondent who never participated in an audio-conference is in line with the PAs’ assessment that if they had participated in one conference and it went smoothly, they might have tended to be a repeat user:

“Maybe if there had been an initial conference with a person that I had developed a relationship with that might have been different.”

5.8.2.1 Structural Barriers

Some core processes that were identified as barriers by both HHS and FPs included differing documentation systems, different geographic boundaries, and different workflows.
between a FP’s office and HHS routine. In addition, FPs identified inability to use newer technological solutions (such as text messaging or email) for communication as a significant barrier.

FPs and HHS described different documentation systems that exist in non-intersecting worlds as a barrier to coordination across primary care and home health. Very few FPs in this study were on Electronic Medical Record (EMR) documentation systems, and the majority did not have access to the HHS clinical documentation system (PARIS). However, access does not guarantee use; the few FPs who could have accessed PARIS7 (because they were connected to Vancouver Coastal Health programs) stated that they did not do so.

That the HHS team covers all residents in a defined area of Vancouver (see Figure 4), whereas FPs’ practices are not as geographically bound, clearly interfered with communication processes. Some FPs indicated that they had patients in areas of Vancouver other than South Vancouver. Even more problematic, several FPs had patients in other Vancouver Coastal Health communities (e.g. Richmond) or outside the Vancouver Coastal Health boundaries (e.g. Burnaby or Delta). The difference between geographic boundaries was identified as problematic to communication because HHS are simultaneously involved with hundreds of FPs at any given point in time, while FPs are not necessarily aware of which HHS site their patients are referred to, and even if they are, they have many HHS offices with which they have to maintain contact.

Control FP Respondent 23 related the difficulties he had in contacting the appropriate Vancouver HHS team when he did not know which area his patient lived in:

“I end up making two calls… I’ve been told it’s not this unit and I’m sent to another.”

In addition, FPs’ patients may also be involved with many programs/services in addition to Home Health, and the FPs are not necessarily aware of which program to call or where the programs are located. Intervention FP Respondent 18 noted,

7 Four FPs were practicing within VCH sites, and had access to PARIS to read charts.
“I don’t know how services are allocated. What’s the difference between SAFER\(^8\) and geriatric psychiatry? There’s the geriatric outreach team; there’s geriatric teams in the units.”

FPs who had patients across different health authority boundaries noted that referral processes and forms were different (as health authorities across BC do not use the same forms or processes for access), which added workload and complexity to communication about their patients.

Different work processes in primary care compared to Home Health were an identified barrier that had numerous implications for effective communication. For example, both FPs and HHS acknowledged timing as a barrier to effective communication. Because FPs book appointments in slots of ten to fifteen minutes, but patients may take more or less time than their booked time slot, it is difficult for FPs to stick to specific times. HHS visiting patients in their homes are unable to time their call to a FP to coincide with the break between patients in a FP office.

Inability to use newer technology solutions for communication was seen as a barrier to collaborative care planning. As previously discussed, some FPs identified lack of ability to use email as a barrier, and some FPs stated that they would prefer to use text messaging. FPs who used electronic medical records (EMR) identified the fact that faxes did not integrate into their electronic record as a barrier. Intervention FP Respondent 20 also noted the lack of interface between his Electronic Medical Record (EMR) and PARIS as a barrier,

“There are two parallel electronic records which don’t cross-communicate and we live in two different worlds, and I think that may be one of the reasons why there’s not much communication. I think nurses can do everything that they need to do within PARIS and that doesn’t communicate with our EMR, so I think that’s a little bit of a difficulty.”

Some FPs also identified the additional workload for their office staff because faxes had to be scanned into the EMR record.

\(^8\) SAFER (Suicide Attempt, Follow-up, Education and Research) is a Vancouver Coastal Health program providing counseling and education to people who are suicidal and their families. There are two programs available in Vancouver providing geriatric psychiatry specialty support.
5.8.2.2 Requires Logistical Support

At South Vancouver Community Health Office, the majority of the increased workload and support for implementation of the new form of communication being assessed for this study fell to the HHS program assistants (PAs). Partly this was by design, as the HHS manager assigned two of the PAs the task of implementing procedures to facilitate the project’s success. These two PAs arranged the room in which research information was kept and the audio-conferences took place, received and disseminated the shared patient reports to HHS and to FP offices, communicated with the Medical Office Assistants (MOAs) by telephone and fax to coordinate the conferences, and took on the role of supporting HHS with the technology (polycom and audio-conference codes).

Initially, however, when the manager asked them to coordinate the project, the two program assistants were at a loss. HHS respondent 4 in the program assistants’ focus group stated,

“We were sitting in that meeting, I’m writing things down and I had this confused look on my face the whole time. (The manager) was staring at me like I was on drugs or something, I was like, ‘I don’t know what you’re talking about, no idea what you’re saying, somebody speak English!’”

After this meeting, the program assistants compared notes and figured out some first steps, then worked with the team coordinator and manager to implement them, and adjusted the process when it was not working. Not only did they take on the tasks required to get underway with the intervention; they became leaders and problem solvers to ensure that the audio-conferencing would be successful (not a traditional role for program assistants). For example, program assistant respondent 3 stated,

“You know, we tried one thing and that didn’t work, like with the first calendar, and then we tried a different way of doing it.”

In all four HHS focus groups, the program assistants’ role showed up as by far the most valued and consistent logistical support that they felt would be necessary to continue audio-conferencing.
5.8.3 Bridging Silos

5.8.3.1 Scheduled Audio-conferences

For both FPs and HHS, there were positive and negative experiences with the audio-conference intervention. Negative experiences tended to be associated with timing issues, such as miscommunication about whether there was going to be a conference, or one party being late or unavailable when a scheduled conference occurred. For example, in the home care nursing focus group, HHS Respondent 3 noted,

“We had one experience where the doctor was late signing on by half an hour, and I only had that half hour booked of my time, so…”

The reason given for lack of participation by one intervention FP who had no audio-conferences suggests that he viewed the new form of communication as problem-based rather than as a way to engage in anticipatory care planning:

“It was initiated by the health unit and it was a kind of problem based trigger, and I can’t think that there was ever a time when the health unit or myself could come up with a problem, so we didn’t discuss anything.”

The logistical issue of finding a time that worked for both FPs and for HHS was a clear barrier to more extensive interprofessional collaboration. For FPs, the best time for pre-scheduled conferences was their first appointment time in the morning, before the first booked patient because that was one of the few times during the day when they could be confident that they would be available (most commonly for FPs this was nine o’clock in the morning). For HHS, this timing meant limited availability of the appropriate staff members in situations where, for example, a patient required a visit first thing in the morning. The issue was more problematic for some staff than for others. Home care nursing seemed to be most inconvenienced by this time, followed by occupational and physiotherapy; case managers were usually most able to adjust their patient visit schedules to accommodate the early morning time slot. The variation in ability to accommodate pre-scheduled times relates to the way the different services schedule patients; home care nurses have patients scheduled for them and often visits are time-of-day sensitive (for example, intravenous therapy and wound care), while the rehabilitation services and case managers self-schedule and their interventions are less time sensitive. In explaining why he did not find the audio-conferences useful, a respondent in the case managers’ focus group stated that because other team members found it difficult to adjust their schedules to the
time that the FP was available for an audio-conference, he found it easier to simply call the FP when it was convenient for him.

One control FP (Respondent 4) suggested face-to-face conferences would be preferable to audio-conferences, stating,

“I think the easiest thing if it’s a very complex care plan, instead of trying to coordinate through audio or video, [would be to] just come in, make an appointment, so that you’re all there at the office, and you book for half an hour.”

If this recommendation were to be adopted, it would allow the FP to have a face-to-face conference within his usual work process of scheduled patient appointments. That is, HHS would book a time and come in and wait their turn in his waiting room along with patients. Such a process would provide efficiencies for the FP, with no real change to the FPs work process, but would introduce considerable inefficiencies for the HHS.

HHS felt that it that it would not be possible to book time into every FP schedule to discuss complex patients in person. In the case managers’ focus group, Respondent 14 noted,

“This is one resource we can try for other GPs. They might accept it. Because…we cannot ask everybody here [meaning the HHS staff] to come to a conference in person with a FP, but we can easily just talk on the phone.”

In contrast, the positive experiences with audio-conferencing were described using phrases such as “specific and efficient communication”, “consistency”, “focused”, “convenient”, “scheduled meetings bring structure”, “more comprehensive picture”, “prepared”, and “collaborative.” Among the key advantages of having the full team, including the FP, together (virtually if not in person) were “efficiency” and “focus.” For example, intervention FP Respondent 18 stated,

“It was good because there were a couple (of patients) at one time, there was a [physiotherapist] and an occupational therapist and a home care nurse.”

This was consistent with comments that emerged from the HHS focus groups. For example, in the rehabilitation focus group, Respondent 1 commented,

“… often it’s just one team member calling him individually as opposed to the whole group hearing it together. It [the audio-conference] was useful.”
Both FPs and HHS noticed that the scheduled times, combined with prior knowledge about which patients would be discussed, allowed more focused time with the FPs. HHS mentioned several times the fact that they had the FP’s full attention for the audio-conference time, and that the FP had reviewed the patient’s chart and was aware of the issues. The participating FPs agreed that the audio-conferences were superior to on-the-spot telephone calls, as the FP did not need to respond to HHS about an issue spontaneously without having consulted clinical documentation. In the home care nursing focus group, Respondent 10 referred to the efficiency of audio-conferences, noting that a lot of work was accomplished in a short time, and that HHS team members could prompt each other to ensure no issues were forgotten.

When asked whether respondents thought the conferences improved patient outcome, generally the answer was affirmative. FP Respondent 16 noted,

“it’s those patients who need home care I think need a lot of care. And anything additional that we can offer them is very important. I think the communication between the home care team and the physician is very important.”

Intervention FP Respondent 12 observed that the introduction of audio-conferencing increased the positive relationships he experienced with South HHS, leading to more specific and personalized communication outside of the audio-conferences.

“It [the audio-conference] helped in a couple of ways. It improved my written communication. I spent more time dictating notes back to them. And I think it was more personalized dealing with, you know, the specific [occupational therapist] who knew the patient rather than having a general response.”

Respondent 14 in the case managers’ focus group described a similar experience. He commented on the fact that once he had been involved in a teleconference with one of the FPs and had built up a rapport, the FP was more likely to respond to phone calls he made outside of scheduled audio-conference times. In a similar vein, respondent 3 in the case managers’ focus group conjectured,

“I think it’s a good start to involve the community GPs more… hopefully, like [Respondent 14] said, we can get on board those who are more difficult to communicate with.”
A comment that perhaps most clearly shows the impact for FPs in bridging the silos and including FPs as part of the interprofessional team was given by Intervention FP Respondent 16, who stated,

“It was a very direct approach to patients’ care and I didn’t feel like an island, alone, just treating the patient. That was the positive part.”

In addition to administrative support, with new forms of communication there may be a need to develop new protocols or agreements, or to clarify roles. In the case managers’ focus group, one respondent described a situation where she had participated in an audio-conference with a FP about a patient who subsequently requested a copy of her Home Health chart. In this case, the patient had provided different information to her FP than she had to the home health team, and the case manager had documented this in the clinical chart. The case manager was uncomfortable providing the chart to the patient, stating,

“I didn’t get her consent to talk to the GP and I doubt the GP got her consent… I’m uncomfortable because she’s got the record and she sees it, and I’ve talked to her since then and she never raised it, the discrepancy in the assessment between her information and his information but it was different. And she was in the process of trying to get an insurance claim.”

5.8.3.2 Tools as Bridges

Respondents in the focus groups and interviews were asked to comment on several tools used to facilitate conferences, including the shared patient reports for each FP that were provided to all involved HHS staff and faxed to the FPs before pre-scheduled conferences, the SBAR form used by the HHS to prepare for audio-conferences, and the technology (polycom) situated at the HHS office.

The shared patient reports seemed to be valued more highly by FPs who participated in the audio-conferences than they were by HHS. Unless FPs had access to (and actually took the time to access) PARIS, the shared patient reports represented the first opportunity they had to view a list of all their patients who were seen by HHS. In addition, the reports allowed FPs to confirm which disciplines were involved with specific patients. For example, Intervention FP Respondent 18, when asked about the reports, stated that he found having as much information as possible in one place beneficial, and that prior to receiving the reports he tended to
communicate primarily with home care nursing without realizing that other disciplines were also involved. This respondent was able to speak knowledgeably about the primary home care nurse role\textsuperscript{9}, which would indicate that he increased his knowledge and awareness of how the HHS works. FP Respondent 14, who was part of the control group (and therefore did not receive shared patient reports) stated during his interview,

“I actually sometimes have to keep a list of these homebound patients. Because they don’t call us, right?”

Some FPs had an alternate view, however. Intervention FP Respondent 20 felt that the reports did not have enough information, and would have preferred that they include a summary of patient status.

Most intervention FPs felt that the reports were circulated more frequently than required, suggesting that monthly or quarterly would be fine as the turnover in shared patients is not high. For the FPs, a limitation of the shared patient reports was that they included only patients for South HHS; the reports would have been more useful to them if they had contained all patients on their caseload who were involved with HHS.

For HHS, although the reports were not as useful, a staff member who provided support to HHS for problem solving complex issues noted that at least initially the reports provided a mechanism for HHS to sort through which of their patients had complicated issues that would benefit from audio-conferencing.

The SBAR tool provided a means for HHS to organize information prior to an audio-conference, with the goal of keeping the conferences focused and reaching the end point of a shared care plan in the shortest amount of time possible. Although a copy of the SBAR form was provided to the intervention FPs for their information, the FPs were not asked to use the SBAR for audio-conferencing. In general, FP respondents did not show an awareness that the tool was being used by HHS, but were aware that the conferences were efficient and goal oriented. For example, Intervention FP Respondent 12 noted,

\textsuperscript{9} Because home care nurses work a 7-day week and cannot guarantee that the same nurse will always visit a client, one “primary nurse” is assigned to coordinate the care plan, ensure that re-assessments are completed on a regular basis, and make changes to the treatment plan as required. For complex nursing clients (e.g. end stage palliative care) the primary nurse performs the care management function for the HHS team.
“… I’d anticipated they had a pre-meeting. … And I’m not sure how they did it at the other end, but the presentation over the phone was organized and efficient.”

For HHS, the SBAR seems, for the most part, to have been used as intended. Respondent 12 in the case managers’ focus group noted that it kept them focused and aware that there was a time constraint. In the home care nursing focus group, Respondent 2 also noted the awareness of time constraint, and added that the tool kept them on track.

However, there seems to have been variability in whether the tool was used depending upon whether HHS or the FP requested the conference. For example, when the interviewer asked in the home care nursing focus group whether Respondent 3 had used the SBAR, her response was,

“No, because the doctor was the one who requested the meeting.”

In addition, some HHS stated that the fact that FPs did not use a similar process meant that they were not necessarily as focused as were the HHS.

Also, there was the interesting observation about the fact that use of the tool had not generalized past the audio-conferences. Respondent 12 in the case managers’ focus group stated,

“Yes, I would use the SBAR to get focused for time. But I don’t think outside in discussing cases with other team members or in my charting or anything I use the SBAR.”

The technology (polycom, and ability to phone into the audio-conference from multiple locations) seems to have been viewed almost universally as positive by HHS, once they got past the initial learning curve. Even HHS members who did not find the audio-conferences useful tended to see value in having use of a polycom for conferences involving multiple people in different locations. In general, HHS found that as long as they had support (program assistants to show them how to use the polycom, instructions posted in the conference room to remind them when they had not used the technology for a while), the audio-conference codes and polycom were easy to use. In addition, the ability to phone into the audio-conference using the secure code from any location, rather than having to be in attendance in one location, was seen as very positive. In the case managers focus group, one respondent stated,

“It was really slick, one time I was caught in a time crunch and couldn’t get back to the office for a teleconference, so I … just sat in my car and called in.”
5.8.4 Imagining the Future

5.8.4.1 Criteria for Audio-Conferencing

As previously discussed, both FPs and HHS agreed that for quick, more time sensitive issues such as confirming or clarifying orders, or consultation on changing treatments that occur on a regular basis and do not require full interprofessional team involvement, fax and telephone remain better options than audio-conferences which take too much time to set up. Three general categories of patient emerged with regard to criteria for signalling the value of interprofessional audio-conferencing: medical or functional complexity, social complexity, and patients in transition.

Medical and functional complexity generated the most discussion from both HHS and FP respondents. Specific medically complex issues described included: insertion and management of feeding tubes; managing multiple medical referrals; managing conditions that are not resolving over a long period of time; managing medications with risky side effects such as Coumadin and Warfarin; palliative care symptom control and medication management; use of technology for patients with chronic obstructive pulmonary disease (COPD); managing poorly controlled diabetes; combined drug addiction and mental health issues; children with attention deficit disorder (ADHD), learning disabilities and/or behavioural issues; management of patients with new strokes; nutritional issues combined with chronic disease and medication management; and advance care planning for end of life. Functional issues that were referred to included:

- Cognitive changes in patients,
- Mobility issues for older adults with chronic disease especially where the patient can no longer visit the FP office frequently,
- Assisting family caregivers to cope with the combination of functional decline and cognitive impairment.

Several FPs described cases where they found the audio-conferencing helpful, and the situations they described highlight the need for interprofessional communication and collaboration. Intervention FP Respondent 18 highlighted a palliative patient with poor pain control, who had been taking up to sixteen breakthrough doses a day even though the FP had described to the patient and her husband on numerous occasions how to take pain medications. With conferencing, it emerged that the patient and her husband did not think the doctor wanted
to increase her regular dosage, and with common messaging to the patient by both HHS and the FP she was able to understand that increasing the dosage was preferable to ongoing, intermittent use of breakthrough medication, and so the regular dose was increased. Control FP Respondent 4 referred to a patient who had been part of his practice for twenty years, and now had multiple chronic diseases with onset of dementia, living alone after the death of her spouse. Two FP respondents referred to situations where, due to increasing chronic disease symptoms and increasing cognitive impairment, they had referred patients to the Motor Vehicles Branch to suspend drivers’ licenses, but the patients were still driving. Control FP Respondent 23 described a patient with dementia and long-standing decubitus ulcers, where three different dermatologists and a plastic surgeon were involved and the patient had frequent admissions to acute care.

Intervention FP 15 related a story (previously referred to in the “assumptions and relationships” section) that shows how involved FPs can be in the lives of their patients with complex health issues. The situation involved a very elderly (late 90’s) couple whose first language was not English, one of whom had poorly controlled type 2 diabetes, while the other had poor vision due to cataracts. The FP performed daily home visits to inject insulin because HHS would not provide this as a regular daily service.

“I went along with them for one and a half years, every day. One day I went there, [and the] old man hadn’t eaten anything. I said “did you eat something”, “no, nobody here to cook”. I made some omelette in his kitchen, gave him omelette, some toast, then gave him his injection. Because I am there for injection, I cannot [give him an insulin injection when he has been] fasting; I can’t wait for somebody to come.”

HHS noted that it was helpful to be able to discuss end of life plans for patients transitioning from chronic disease management to palliative care (rehabilitation focus group) and pain management (home care nursing focus group).

In terms of social complexity, the most frequent issue raised was maintaining a consistent approach across the full interprofessional team for patients with psychological problems or personality issues.

HHS are co-located, meet together frequently and document on a shared clinical record. For patients who have personality disorders, or patients who are poor historians, this can be a facilitator for a consistent approach across the HHS team. However, FPs are not traditionally
included in the problem solving designed to find a consistent approach. Intervention FP Respondent 12 noted,

“A team approach is a lot easier to manage a “difficult” patient if your approach can be coordinated so you are consistent, because the worst thing that happens with the difficult patient is that they hear one thing from the nurse and a different thing from the doctor or [occupational therapist] or [physiotherapist]. So when we were able to communicate that way [in an audio-conference] we were able to discuss before we did some things, and [were able to] be consistent. And that’s very useful.”

Similarly, usefulness of conferencing for patients and/or families who are poor historians, and provide conflicting information to the FP on one hand, and HHS on the other, was raised several times. Both FPs and HHS seemed to believe that HHS generally have a very good sense of what is going on in the home situation. In fact, however, this was not always the case. Respondent 1 in the rehabilitation focus group highlighted the positive results that audio-conferencing provided where the FP was more aware of what was happening for his patient than the HHS team was,

“What are we going with this person? We don’t know. Sort of felt like we were swimming, and we have this discussion together, but it was incredibly helpful to have the discussion with the GP, who was actually seeing it quite clearly.”

Another issue raised was situations where patients choose to stay at home despite having functional and cognitive decline, and interprofessional communication is required to manage the risks (e.g. leaving the stove on, getting lost, or driving unsafely). Intervention FP Respondent 18 mentioned that for patients who are home-bound and have communication issues that make telephone contact challenging (e.g. English as a second language, or hearing/speech impediments) HHS who are in the home on a regular basis provide information to the FP to which he would otherwise not be privy.

The third theme that emerged was ‘patients in transition’. In focus groups and interviews, several situations were raised that fit into this category. Coordinated care planning for new patients transitioning onto the FP caseload, and/or new patients on the Home Health caseload were examples. Intervention FP 12 commented,
“in managing new patients if you have this get together beforehand you can plan how you are going to interact and what changes you are going to make or how you are going to approach the patient, whereas with the old system that pre-planning never happened.”

In addition, Intervention FP Respondent 20 noted that a change in a patient’s health status may be associated with the inclusion of a new discipline within the HHS team, and therefore an internal referral to a new discipline on the HHS team might be indicative of the need to have a conference. Patients being admitted to or discharged from acute care facilities were highlighted as potentially requiring a conference to ensure there is a coordinated, up to date care plan. Intervention FP Respondent 12 stated that the number of times a family caregiver contacts him in a week about one of his patients may be a flag that there is a need update the care plan:

“I guess it could be triggered by the number of times the caregivers feel they have to contact me. If I’m getting two calls a week for one patient that’s probably the one I should be talking to them about.”

Transitioning patients to a new care setting, such as moving from home to assisted living, hospice or residential care, was also seen as a point where connection between HHS and FP was important.

Although sudden changes in patient status or quickly changing patients were raised as a reason to conference, this issue also was seen as presenting challenges. Control FP Respondent 14 observed,

“I guess the problem is you talk about a person on Tuesday, you go back to see them on Wednesday or Thursday and it’s like, whoa…”

Such an observation may not be surprising, as the current strategies of telephone and fax were centered around exactly this type of reactive, just-in-time communication.

5.8.4.2 Necessary Supports for Audio-Conferencing

Due to the number of FPs, HHS staff communicate with on a day-to-day basis, having pre-scheduled audio-conference times available to each specific FP would not be practical if audio-conferencing were to spread to all FPs. The process that emerged for the HHS team was to be able to approach the program assistants when the need for an audio-conference occurred,
provide several times that a conference would work for HHS, and then have the program assistant coordinate with the appropriate MOA to book the FP’s time.

In the case managers’ focus group, a suggestion provided by one respondent was that it might be worthwhile to invest time in marketing specifically to FPs with whom they find it challenging to communicate. However, most HHS respondents favoured approaching FPs only when patients emerged who were identified as appropriate for conferencing.

All HHS saw the value of having the program assistants take on a more assertive role, booking appointments with MOAs for the conferences. Respondent 4 from the program assistant focus group provided the ‘script’ she uses when she makes such a call to an MOA.

“Whenever I’ve called … and said, ‘I’m calling from South unit, I’m calling regarding such and such patient, one of our clinicians at our office is also involved with this patient and they would like to speak to the doctor about them through an audio-conference. These are the dates and times the clinician is available, is the doctor available at these times?’ And normally that’s enough description for them. And once you have confirmed a time I’ll tell the MOA ‘okay, here are the codes that you need, this is the phone number, this is the code you dial in, and I’m going to fax it to you right after I hang up with you.’ And it’s been enough.”

HHS participants had a number of possible suggestions to deal with the number of FPs. For example, one suggestion was for FPs to leave some slots open that any HHS across Vancouver could book into. Respondent 6 in the rehabilitation focus group also suggested that it might be useful to book follow up conference calls. In the home care nursing focus group, a suggestion was to flag FPs who are familiar with this form of communication on PARIS, so that clinicians would know that conferences were an option if a patient was appropriate. Another suggestion from the home care nursing focus group was to keep a list of ideal times for various FPs so that audio-conferences could be booked at those times when the need for a conference arose.

The intervention FPs who had actively participated in having audio-conferences were quite prepared to book time for conferences into their schedule on an ongoing basis. Intervention FP Respondent 12 stated,
“I would like to be able to have an opportunity for regular interaction with all the units, at a specific time by telephone. And if there isn’t anything that needs to happen feel free to cancel it…”

Intervention FP Respondent 18 suggested that perhaps once per month would suffice for pre-scheduled conferences, with the option of triggering an extra one if necessary. This respondent had also put some thought into how the innovation could be regularized, stating that he could book off one morning per month, and different HHS teams could all use that morning for scheduled audio-conference times, with a bit of lag time between each scheduled conference time. From his point of view, if all the pre-scheduled time was not used for conferencing, he could use it to catch up on paperwork.

The process used to distribute shared patient lists to study FPs could not practically be spread to all FPs with whom HHS work. Program assistant Respondent 4 observed that printing, photocopying, faxing and distributing the shared patient lists accounted for the majority of extra workload for the program assistants, and that this process would not work with hundreds of doctors. In the future, having lists of shared patients fax automatically, or automatically populating an FPs EMR seemed to make the most sense.

Intervention FP Respondent 20 surmised,

“The only problem is once you get all the providers’ names where do you put it? It would be great for it to go automatically into our EMR.”

Intervention FP Respondent 11 added that having the reports automatically populate his EMR and also contain a brief summary of the patients’ current state would be ideal for him.

There were a few innovative suggestions regarding future adjustments and enhancements. The home care nursing focus group included a discussion about the value of FPs accessing the HHS wound care documentation system, which includes wound care protocols, a patient’s skin and wound care plan and progress notes, including pictures of the wound. For FPs, the use of text messaging for more immediate communication, as an alternative to telephone, came up in several interviews. Control FP Respondent 4 stated,

“Like for myself, it’s easier if somebody texts me. Then I can read it later and text back. Simple. Email, yes or no, because most physicians are rushing between one room and another one. There is really very little time to sit down and click on an email. You don’t have the time. Telephone call is the worst.”
The two program assistants who supported the HHS process during the study believed that the major requirement for spreading this innovation to other FPs was education, both for FPs and for HHS.

5.8.4.3 Unintended Impacts of the Study

During the study period, there were several unintended impacts related to generalization of the tools and processes among HHS staff. The first unintended impact occurred after the FPs were randomized to control or intervention groups. When the research assistant visited the offices of the FPs to inform them which group they were part of and ensure they knew the processes they would follow during the intervention phase of the study, one of the FPs who had been randomized to the control group requested that he have an opportunity to audio-conference anyway, as some of his patients would benefit from this process. This is the control FP (14) who did have an audio-conference during the study (documented earlier in this chapter).

Once the intervention phase was underway, the HHS requested one more audio-conference code that they would be able to use with FPs who were not part of the study. The request was discussed among the research team, and agreed to, as the point of the study was to encourage collaboration between FPs and HHS. The number of times HHS used the extra audio-conference code was not documented as part of the study (it would have been impractical to document accurate usage, as all HHS staff had the code and could use it as they saw fit). However, in the focus groups, the use of the extra audio-conference line was referred to on several occasions. In the case managers’ focus group, one respondent referred to using audio-conferencing for a family conference, and another respondent referred to using it for a conference that involved HHS team members and the family respite center. The program assistants referred to staff having audio-conferences with FPs who were not involved in the study, and had already come up with a process, given that staff had approached them to arrange for conferences with FPs who were not part of the study. Respondent 4 in the program assistants’ focus group stated,

“I’ve had [HHS members] come up to me and say I’d like to speak to such and such doctor about such and such patient, these are the times that work for me, these are the days that work for me, can you call and find out if any of these times work for the doctor and please can you set up an appointment.”
Vancouver Coastal Health has recently included FP conferencing as a key element for home health redesign, as discussed in Chapter 3. On a time-limited basis, home health budgets are provided with monetary support for each conference (in person or telephonic) in which they engage a FP about a shared patient. The extra money received by the Home Health program is to be used by the manager to provide short-term change management (such as backfill for program assistants arranging the conferences, or team coordinators to provide orientation to HHS about how to conference) supporting the restructuring of Home Health teams to work in a more integrated fashion with FPs. Notably, as of March 30 2013, two areas of Vancouver Coastal Health have used these targeted funds. On the North Shore HHS team, over 100 audio-conferences between FPs and HHS have occurred since October 2012, and in Richmond, approximately 40 audio-conferences have occurred since January 2013.
6 Discussion

6.1 Introduction

Primary care and community health care services in British Columbia are delivered through two different systems, creating challenges that are difficult to address in terms of establishing appropriate and comprehensive communication about patients shared by key actors in these separate systems. Barriers to effective communication identified in the course of this work align with lack of access to many of the facilitators for effective interprofessional collaboration identified in the literature, such as co-location and availability of opportunities for spontaneous communication. To address such barriers requires extensive investment at both policy and practice levels.

This study evaluated one possible practical, low cost mechanism for improving collaboration between family physicians and home health staff – pre-scheduled, secure audio-conferencing about shared patients using a structured process. Twenty-two FPs participated in a randomized trial. There were eleven FPs in the intervention group and eleven in the control group (using only usual communication processes). Quantitative measures (number of shared patients, number of contacts about shared patients, and pre-post-survey data about perceptions of collaboration) and qualitative measures (field notes, interviews and focus groups) were used to evaluate the effects of the intervention on FP-HHS collaboration.

The study provided a number of stark examples of the challenges involved in introducing system changes that are aimed at connecting the separate worlds of primary care and home health. The issues that fee-for-service primary care offices deal with on a daily basis are separate and distinct from many of the key issues dealt with by home health services delivered through health authorities. Although both FPs and HHS provide primary health care services, in practical terms what they share in common is a very small number of patients, and traditional communication methods are geared toward the needs of each system that have evolved to allow them each to function “efficiently” (e.g. referral to HHS by FPs, or confirming FP medical orders by HHS).
The study’s mixed methods approach produced some clear evidence pointing to future actions that could be taken to support more, and more effective, communication and collaboration between the HHS and FP worlds in order to improve the care of shared patients.

This final chapter discusses the implications of the results described in the previous chapter. The limitations and generalizability of the study are also discussed, and suggestions for future research and knowledge translation are proposed.

6.2 Reassessment of the Study Outcomes

In Chapter 2, a temporal logic model was introduced in order to represent how the study inputs, outputs and outcomes link together in the context of factors from the external environment and factors affecting the uptake of the intervention (Figure 1). Temporal logic models allow for periodic reassessment and recording of changes based on knowledge generated as a program (or in this case an intervention) is implemented (den Heyer 2002). Therefore, based on the knowledge gained through implementation and evaluation of the intervention in this study, Figure 7 represents a revised understanding of how the expected outcomes are related to inputs and outputs, with changes from the original logic model highlighted in red type.

Figure 7: Implementation of Secure Audio-Conferencing Between Family Physicians and Home Health Staff – Post-Study Understanding of Temporal Logic Model

- **Target Population:** Patients who are shared by FPs and HHS, particularly those who have medical or social complexity, or those undergoing transitions
- **Current Challenge:** FPs & HHS share complex patients but experience significant barriers to collaborative care
- **Goal:** A common care plan for shared patients, and a consistent approach to care for shared patients
- **Inputs:**
  - Secure audio-conferencing about shared patients
  - Pre-scheduled times for audio-conferences
  - Structured process (SBAR)
  - Shared patient list including involved clinicians circulated prior to audio-conferences
- **Outputs:**
  - Number of audio-conferences held
  - Number of FPs/HHS who used the audio-conferences
  - Number of patients discussed
  - Number of patients identified for audio-conferencing by HHS, and number identified by FPs
- **Immediate Outcomes:**
  - Relationships established between FPs and HHS (increase)
- **Short Term Outcomes:**
  - Contacts about shared patients (increase)
  - Efficiency of communication (increase)
  - FPs and HHS identify ways to sustain the intervention
- **Intermediate Outcomes:**
  - Patient shared care plans (increase)
  - Number of shared patients (increase)
  - Effectiveness of contact about shared patients (increase)
  - Shared care planning becomes a part of core
- **Impact:** Improved Patient/Client Outcomes
- **Theoretical Foundations:** Factors affecting interprofessional collaboration (role clarity, trust, power and status, spatial and temporal factors); Systems Theory; Relational theories; Diffusion of innovations; Expanded Chronic Care Model; Temporal Logic Models
- **Context Specific Factors/Characteristics:** Two separate systems (differing business structures and processes), lack of co-location, small number of shared patients in each FP practice, different clinical documentation systems that do not connect, socialization process for physicians and non-physicians
In this revised and updated post-study version of the temporal logic model, the current challenge remains the same, as do the theoretical foundations and the context specific factors and characteristics. However, a deeper understanding of the target population has been achieved, as the study participants have provided insights into the specific types of patients for whom audio-conferencing is useful (those with medical or social complexity, and those undergoing transitions). Likewise, the goal has been revised to more align more closely with the intervention; out of the audio-conferencing participants want common care planning for shared patients and a common approach to care for shared patients. The inputs and outputs remain the same.

The most significant changes to the post-study version of the temporal logic model are in the understanding of the outcomes. The post-study version in Figure 7 reflects an understanding that in the short timeline in which the study took place, it was not reasonable to expect to see significant effects for all measured outcomes. Participants re-affirmed, as reflected in the evidence reviewed in Chapter 2, that development of relationships is important before effective interprofessional collaboration can occur. This intervention provided the opportunity for relationships to be developed between HHS and the participating FPs (immediate outcome). Once a relationship was developed, the stage was set for short term outcomes such as increasing contacts about shared patients, increasing the efficiency of communication about shared patients, and developing strategies to sustain the audio-conferencing. It would be expected that as audio-conferencing continued over time, intermediate outcomes such as increases in the number of shared patients and increases in the number of shared care plans about shared patients would occur. As participants refined the process, other intermediate outcomes would include increasing the effectiveness of contacts about shared patients and shared care planning would become a part of the core processes for both FPs and HHS. The impact of implementation of this intervention over time would be improved patient outcomes.

The post-study understanding reflected in Figure 7 will be referred to in the following discussion.
6.3 Summary of Results

6.3.1 Shared Patients

It was hypothesized that a successful intervention would result in an increase in the referral rate by FPs to HHS, thereby resulting in more shared patients between the intervention FPs and HHS. The reasoning behind this was that with increased contact between FPs and HHS, there would be greater familiarity with the services offered by Home Health (and conversely greater understanding by HHS of the patient management issues faced by FPs). It was thought that FPs would become aware of more of their patients who could benefit from HHS services but were not receiving them, leading to an increase in referrals to HHS by FPs. Neither the quantitative nor the qualitative results provided evidence of such a change occurring during the intervention phase of this study. There was no statistically significant increase in shared patients in the intervention arm of the trial, and intervention FPs stated unequivocally in post-study interviews that they did not believe their referral patterns to HHS had changed.

There are a number of possible explanations for this result. It is likely that the intervention timeline was not long enough to change FP patterns of referral. There also other systemic barriers to interprofessional collaboration, as identified in the literature and this study, that may have had some bearing on this result. These possibilities are discussed below.

For audio-conferencing to affect a FP’s referral patterns would require him/her to make a connection between the clinical profile of the patients (s)he shared with HHS and the clinical profile of similar patients in his/her caseload who were not currently treated by HHS but might benefit from shared responsibility. This is because, as Control FP 14 explained in his interview, FPs do not generally have a way to keep track of all patients on their caseloads who have complex or unstable health needs, and such patients generally only come to their attention when the patient calls the FP or comes in for an appointment. Therefore, during the study intervention period, for a FP to make the necessary connection and refer new patients to HHS would probably have required a coincidental call/visit by a patient not receiving HHS (but who could have benefited from HHS services) around the same time as an audio-conference where a similar patient was discussed. Because the maximum number of audio-conferences with any intervention FP in this study was seven, the likelihood of audio-conferencing occurring enough times to change the FP referral pattern was low. Therefore, a longer intervention period may have produced different results.
The importance of daily, unplanned and unstructured communication between community health professionals and FPs as a driver of high quality interprofessional collaboration may be relevant (Goldman et al 2010). Goldman and colleagues found that co-location led to opportunities for spontaneous interaction. In the case of South Vancouver Community Health Center, the fact that the greatest source of referrals across HHS disciplines came from within the team (for example, nursing to case management, known as internal referrals) is consistent with the notion that the opportunity for spontaneous, unstructured communication is a key driver of patient sharing. For FPs, who are not co-located and therefore do not have the advantage of spontaneous interaction, the scheduled audio-conferences may not have provided sufficient opportunity for spontaneous interaction to result in new referrals.

In addition to space and temporality, another factor discussed in the literature as influencing quality of collaboration is role knowledge and clarity (Baxter 2008), (Gaboury et al 2009). The literature supports the fact that FPs are often not fully aware of what community health services can provide, which would suggest that for FPs, role clarity about HHS is poor (Aubin et al 2001), (Dey et al 2011). Unfortunately there are currently few systematic ways for FPs to learn about services provided by Home Health, and any that exist are passive (e.g. pamphlets, the health authority website). In addition, the pattern of new referrals to South HHS suggests that FPs may not be aware of when to refer their patients, or when their patients have been referred to HHS; the majority of new referrals (60%) come from acute care, while FPs account for only 10% of new referrals. There was evidence from the interviews and focus groups that the FPs who participated in audio-conferences developed a better understanding of the variety of services that Home Health provides, and that HHS in turn became more aware of the complexities that FPs face in their practice settings. If the intervention phase had gone on longer, and FPs and HHS involved had developed a more comprehensive understanding of each others’ roles, it is possible that increased role clarity might have resulted in an increase in FP referrals to HHS.

Relating this back to the Temporal Logic Model shown in Figure 1, it is likely that it was unrealistic to expect an increase in number of shared patients between FPs and HHS, given the short timeframe for this study. A more realistic assumption would have been to expect that increases in referrals/numbers of shared patients would be an intermediate outcome of the study as portrayed in the revised logic model (Figure 7). A longer timeframe leading to greater
familiarity between HHS and FPs could conceivably have led to more comprehensive discussions, and deepened the shared understanding (across FPs and HHS as a virtual team) of which patients would benefit from shared services across primary and community care. Alternatively, it may be that more extensive changes that would facilitate more spontaneous collaboration between FPs and HHS are required to ensure that all patients who could benefit from shared primary and community services would be identified.

**6.3.2 Contacts About Shared Patients**

A second research question explored in this study was whether or not audio-conferencing about shared patients between FPs and HHS would increase the amount of communication about those shared patients. Both quantitative and qualitative data were obtained, and no definitive answer was reached. Quantitatively, there was a statistically significant increase in the average number of contacts per shared patient for both control and intervention FPs during the intervention phase relative to the baseline phase. However, examination of the data when the intervention FPs who used the audio-conferences were extracted as a subset of all intervention FPs showed that conference-users in this sample increased their contacts per shared patient more than other FPs in the study during the intervention phase. While the overall increase in total contacts per shared patient may simply have been a random effect, other explanations might include the fact that FPs participating in the study were generally more aware of the need to communicate with HHS than those who chose not to participate (a selection effect) or that through their involvement in the audio-conferences, HHS developed more confidence in contacting FPs and vice versa.

However, examination of the data in more detail would suggest that these explanations are too simplistic. The data obtained in interviews and focus groups, combined with the quantitative results, suggest that the number of contacts about shared patients is less important for collaborative care planning than the nature (quality) of contacts that occur (for example, enhanced problem solving re difficult patients, or better understanding of how HHS can help support FPs work).

Clearly, an assumption inherent in choosing “increase in contacts about shared patients” as a measure to evaluate quality of collaboration about shared patients between FPs and HHS was that an increase in the number of contacts per shared patient could be associated with better quality of collaboration about patient care. As noted earlier, the literature on outcomes of
interprofessional collaboration supports the need for communication to prevent patient harm (Suter et al 2009), decrease incidents of serious adverse events such as medication errors (Joint Commission on Accreditation of Healthcare Organizations 2007), and resolve patient health issues (Maison 2006). In terms of what kind of collaboration is best, the relevant literature suggests an association between high quality interprofessional collaboration and opportunities for unplanned, unstructured communication (Goldman et al 2010). This available literature, discussed in Chapter 2, provided the foundation for choosing contacts about shared patients as a variable to measure collaboration between FPs and HHS.

Despite the small sample size, an interesting pattern in the quantitative data was that the subset of six intervention FPs who used the audio-conference intervention at least once actually had lower total contacts per shared patient than the intervention group as a whole, although, as with all FP groups, their contacts per shared patient did increase in the intervention phase (Chart 5).

Perhaps not surprisingly, the data suggest that the quality of the communication between FPs and HHS is linked to factors other than solely the number of contacts per shared patient. Quality and efficiency of communication, as opposed simply to frequency, may involve a balance between anticipatory (proactive) care planning (for which the audio-conferences provided one opportunity) and just-in-time, more reactive communication (FP order updates, etc.). There is very little prior literature reviewed that can provide insight into the qualitative dimensions of interprofessional communication between FPs and HHS. Street and Blackford (2001) observed that “a common understanding of what nurses and doctors needed to know” was an important emergent theme influencing effective communication about palliative patients. Dey et al (2011) noted that FPs were found to want more “fact-based” information while pharmacists valued accessibility, style and nature of communication. In addition, organizational categories labelled “proactive planning” and “efficient communication pathways” were identified by Neergaard et al (2010) as important for organization of an interprofessional palliative care program. However, no literature was found that explored the interaction between ‘amount’ and ‘quality’ of communication.

In considering a primary care-specific, relationship-based model (Miller et al 2010), the intervention FPs who used the audio-conference opportunity may have shown more resilience in terms of their “adaptive reserve.” In particular, these primary care practices may have had some
combination of learning culture, improvisational ability and/or relationship/communication skills that allowed the medical office assistants and FPs to adopt this new initiative quickly and incorporate the new communication modality into their practices.

The implication of this discussion regarding contacts between FPs and HHS about shared patients is that, in retrospect, choice of “increase in contacts about shared patients” was too crude an indicator for the purpose of determining whether audio-conferencing improved interprofessional collaboration about shared patients. The fact that for both intervention and control FPs, there was an increase in contacts about shared patients may suggest that an increased awareness of HHS for FPs, and FP services for HHS, resulted in a short term outcome of increased contacts about shared patients. In addition, the change in pattern of communication for FPs who used the audio-conference intervention at least once may support a conclusion that an increase in efficiency of communication between FPs and HHS was a short term outcome of engaging in this intervention. Figure 7 therefore portrays both contacts about shared patients and efficiency of communication about shared patients as short-term outcomes of the intervention.

6.3.3 Perception of Quality of Collaboration

The statistically significant increase in HHS satisfaction with FP communication, along with increased average score for FPs (although not statistically significant) suggest that both HHS and FPs observed positive changes in collaboration about shared patients due to the intervention. For HHS, although the survey item “Case conferencing on complex cases would be helpful to us to improve outcomes for our patients” did not show a statistically significant difference, the mean response went up slightly. However, the focus groups did suggest that HHS gained a greater appreciation of the issues facing FPs in managing patients with complex health issues.

In terms of Normalization Process Theory (May and Finch 2009) discussed in Chapter 2, for some members of the HHS team the beginnings of coherence (attributing meaning to the innovation) and cognitive participation (engaging in the process of implementing the innovation) may have occurred, and there was some collective action participation (engagement in changing the chain of work to allow the innovation to occur). But perhaps the experience with audio-conferencing with FPs did not extend long enough to allow HHS to invest in the innovation over time and move it to sustainability.
Another possible explanation for HHS perceptions would be to consider the changes that may have occurred to core and adaptive reserve resources, as discussed in Chapter 2 (Miller et al. 2010). For HHS, a number of changes were made to core functional processes, such as introduction of shared patient reports and use of SBAR forms, as well as the reconfiguration of meetings around new teams to prepare for audio-conferences. Perhaps the introduction of these changes for such a short time and for only 11 FPs did not constitute a “dramatic change” that could tap into the full range of factors involved in adaptive reserve for HHS.

There is evidence from the focus groups, however, that HHS tapped into adaptive reserve (Miller et al. 2010) to implement the intervention. For example, the leadership shown by the manager, the South Research Group, and the program assistants in supporting the audio-conferencing, as well as the uptake of the polycom technology by the majority of HHS, are indicative of improvisation and leadership. Perhaps HHS did not experience a change significant enough (or for a long enough period) to move to a “new state” through use of reflection cycles or change stories (May and Finch 2009).

In contrast to HHS, who were limited to having conferences on only a few of their patients who were shared with study FPS, the FPs in the intervention group had the potential opportunity to have one or more conferences on each patient that they shared in common with South HHS during the intervention period. Considering the increased satisfaction survey score post- versus pre-study (although not statistically significant) together with the qualitative data and based on the literature about FP barriers to communication with HHS, it may be that some of the barriers FPs identified in communicating with HHS were partially addressed for the intervention FPs in this study. For example, Aubin (2001) identified lack of time for collaboration and the inconvenience of having to interact with several home care practitioners dependent upon the patient’s geographic location as barriers for FPs. In addition, the importance of having a personal relationship (and trust) between FPs and specific HHS members is identified in the literature (Street and Blackford 2001) and was also identified by FPs and HHS in interviews and focus groups as a benefit derived from participation in audio-conferences. The use of audio-conferencing provided opportunities for HHS and FPs to build relationships. The need for building trust and respectful relationships was identified as an important factor in creating interprofessional collaboration (Suter et al. 2009), and was also identified as a benefit from participating in audio-conferences. Both HHS (in focus groups) and FPs (in interviews)
identified that the audio-conferences provided an opportunity to build relationships between HHS and FPs, which in turn resulted in qualitative improvements in interprofessional communication. Considering the Temporal Logic Model (Figure 1 and Figure 7), the evidence from the literature, as well as both the quantitative data (from the surveys) and qualitative data arising from this study, it would appear that an increase in established relationships between HHS and FPs may be an immediate outcome of interventions designed to increase communication and collaboration. In fact, it is possible that the development of relationships between FPs and HHS is a necessary prerequisite for improvements in communication that could lead to improved patient outcomes.

A third major barrier to interprofessional collaboration between physicians and other health professionals identified in the literature and discussed in Chapter 2, was power and status (Baxter 2008), (Kramer and Schmalenberg 2003). Notably, unless obscured by the issue of role clarity, this barrier did not seem to arise between HHS and FPs in this study. The majority of the literature exploring how a power differential between professionals affects interdisciplinary collaboration takes place within an institutional setting where physicians and other health professionals are functioning within one common system, such as acute care (Kramer and Schmalenberg 2003) or jurisdictions where home health nurses are part of the primary care team (Modin et al 2010). It is conceivable that in the case of primary and community care in British Columbia (and most places in Canada), the fact that FPs and HHS exist within two separate systems neutralizes the potential of power and status between professions as a significant communication barrier.

On its own, audio-conferencing may not be sufficient to overcome the multitude of barriers faced by primary care and home health in terms of interprofessional collaboration. Thus, in terms of factors that facilitate interprofessional collaboration, audio-conferencing provided an opportunity to enhance role clarity (Baxter 2008), while pre-scheduling of audio-conferences could only partially address the issue of temporality (Retchin 2008), and did not address the issue of co-location (Goldman et al 2010), (San Martin-Rodriguez et al 2005).
6.4 Insights from the Study

6.4.1 Reactive Versus Proactive Communication

The focus groups and interviews revealed that the usual forms of communication between FPs and HHS are reactive in nature. For instance, as described in Chapter 3 and portrayed in Figure 2, FPs contact Central Intake for a new referral, but the information provided is the minimum required to ensure the patient receives home health services, and there is no formal, systematic mechanism that FPs can use to communicate with HHS to develop a shared care plan for a new referral. Similarly, HHS staff telephone the FP office to request orders, update orders or provide a status update, and rely on faxes to receive new or updated orders. Once again, there is no mechanism for systematic engagement of FPs by HHS to seek, proactively, the medical input that is essential in formulating a shared care plan. HHS tend to anticipate what the FP would order and fax through a request for specific orders, rather than engaging the FP in a discussion about what options are available that might potentially lead to a better solution. This was referred to in one study as, “the lowest common denominator” approach (Street and Blackford 2001).

The FPs who used the audio-conference intervention at least once described the experience in positive terms suggestive of an understanding that collaborating with HHS to create a shared care plan, rather than reacting to changes in patient status, is beneficial for the patient. A randomized controlled trial involving care conferencing between FPs and palliative care specialists, discussed in Chapter 2, found a similar result: that early case conferencing might have enhanced the relationships that eventually led to better care coordination later in a patient’s illness (Mitchell et al 2008). The view of FPs who participated in audio-conferences, as well as HHS staff who had positive experiences with the intervention, also suggest that audio-conferences would not replace existing forms of communication such as fax and telephone, but would be a complementary method of communicating. Linking this back to Figure 2 portraying the context for interprofessional collaboration between HHS and FPs in South Vancouver, the audio-conferences might become an additional box labelled “Conference about patients to create or update shared care plans,” with a two-way arrow between FP offices and the HHS.
6.4.2 Tools Supporting Change Across Systems

Feedback from HHS and FPs about the tools that were used as part of the intervention (e.g. the shared patient list and the SBAR) may also provide insights into the degree of separation between Home Health and primary care. As discussed in the literature review, the SBAR as a tool has been used and adapted as a means to manage the process of communication between physicians and other care staff during transitions, or when patients’ conditions change (Leonard et al 2011). The work process in FP offices requires that any communication between FPs and HHS be efficient and results-driven, which is reasonable given that patients are scheduled at 10-minute intervals. Any event that interferes with this flow significantly backs up the workload, inconveniencing patients who are waiting and increasing the work day for the FP and medical office assistant. The literature reviewed also pointed to the fact that FPs are more comfortable with succinct, factual information exchange (Street and Blackford 2001), (Dey et al 2011). In the HHS focus groups, participants emphasized the need for efficient, outcome focused communication, and made the link between their use of the SBAR tool and achieving this during the audio-conferences. The intervention FPs who took part in audio-conferences noted that the conferences ran efficiently, although they were not necessarily aware that HHS staff were using the SBAR to achieve this efficiency.

The shared patient reports provide another example of the difficulty of bridging differences between the two worlds and bringing change that supports the objectives of both. The program assistants at South Vancouver Community Health Center identified the receipt and distribution of shared patient reports as the single most time-intensive task they were involved with in the intervention phase. The shared patient reports provided the FPs with the opportunity to view the full list of their patients who were shared with South HHS and decide whether or not they wanted to initiate an audio-conference with the HHS team. Without access to the shared patient lists, in this study FPs would not have had this choice as they have no systematic way to determine which of their patients are on the HHS caseload.

Although the shared patient report is a critical tool enabling engagement by FPs in deciding which of their shared patients could benefit from audio-conferencing, within the existing system there is no capacity for program assistants to scale up the activity they engaged in during the study to all FPs who share patients with South HHS (well over 100 FPs at any point
in time). One solution to this that was raised by both FPs and HHS would be to enable PARIS to automatically fax shared patient lists to FP offices at regular times.

Faxing shared patient lists is not a universally agreed upon solution, however. The alternative solution suggested by FPs who had electronic medical records (EMR) would be to enable greater connectivity between the FPs EMR and PARIS, such that patient-related details could populate their clinical record without a need to manually scan faxes. Such a solution would require commitment, resources and shared governance across primary care and health authorities. In British Columbia, the emergence of Divisions of Family Practice that have formal connections to health authorities may provide a mechanism to move this agenda forward.

In the previous chapter, it was reported that Vancouver Coastal Health has, since the end of this study, incorporated audio-conferencing between FPs and HHS into their strategies to encourage development of Integrated Primary and Community Care (IPCC) teams. Audio-conferencing between FP offices and HHS has been established in two communities (the North Shore and Richmond). The staff involved in this initiative report that although both FPs and HHS are encouraged to identify appropriate patients for audio-conferencing, the majority of scheduled audio-conferences to date have been initiated by HHS; this may in large part be due to the fact that shared patient reports are not yet provided to FPs on a regular basis. Therefore, although the audio-conferencing concept has spread as a communication strategy between HHS and FPs, the reciprocal decision making about which patients could benefit from a conference that was enabled for FPs through the shared patient reports in this study has not been implemented more widely to this point.

6.4.3 Recruiting Family Physicians

From the initial discussions held with researchers and leaders within the health authority and physician organizations, recruitment of enough FPs to make the study possible was raised as a potential and significant problem. For example, a physician leader who had been involved with initiatives to create interprofessional teams in Winnipeg, Manitoba commented that working with the physicians in solo practice was pioneering work (Mazowita 2006).

As described in the Methodology chapter, there was no available list of FPs working in Vancouver or in South Vancouver. Once a list was created for recruitment purposes, the task of contacting FPs to be able to explain the study so that they would have enough information to
make an informed decision to participate was time consuming, as there was no practical way to make appointments with FPs for anything other than patient care.

The formation of British Columbia’s Divisions of Family Practice may, in future, result in a streamlined process with regard to obtaining lists of physicians and/or finding physicians who are interested in participating in relevant research projects. However, in jurisdictions where there are no Family Practice Divisions, and in British Columbia currently, the ability to create a list of physicians for research recruitment purposes remains a challenge.

The process undertaken to recruit physicians into this study provides valuable information for others planning to engage in primary care research. For example, medical office assistants are the gatekeepers for FPs, and obtaining direct, personal contact with a FP (as opposed to communicating through the medical office assistant) was problematic. Yet it became clear that if direct contact was made with the FP, rather than relying solely on the medical office assistant to transmit the information, there was a much greater chance of being successful in recruiting the physician. On-site visits rather than telephone calls or letters were crucial to successful recruitment in most cases. Multiple visits were often required, and persistence in returning to the site until the practice environment was quiet enough to allow a FP to meet with the researcher or research assistant often paid off. Having a member of the research team meet directly with FPs was time intensive, but allowed for direct and accurate answers to FPs’ questions about the research project. In addition, the involvement of one of the research team members who is also a FP in contacting peers with whom she had a relationship to encourage their involvement in the study, and engagement with the Vancouver Coastal Health Practice Support Program staff who had relationships with many of the FPs, may have assisted in recruitment. Not all studies have these resources available and, in addition, researchers must balance the relative benefits of using this type of resource with the threat to generalizability of results, as well as the possible introduction of bias to the selection process.

Relating the experience with recruiting FPs from this study (e.g. benefit of in person visits and direct in person connection with the FP rather than the MOA, and the use of previous personal connections to FPs) back to the evidence, a parallel can be made between the feedback from HHS and FPs about the need to develop relationships as a prerequisite to improved collaboration about shared patients, and the advantage obtained by developing/utilizing relationships as a prerequisite for recruitment into the study. It would seem that role clarity and
trust are as applicable to developing collaboration for study recruitment as they are for interprofessional communication about shared patients (Baxter 2008), (Suter et al 2009, (Neergaard et al 2010). The traits of adaptability, flexibility and willingness to share with other team members, identified by Molyneux (2001) as important for role clarity and trust, share similarities with the concept of adaptive reserve as described by Miller et al (2010). Additionally, the concept of coherence, from Normalization Process Theory (May and Finch 2009), may assist in explaining the challenges inherent in physician recruitment. If FPs have not ascribed meaning to the intervention in a manner that would suggest added value to their practice, enrolment in a research study will not be seen as useful.

6.4.4 Difficulty of Implementing and Sustaining Change Across Systems/Sites

The fact that only six of eleven FPs tried audio-conferences at least once during the eight months of the intervention phase could be seen as a negative outcome of the study. Alternatively, considering Diffusion of Innovations theory (Sanson-Fisher 2004), the fact that over 50% of the intervention FPs used the audio-conferences could be seen as a very high ratio of “innovators” and/or “early adopters.” If one were to apply this theory, then based on the S-curve often used to show diffusion rates, one would expect 16% or less to have trialed the innovation as innovators/early adopters, particularly given the short life-span of the experiment (Boston University 2013).

The information provided by HHS in the focus groups, particularly from the program assistants, highlights the challenge inherent in implementing a change in highly structured systems. On the surface, to simply pre-schedule a time for a specific FP to talk on the phone with a few HHS members seems like it should be very easy to do. In practice, for HHS it required a project team (the South Research Group), reassignment of tasks for two program assistants, dealing with logistical issues such as finding private quiet space for audio-conferences, changes to the way HHS organized for meetings to include the staff members who specifically worked with one patient and his/her FP, and rapid improvement cycles to create new processes for scheduling conferences. Similarly for FPs and medical office assistants, it required changes to scheduling, incorporating new routines into a busy, highly structured schedule, and reinforcement of learning when the process was not clear. Thus, for both FP offices and HHS, to implement this seemingly simple intervention required significant change and commitment.
It is interesting that success led to commitment. Once the program assistants who were dealing with resistance from HHS observed clinicians come away from audio-conferences happy with the results, they became champions of the innovation. In addition, both FPs and HHS who used audio-conferences at least once seemed to like the intervention, and use it again. At an individual level, Normalization Process Theory (May and Finch 2009) may provide a possible explanation for this. For the FPs and HHS members who participated successfully in an audio-conference, one could posit that they had undergone the four processes Normalization Process Theory suggests are involved in adoption of a new practice: coherence, cognitive participation, collective action and reflexive monitoring (of which the feedback heard by the programs assistants would be part).

In a follow-up meeting with South Vancouver Community Health Center leadership (manager and staff who provide education and clinical leadership to HHS) to discuss the qualitative results, an observation by the leadership group was that active involvement of a researcher and research assistant was helpful to engage the FPs and was a key success factor for this project that will be difficult to replicate as the innovation is spread to other FP offices, unless similar support is provided. Therefore, for British Columbia-based FPs, where the General Service Practice Committee (GPSC) and Primary Care Practice Support Programs (PSP) (discussed previously in Chapter 3) are in place, the engagement of PSP leaders to support FP offices and HHS in engaging in new initiatives such as audio-conferencing may be advisable.

It was noted by the South Vancouver Community Health Center leadership team and by a member of the research team that the role of the HHS program assistants changed during this project; over time they came to function more like medical office assistants than program assistants, taking on a much more active role in terms of coordinating communication flow between HHS and FPs. This active role of program assistants may be key to sustaining initiatives that cross the two silos, particularly in the absence of automatic, electronic information flow such as having the FP EMRs interact with PARIS, and quite possibly even with larger system changes (such as electronic information flow).

It was noted earlier that South HHS asked for and received a separate audio-bridge number to use for FPs who were not part of the study (see “Unintended Impacts of the Study” in Chapter 5). Following completion of the study, the HHS manager reported that HHS continued regular use of the polycom and audio-conference line after the study was over (among
themselves and with other VCH services). As of April 2013, HHS staff had used the teleconference line and polycom for pre-discharge conferences with acute care staff, and for conferences with the Community Mental Health team (and other health authority programs) about patients they shared. It seems that for HHS, the innovative way to communicate about shared patients was sustained after the study ended, albeit not very consistently for communication with FPs. Examining Figure 2, the context for HHS and FPs in South Vancouver, one might observe that HHS are currently using audio-conferences with programs that fall on the right hand side of the diagram to communicate with programs that HHS regularly work with in their usual practice. Perhaps not surprisingly, it would seem that there are fewer barriers to integration of an innovation that facilitates more communication among programs or agencies that already have linkages (for example, the Community Mental Health teams also use PARIS, so HHS and mental health staff would both be aware when they share a patient).

6.5 Limitations

There are a number of limitations to interpretation of the results of this study. One important limitation is that quantitatively, a link between more interprofessional collaboration and better outcomes for patients is assumed, rather than directly evaluated, in this study design. As noted in Chapter 2, there is evidence linking interprofessional collaboration to improved patient outcomes. In addition, in both HHS focus groups and in interviews with FPs who used the audio-conferencing, there was an unequivocal belief that audio-conferencing provided benefit to the patients discussed in conferences. It would be possible in the future to undertake a study that explored impacts on patients, since patient-specific data for each FP who participated in this study are available through the HHS electronic documentation system (PARIS). In Vancouver Coastal Health, patient-level clinical data available on PARIS (e.g. use of home health services, wound care outcome data such as time to heal a wound, and assessment/re-assessment of patient function, pain, etc.) could be linked (using PHNs) to data available in other information systems, and therefore acute care and emergency utilization data (such as visits/admissions/length of stay) could be linked to the PARIS data of patients for whom a conference was held. Given that audio-conferencing has spread to other areas of Vancouver Coastal Health, there may be future opportunities for patient-outcome level research.
This study involved the participation of HHS employed by Vancouver Coastal Health in a professional role (nursing, occupational and physiotherapy, case management, nutritionist). A limitation of the study is that the non-regulated health workers (community health workers) who provide personal care to home health patients were not directly involved in the audio-conferences during this research protocol. The community health workers, who provide Home Support (personal care) services, generally see patients more frequently than professional staff, and potentially would provide valuable information to both FPs and HHS for proactive care planning. In future it would be helpful to consider ways to ensure the active participation of community health workers in patient care planning involving FPs and HHS.

Finally, the aim of this study was not to try to address the systemic issues (such as lack of co-location or other challenges the elimination of which would involve high cost or more disruptive organizational change) that are identified in the literature as barriers to interprofessional collaboration. Rather, the objective was to determine if lack of co-location and temporality barriers could be overcome, at least in part, by structured audio-conferences. The results of this study suggest that the answer is a qualified “probably”. Conceivably, changing the ways in which FPs are funded (e.g. salary versus fee-for-service) and/or changing the way HHS services are provided (e.g. such as the structure used by Community Health Centers in Ontario or Quebec as discussed in Chapter 3) might produce more effective and sustainable solutions to shared care for patients with complex and unstable health status.

In British Columbia, it may be possible in the future to trial innovations that involve some level of co-location and/or shared time between HHS and FPs through the Integrated Primary and Community Care (IPCC) initiatives (discussed in Chapter 3). This would require engagement by a Division of Family Practice with a local HHS team to evaluate unique arrangements (e.g. some co-location of HHS at a FP site that includes a larger number of FPs; use of FP chronic disease fee codes in innovative ways such as a FP “contracting” for HHS time to involve an inter-disciplinary team in primary care chronic disease management, etc.)

6.6 Generalizability

The most serious threat to internal validity for this study included the small sample size. Sample size calculations specified an initial target of 40 FPs for recruitment (as discussed in Chapter 4). Only 24 FPs were recruited, and two of these were lost during the study. With a
small sample, it is not possible to generalize study results to all solo and small group practice FPs, even in Vancouver Coastal Health, let alone beyond. Performing post-hoc power calculations based on study data suggests that the original targeted sample size was likely too small, given the variability in the number of shared patients across FPs in South Vancouver (leading to a high standard deviation). For the total recruited sample of 24, the average number of shared patients in the pre-study period was 10.14 patients, with a standard deviation of 8.45. Using a one-sided test, with 80% power and alpha = 0.05, this study would have required a sample size of 76 FPs in total (38 per group) to achieve statistical significance if the average number of patients was increased to 15.\(^{10}\) Given the time commitment and difficulty in recruiting 24 FPs, to recruit 76 FPs would have required inclusion of multiple home health sites, and introduced multiple additional barriers to implementation of the study. Additionally, it was determined during this study that contacts between FPs and HHS about shared patients are relatively rare (the most common value for average contacts about shared patients per month was “0”). Therefore, contacts about shared patients, rather than shared patients, may have been a more appropriate measure to determine study power.

In addition, the original research design for this study called for an eighteen-month study period, with the intervention phase continuing for twelve months. Due to the fact that the funding source secured for this study limited the research to twelve months, the study design was revised to fit the funding criteria. As a new procedure such as scheduled audio-conferencing involving numerous sites takes time to implement, no audio-conferences occurred in the first two to three months of the intervention phase, which meant that effectively there were only five months for HHS and FPs to experience audio-conferencing about shared patients. This was because although as much pre-planning as possible was completed in the baseline period, the FPs were not randomized to control/intervention groups until the end of the baseline period. Therefore, the choice of pre-scheduled times, and the education for intervention FPs could not occur until after the baseline period was complete (and both the FPs and HHS knew with which FPs they would be working). It is not possible, given the short exposure to the intervention, to determine whether the FPs who used the audio-conferencing would have continued to do so or might even have

\(^{10}\) Calculations completed using a UBC on-line site created by Rollin Brant and available at http://www.stat.ubc.ca/~rollin/stats/ssize/n2.html.
increased their use of this resource, or whether the intervention FPs who did not use the audio-conferencing might have eventually tried it out.

There are a number of factors associated with sampling techniques that limit internal and external validity. The study deliberately introduced sampling error, as noted in the Methodology section. Although the FPs were randomized to the control or intervention group, three of the FPs agreed to be part of the study on the condition that they were placed in the control group. Consequently, there may be systematic differences between FPs in the two groups even with randomization due to the fact that three FPs were pre-assigned by choice. Given the considerable variability among the FPs (e.g. difference in average numbers of shared patients with HHS and in average numbers of contacts with HHS per shared patient), it is unlikely that pre-assigning three FPs to the control group based on their request affected study generalizability relative to other factors discussed in this section.

Both the FPs and the HHS involved in this study had, on average, many years of experience, which could affect generalizability of study results among FPs and HHS who are less experienced. However, there is a high likelihood of sampling bias that would limit external validity of the study results, due to the use of a convenience sample of FPs, as FPs who agreed to participate in this study may have had different characteristics that FPs who chose not to participate.

This study took place in one geographic area of one urban city. Although the services delivered by Home Health and primary care are very similar across the province (and the country) there may be some differences between South Vancouver and other jurisdictions that would limit the external validity of the results from this study to other jurisdictions. For example, the fact that a high proportion of South Vancouver residents do not speak English as their primary household language may affect generalizability to areas of Canada where English is the primary language, and the issues affecting HHS and FPs in rural areas are very likely different from those facing urban professionals.

One of the research team members is a respected FP in Vancouver, and used her influence to assist in recruiting FPs and to encourage FPs to complete post-study surveys. This involvement may have influenced the study results; however, the threat to generalizability in this case was balanced against the need to recruit and retain as many FPs as possible.
In addition, the staff of South Vancouver Community Health Center had a previous relationship with the primary researcher, which resulted in provision of significant support for the researcher to undertake this study. The combination of being engaged in identification of the research questions and development of the study protocol, as well as the previous relationship with a researcher engaged in the study, certainly influenced the motivation of the HHS engaged in this study to participate in a meaningful way. Therefore, the experience of engaging HHS as documented in this study may not be generalizable to other HHS teams.

6.7 Future Practice and Research Implications

There are many implications arising from this study, from the perspective of quality improvement for Vancouver Coastal Health (and other jurisdictions) and in terms of future research. Some implications relate to refinement of audio-conferencing and other tools that may promote improved communication between primary care and community health services, while other implications relate to generation of new knowledge about factors influencing collaborative interprofessional care.

With regard to refined understanding of how to use audio-conferencing, there are a number of areas of further exploration logically following from this study. For example, HHS and FPs linked appropriate use of audio-conferences, in the focus groups and interviews, to specific types of patients or patient situations, including those with medical complexity, those with social complexity, and those who were in transition. Further research is warranted in this area. The categories “medical complexity”, “social complexity” and “transitions” would be important to consider in any research that directly considered outcomes for patients for whom FPs and HHS engaged in audio-conferencing (or other tools that led to proactive shared care planning). The health and patient experience indicators chosen to evaluate success would be somewhat different for these three different patient categories. For example, clinical health outcomes (such as appropriate symptom control for palliative patients or wound heal rate for patients with skin breakdown) would be important for the medical complexity category. However, for the social complexity category, consistency of the patient experience across multiple providers would be a central consideration, and for patient transitions, safety indicators (such as medication reconciliation, or the patient receiving services and equipment in a timely manner) would be significant.
A further area for research with regard to categories of patients for which conferencing is useful would be to refine a set of criteria that FPs and HHS could use to quickly and practically make consistent, standardized decisions about whether or not a conference is required. Given that FPs and HHS are limited in their ability to control many factors that influence interprofessional communication (most importantly, location of care and shared time for collaboration), tools that can assist clarification of roles (a third factor important to collaboration) may be useful. Simple, easy to use criteria that are understood by both FPs and HHS about how to identify patients for whom conferencing would be helpful might provide such a bridge.

An additional, practical reason for having criteria for conferencing is the ratio of staff involved in the audio-conferencing. For any specific audio-conference, there can be up to 4 HHS members (the average was 2.1 per conference) as well as the FP participating to discuss one patient. The qualitative data from this study point to the fact that for certain patients, this involvement of FP and all HHS members can actually lead to more efficient communication. However, it will be important not to “overuse” conferencing for communication that does not require the entire team. Having some criteria to guide the use of audio-conferencing would assist in this regard.

More generally, an issue beyond the scope of this study relates to how much communication between FPs and HHS about shared patients is optimal, and what tools or processes can be used to ensure the communication is efficient and promotes improved patient health outcomes. From the perspective of generating new knowledge that would inform the literature about interprofessional collaboration, studies that explore the nature of high quality interprofessional communication would supplement existing knowledge in the literature about the characteristics of individuals and teams who are more or less effective in using interprofessional communication to improve the care of their patients. Either interviews with FPs and HHS about their experiences with “effective” and “ineffective” communication with each other, or a case study approach to identifying what processes FPs and HHS have found to be effective would provide a starting point that could lead to more quantitative study designs.

The observation, from the qualitative data presented in this study, that the audio-conferences may fill a gap in terms of pro-active communication, also has implications both for quality improvement within Vancouver Coastal Health and other jurisdictions, and for future research about the factors affecting interprofessional collaboration. For Vancouver Coastal
Health and other health authorities, the analysis of results from this study may assist by providing some insights and direction that can lead to development of processes and tools promoting proactive shared care planning, rather than the just-in-time, one-way, reactive information exchange that is currently the norm. Although audio-conferencing is a starting point, perhaps the more fulsome knowledge about why HHS and FPs would use audio-conferencing (i.e. for anticipatory shared care planning) may surface other approaches to increasing the currency of such planning.

In terms of research implications, reactive versus anticipatory communication was not explicitly discussed in any of the existing, reviewed literature about factors influencing interprofessional collaboration. The factors that were discussed in chapter two, such as co-location and temporality; role clarity and knowledge; power and status; and consistent processes, do not differentiate between these two kinds of communication. It may be that some of these known factors are more facilitative of reactive or proactive communication. Arguably, the attainment of better patient outcomes in the management of chronic diseases requires a more proactive approach, engaging the patient as a partner, and involving the entire care team. Therefore, research about what factors (and tools) are facilitative of successful proactive interprofessional communication would be relevant to effective policy development.

For future research projects involving solo and small group FP participants, recommendations from this experience include allowing enough time for the recruitment process (months rather than weeks), ensuring that recruitment and introduction letters are followed up with in person drop-in visits that lead to appointments with the FPs (short, at the beginning or end of their work day, or before or after their lunch break), being persistent and planning for multiple visits, ensuring that a researcher with direct knowledge of the study is available for in person visits and, if possible, including a respected FP on the study team.

The fact that clinicians for whom the study question was meaningful were engaged throughout the study process, from developing the questions and protocol to implementing the intervention and providing feedback on results, is appropriate for research that has an aim of spreading successful elements of the intervention to colleagues. As discussed in the introductory chapter to this thesis, this study involved a research team that included an industry partner and a senior executive decision maker at Vancouver Coastal Health. Inclusion of an industry partner that not only provided in-kind funding, but also provided a representative who joined the
research team, allowed for knowledge translation between the industry, Vancouver Coastal Health, and the clinicians involved in the study. Including a senior executive provided opportunities for knowledge translation throughout the organization that would not have occurred otherwise. The fact that the intervention utilized in this study has already been integrated across the health authority is an example of the power of interdisciplinary research teams that include decision makers, industry, clinicians and researchers.

Application of a temporal logic model (Figures 1 and 7) was a valuable tool for conceptualizing this study and for analyzing results. The use of a temporal logic model provided an opportunity for increased understanding about how the intervention inputs, outputs and outcomes related to each other. Revisiting the logic model led to a refined definition of the study aim and targeted patient population. Therefore, revision of the temporal logic model provided an opportunity to integrate the knowledge generated through evaluation of the intervention. Application of a logic model, and revision based on evaluation, may be a very relevant and useful process for other studies that involve clinicians, decision makers and researchers in health services research.

For research funding bodies, implications arising from this study include the need to ensure that grant proposals aimed at creating interdisciplinary research teams (including clinicians, decision makers and researchers) allow enough flexibility, funding and time for team development and change management, as well as implementation of interventions. Criteria for funding grants for interdisciplinary teams working at creating new knowledge or new ways of working together across silos must include the flexibility for research designs (methodology and analysis) that are practical and adaptable.
7 Conclusion

The problem that led to undertaking this study was identified by HHS and FPs, who have often raised concerns about the difficulty they had communicating consistently with each other about the care plans of complex patients (palliative; seniors with deteriorating health, social and functional status; and post-operative patients with complications). The literature confirmed that FPs have identified problems in communicating with HHS: telephone tag; not knowing which HHS member to communicate with; lack of continuity among HHS members; not knowing whether or not to trust the clinical judgment of specific HHS staff (Aubin et al 2001). In addition, the issues that HHS articulated with FP communication (telephone tag; FPs who were unavailable due to working part-time or not having after-hours call arrangements; FPs who did not have (or did not turn on) fax machines; and FPs who did not return calls) were very similar to issues that had been identified in the literature (Street and Blackford, 2001), (Fairchild et al 2002).

The availability of an interdisciplinary and broad research team (including the thesis committee, a broader research team that included health authority decision makers and a telecommunications industry representative, the South Research Group, and a broader decision maker reference group) provided opportunities for insight into the study process and study results. The use of mixed methods for this study provided rich data, in terms of further understanding the nature of the difficulties with communication about shared patients between FPs and HHS, as well as surfacing ideas for future research and policy directions for Vancouver Coastal Health and other jurisdictions in Canada. In addition, use of a temporal logic model (Rogers 2008), (den Heyer 2002) provided a practical method to conceptualize changes in understanding of how the components of the study linked together that occurred due to evaluation of the intervention.

In the short time during which audio-conferencing was available, and within this small sample of FPs, the intervention did not significantly influence the average number of shared patients per FP and other quantitative variables under study. However, both HHS and FPs who participated in audio-conferences about shared patients believed that the use of conferencing led to better shared care for their patients. In addition, intervention FPs who participated in the
intervention perceived that the communication they had with South HHS became more efficient, and that for some patients with complex health care needs a consistent, shared care plan was better developed through use of the conferences than traditional methods of communication. Both FPs and HHS who participated improved their knowledge of the services offered by each other, leading to increased interprofessional role clarity, an important factor identified in the literature for successful collaboration.

In terms of future research, it would be useful to explore the factors that influence proactive, versus just-in-time communication between FPs and community health staff. In addition, future research with larger sample sizes of FPs, a longer ‘run time’, and engaging more than one HHS team is warranted. The research reported here suggests that innovations in communication, and system redesign to support the innovations, holds considerable promise for improved FP-HHS interaction and, likely improvement in patient outcomes and quality of life.

To engage more HHS and more FPs in regular, structured, conferencing about shared patients will require new ways of organizing HHS systems. In the short term, support of the Primary Care Practice Support Team to assist HHS offices and FP offices to implement processes that facilitate audio-conferencing would be very helpful. Support to HHS program assistants to take a more active role in connecting HHS and FPs will be required, as their role traditionally does not include this component. Enabling PARIS (the HHS clinical documentation system) to automatically fax information to FP offices (such as shared patient reports) would go a long way toward supporting interprofessional collaboration, as FPs would have a list of their patients who are also shared with HHS. Spreading the use of the adapted community SBAR to other HHS teams could assist in ensuring that when audio-conferences occur, they are short and focused on achieving a shared care plan.

While this study has shown that audio-conferencing between FPs and HHS can provide an additional communication tool that assists in bridging the divide between primary and community care, it can only be part of the solution. To achieve full interprofessional collaboration will require larger, systematic changes. For example, all FP offices must be on electronic medical records (i.e. no more paper charts) and connectivity between PARIS and FP electronic medical records must be enabled. Although new billing codes in British Columbia have enabled FPs to provide better chronic disease management within their own practice, to date they have not enabled FPs to connect in real time with HHS for shared care arrangements.
Different practice arrangements for both FPs and HHS (such as wide-spread use of Community Health Centers) would be required that would enable co-location and spontaneous consultation about shared patients.

In Vancouver Coastal Health, audio-conferencing has been incorporated into new initiatives designed to integrate primary physician care with home health services. In two communities (North Shore and Richmond), the conferences are showing initial success, and early evaluation results are positive.
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### COMMUNITY SBAR GUIDE
For Community Staff Consultation with a Physician

<table>
<thead>
<tr>
<th><strong>S</strong> Situation</th>
<th><strong>B</strong> Background</th>
<th><strong>A</strong> Assessment</th>
<th><strong>R</strong> Recommendation</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client name and location:</td>
<td>Relevant past history and care plan information:</td>
<td>The client has changed/is deteriorating/etc.:</td>
<td>Suggestions or requests (yours, physicians, clients):</td>
<td></td>
</tr>
<tr>
<td>Calling about:</td>
<td>What has already been tried (if relevant):</td>
<td>Presenting conditions or behaviors:</td>
<td>Follow-up Plan:</td>
<td></td>
</tr>
<tr>
<td>(what is the concern, problem, condition change, need for orders, etc.)</td>
<td>Consider other relevant clinical information:</td>
<td>Signs and symptoms:</td>
<td>Orders?</td>
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</tr>
<tr>
<td></td>
<td>Lab Data (HbA1C, electrolytes, Urea, Crea)</td>
<td>Collateral information (other programs such as Mental Health and Addictions; other disciplines, specialists, etc.):</td>
<td>Further communication? (who, when, how):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Blood Pressure _________</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weight _________</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Medication issues (compliance, errors)</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Nutrition Issues (recent changes)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Activity (note any change)</td>
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<td></td>
<td>Behavior (note any recent changes)</td>
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</tr>
<tr>
<td></td>
<td>Mobility (note changes, falls)</td>
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</tr>
<tr>
<td></td>
<td>Code Status (if appropriate)</td>
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</tr>
<tr>
<td></td>
<td>Foot Care (ulcers, infections, reduced sensation)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mental Status (note any change)</td>
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**NOTE:** This is a communication tool, not part of the client’s clinical chart. Use it to organize your communication with the physician, and then shred. Do not add this to the chart. Document your conversation with the physician according to your usual guidelines in the client chart.
Appendix B: Sample Copy of the Weekly PARIS Report Showing Shared Patients Between HHS and FPs Over the Period of Study

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<thead>
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<th>GP_NAME</th>
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<td>Team Name (All)</td>
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<tr>
<td>Staff Discipline (All)</td>
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</tr>
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<td>Referral Reason (All)</td>
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Count of Referral ID

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<th>Total</th>
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<tr>
<td>23232-TEST</td>
<td>CHN Louis Mak</td>
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</tr>
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<td>23232-TEST</td>
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<td>23232-TEST</td>
<td>CMSW Susan Shaw</td>
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<td>23232-TEST</td>
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<td>GVCSS HOME SUPPORT</td>
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<td>23232-TEST</td>
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Names in this table have been changed to respect privacy.
Appendix C: Physician Contact Letter

THE UNIVERSITY OF BRITISH COLUMBIA
School of Population and Public Health

[Contact Info/Address of GP]
March 22 2010

Effectiveness of an intervention to increase communication and collaboration between solo/small group practice general practitioners and home health staff

Research Team:
Dr. Morris Barer and Dr. Sam Sheps (Co-Principal Investigators)
Shannon Berg, MSc, BScOT, PhD Candidate, School of Population and Public Health, University of BC and Acting Executive Director Home & Community Care, Vancouver Coastal Health,
Dr. Margaret McGregor, Clinical Assistant Professor, Department of Family Practice, Faculty of Medicine, University of BC
Dr. Sabrina Wong, Assistant Professor, School of Nursing, University of BC

Dear [Dr. ]:

We are writing to request your participation in a study, the objective of which is to enhance your ability to work collaboratively with Vancouver Coastal Health Home Health staff (home care nurses, case managers, occupational therapists, physiotherapists) when a patient of yours is also on the Home Health caseload. The study is funded by the Canadian Institutes of Health Research (CIHR) and also has in kind funding from TELUS Business Solutions and Vancouver Coastal Health.

The purpose of this study is to assess the feasibility of a targeted communications strategy consisting of regularly scheduled and structured secure audio-conference meetings to increase communication and collaboration about patients shared between home health staff and general practitioners working in small group or solo practices in the South Vancouver Community Health Center catchment area.
Study Procedures:
If you agree to participate, the time that you and your Medical Office Assistant (MOA) spend on the study will be reimbursed. You will be asked to complete a survey about your perceptions of the quality of collaboration between you (GP) and the South Vancouver Home Health staff, and we will collect general information about you and your practice (e.g. years in practice, languages of practice, number of patients etc.). We will also schedule an interview with you to explore the extent to which your personal experience mirrors evidence in the academic literature on barriers to communication between GPs and Home Health.

For a baseline period of three months, we will measure the nature and extent of your involvement with South Community Health Center Home Health staff. Following this baseline period, you will be assigned to one of two GP groups – either we will continue to record data about your shared patients, new referrals and contacts as we did during the three month observation period (control group), or you will become part of an intervention group.

The intervention group in this study will have secure audio-conferences with home health staff at pre-scheduled times using a standardized communication process to facilitate efficient, effective communication about shared patients. The intervention period will consist of eight months.

Following the eight-month period, all participating GPs (intervention and control) will complete a survey about perceptions of collaboration. In addition, if you were in the intervention group we may ask you to participate in a post-intervention interview about which parts of the intervention (if any) you found most valuable, and what supports and resources would be required to maintain the intervention past the study period.

A research assistant will work with you and your MOA to collect the data required for this study. If you are assigned to the intervention group, TELUS Business Solutions and the research assistant will ensure that your secure audio-bridge is in place and working so that you can participate fully in the intervention.

None of your patients will be contacted by the research team. No information about specific patients will be collected by the research team. We will obtain secondary data (with no identifiers) about the number of shared patients you have with the South Home Health team through the Vancouver Coastal Health community information system (PARIS).

We can provide you with a poster for your office stating that you are participating in a research study to determine ways to increase collaboration between GPs and Home Health staff. In addition, if you agree, we may promote your involvement in research through VCH and local media (e.g. Southeast Vancouver newspapers and ethnic media).
All results of the study will be shared with you throughout the study. The research team values your input into the study process and design, and your feedback specifically about feasibility issues and additional ways to improve the communication mechanisms between GPs and home health staff are welcome. In addition, the BCMA Practice Support Program, the BC College of Family Practitioners, Vancouver Coastal Health, and the Ministry of Health Services (Home and Community Care and Primary Health Care divisions) are all involved in this study as stakeholder partners, and will be kept up to date throughout the study. They will have a critical role both informing the research project and, in particular applying evidence obtained from this research to inform policy development and/or recommendations of changes to reimbursement and reward structures.

Remuneration/Compensation:
You will be compensated for the time you spend on activities related to this research project at current BC sessional rates, or the hourly equivalent for less than a full session. In addition, you will be reimbursed for time that your MOA spends on this research project at a rate consistent with the current rate used by the General Practice Services Committee for learning sessions provided through the Practice Support Program.

Potential Risks:
There are no known risks of participating in this research study. Additional research-related time for you and your MOA will be reimbursed based on documentation you provide. The time required for participation will vary, but it is anticipated that approximately 2-3 hours will be required at the beginning of the study to gather baseline data (interviews and survey), and a half-day or less would be required for your MOA to set up data collection methods with the study research assistant. During the study period, a minimal amount of your MOA's time will be required for documentation of the number of communications about shared patients. If you are assigned to the intervention group, there will be a maximum of 1 hour set-up and education by TELUS Business Solutions to ensure the secure audio-bridge is functioning, and then regular tele-conferences set up with the South Community Health Center home health staff. At the end of the study, a further 1 to 2 hours will be required for data gathering (interviews and survey).

Potential Benefits:
Through this research we hope to identify ways to improve collaboration between you and the home health staff who share the care of your patients; this may lead to improved integration of care for those of your patients who can benefit from the services offered through home health. Increased collaboration and communication has been shown in some published research to improve health outcomes for patients in a number of settings, including primary care. In addition, through this research project you may develop a better understanding of the roles of other health professionals in the care of patients that you share, which may provide you with increased clinical resources on which you can draw in future to better meet the needs of your patients.
The South Vancouver Home Health staff has determined that collaboration and communication with you and other GPs in South Vancouver is crucial to their ability to provide the best possible care to their patients, and your participation in this study will also assist Home Health staff to improve their ability to communicate about shared patients with you.

Confidentiality:
Your identity will be kept strictly confidential in study documentation, as all study documents will be identified only by code number and all electronic information will be kept on a secure computer system with firewall and password protection (UBC and/or VCH), while all paper documentation will be stored in a locked filing cabinet. You will not be identified by name in any reports of the completed study.

As the study involves interaction with other health professionals, only limited confidentiality can be offered among the practice community. The Home Health staff will participate in focus groups, and while we encourage all participants to refrain from disclosing the contents of the discussion outside of the focus group, we cannot control what other focus group participants do with the information discussed.

Thanks very much for considering your participation in this research project.

Contact for information about the study:
In the next two weeks you will be contacted in person by Shannon Berg. If you have questions or would like more information you can also contact Shannon at , or any of the other members of the research team.

Sincerely,

Dr. Samuel Sheps,
Director, Western Regional Training Centre for Health Services Research;
Western Regional Mentoring Coordinator CHSRF EXTRA Program;
Professor and Director MSc/PhD Program
School of Population and Public Health, Faculty of Medicine

Dr. Morris Barer, MBA, Ph.D., FCAHS
Director, Centre for Health Services and Policy Research;
Professor and Co-Lead, Health Care Services and Systems
School of Population and Public Health, Faculty of Medicine
Appendix D: Physician Consent Letter

THE UNIVERSITY OF BRITISH COLUMBIA
School of Population and Public Health

"Consent Form"
Effectiveness of an Intervention to Increase Communication and Collaboration Between Solo/Small Group Practice General Practitioners and Home Health Staff

Co-Principal Investigators:
Dr. Morris Barer, Center for Health Services and Policy Research, University of BC,

Dr. Sam Sheps, Faculty of Medicine, University of BC,

Co-Investigators:
Shannon Berg, MSc, BScOT, PhD Candidate, School of Population and Public Health, University of BC and Acting Executive Director Home & Community Care, Vancouver Coastal Health,

Dr. Margaret McGregor, Clinical Assistant Professor, Department of Family Practice, Faculty of Medicine, University of BC

Dr. Sabrina Wong, Assistant Professor, School of Nursing, University of BC

Research Team Members:
Duncan Campbell, Chief Financial Officer, Vancouver Coastal Health
Ginger Brown, Manager, Adult/Older Adult Program and Primary Care,
Bruce Matthews, Client Executive – Health Sector

Sponsors:
Canadian Institutes of Health Research
TELUS Business Solutions
Vancouver Coastal Health

Purpose:
The purpose of this study is to assess a targeted communications strategy consisting of regularly scheduled and structured secure audio-conference meetings to increase communication and collaboration about patients shared between home health staff (HHS), and general practitioners (GPs) working in small group or solo practices, in an urban, multicultural setting. This study will involve the HHS and 40 GPs (representing the area’s ethnic diversity) providing service in South Vancouver Health Service
Delivery Area. You are being invited to take part in this research study because you are a general practice physician providing care to residents of South Vancouver, within the catchment area of South Community Health Center (SCHC). Therefore, when your patients require the services of HHS (home care nurses, case managers, occupational and physical therapists and/or nutritionist) you will have a shared care relationship with these HHS for your patient.

Study Procedures:
If you agree to participate in this study, the extra research-related time that you and your Medical Office Assistant (MOA) spend on the study will be reimbursed. You will be asked to complete a survey about your perceptions of the quality of collaboration between you (GP) and the SCHC HHS, and we will collect general information about you and your practice (e.g. years in practice, languages of practice, etc.). We may also explore with you, through interview, the extent to which your personal experience mirrors evidence in the academic literature on barriers to communication between GPs and HHS.

For a period of three months, we will measure the nature and extent of your involvement with SCHC. Following a three month baseline observation period, you will be assigned to one of two GP groups - either we will continue to record data about your shared patients, new referrals and contacts as we did during the six month observation period (control group), or you will become part of an intervention group.

The intervention that will be applied for the intervention group in this study includes secure audio-conferences with HHS at pre-scheduled times using a standardized communication process to facilitate efficient, effective communication about shared patients. We will continue to measure the number of shared patients, new referrals and number of contacts about shared patients for both groups of GPs to determine if the intervention makes a difference. The intervention period will consist of eight months.

Following the eight-month period, the survey about perceptions of collaboration will be re-administered to all GPs participating in the study. In addition, we may ask you to participate in an interview to determine which parts of the intervention (if any) you found most valuable, and what supports and resources would be required to maintain the intervention past the study period.

A research assistant will work with you and your MOA to collect the data required for this study. If you are assigned to the intervention group, an TELUS Business Solutions and the research assistant will ensure that your secure audio-bridge is in place and working so that you can participate fully in the intervention.

None of your patients will be contacted by the research team. No information about specific patients will be collected by the research team, although you and the SCHC HHS will be aware of the demographic and clinical information about your shared patients. We will obtain secondary data (with no identifiers) about the number of shared
patients you have with SCHC through the Vancouver Coastal Health community information system used by HHS (PARIS).

We will provide you with a poster for your office stating that you are participating in a research study to determine ways to increase collaboration between GPs and HHS. In addition, if you agree, we may promote your involvement in research through VCH and local media (e.g. Southeast Vancouver newspapers and ethnic media).

All results of the study will be shared with you throughout the study. The research team values your input into the study process and design, and your feedback about how to improve the communication mechanisms between GPs and HHS will be welcome throughout the study. In addition, the BCMA Practice Support Program, the BC College of Family Practitioners, Vancouver Coastal Health, and the Ministry of Health Services (Home and Community Care and Primary Health Care divisions) are all involved in this study as stakeholder partners, and will be kept up to date throughout the study. They will have roles of both informing the research project and applying evidence obtained through policy development changes and/or recommendations of changes to reimbursement and reward structures.

Potential Risks:
There are no potential risks of participating in this research study. Additional research-related time for you and your MOA will be reimbursed when you provide appropriate documentation. The time required for participation will vary, but it is anticipated that approximately 2-3 hours will be required at the beginning of the study to gather baseline data (interviews and survey), and a half-day or less would be required for your MOA to set up data collection methods with the study research assistant. During the study period, a minimal amount of your MOA's time will be required for documentation of the number of communications about shared patients. If you are assigned to the intervention group, there will be up to 1 hour of set-up and education to ensure the secure audio-bridge is functioning, and then regular tele-conferences set up with the SCHC HHS. At the end of the study, a further 1 to 2 hours will be required for data gathering (interviews and survey).

Potential Benefits:
Through this research we hope to identify ways to improve collaboration between you and the HHS who share the care of your patients; this may lead to higher quality of care for those of your patients who can benefit from the services offered through HHS. Increased collaboration and communication has been shown in some published research to improve health outcomes for patients in a number of settings, including primary care. In addition, through this research project you may develop a better understanding of the roles of other health professionals in the care of patients that you share, which may provide you with an increased array of resources on which you can draw in future to better meet the needs of your patients.

The SCHC HHS have identified that collaboration and communication with you and other GPs in South Vancouver is crucial to their ability to provide the best possible care.
to their patients, and your participation in this study will also assist the HHS to improve their ability to communicate about shared patients with you.

Confidentiality:
Your identity will be kept strictly confidential, as all study documents will be identified only by code number and all electronic information will be kept on a secure computer system with firewall and password protection (UBC and/or VCH), while all paper documentation will be stored in a locked filing cabinet. You will not be identified by name in any reports of the completed study.

As the study involves interaction with other health professionals, only limited confidentiality can be offered among the practice community. The HHS will participate in focus groups, and while we encourage all participants to refrain from disclosing the contents of the discussion outside of the focus group, we cannot control what other participants do with the information discussed.

Remuneration/Compensation:
You will be compensated for the time you spend on activities related to this research project at current BC sessional rates, or the hourly equivalent for less than a full session. In addition, you will be reimbursed for time that your MOA spends on this research project at a rate consistent with the current rate used by the General Practice Services Committee for learning sessions provided through the Practice Support Program.

Contact for information about the study:
If you have any questions or desire further information with respect to this study, you may contact Shannon Berg at , or any of the other members of the research team.

Contact for concerns about the rights of research subjects:
If you have any concerns about your treatment or rights as a research subject, you may contact the Research Subject Information Line in the UBC Office of Research Services at 604-822-8598 or if long distance e-mail to RSIL@ors.ubc.ca.

Consent:
Your participation in this study is entirely voluntary and you may refuse to participate or withdraw from the study at any time without jeopardy of any sort.

Your signature below indicates that you have received a copy of this consent form for your own records, and that you consent to participate in this study.

____________________________________________________
Signature Date
Please print your name here.
Appendix E: One Page Summary

Official title: Effectiveness of an intervention to increase communication and collaboration between solo/small group practice GPs and home health staff

Lay title: Bridging silos: increasing collaborative teamwork between physicians and home health staff

Background: GPs and home health staff (home care nurses, community occupational and physical therapists, case managers, nutritionists) share complex acute and chronically ill patients, but experience significant barriers to collaborative care.

Study Objective: This study brings together a team of researchers, policy makers, and providers to assess the effectiveness of applying high quality, secure audio-conferencing at recurring, pre-scheduled times, along with a structured process for communicating between GPs and home health staff.

Method: The study will involve home health staff from South Vancouver and a convenience sample of 40 GPs who provide service in South Vancouver. Following a baseline measurement period, GPs will be assigned to an intervention group or a usual communication group. Outcome measures will include whether or not there is a significant increase in shared patients, increase in communication about shared patients, and increase in satisfaction with collaboration between GPs and home health staff.

Implications/significance: This study will determine critical factors for sustaining the intervention if it is successful.

Ethics: This study has ethics approval from both UBC and VCHRI. No patient specific information will be collected and researchers will not have access to patients.

IMPLICATIONS FOR GP OFFICES: The study has a research assistant involved. We will work with office assistants/managers to ensure that data collection makes sense within the workflow for each GP office, and minimize the extra work for GPs and office assistants.

There is time-limited work at the beginning and at the end of the study which will be reimbursed (likely 1/2 hour to two hours depending on the physician, and could be broken up). The ongoing need (also reimbursed) is for the office assistant to work with the research assistant to capture the following information for “shared patients” – the number of times a GP communicates with South home health staff about a shared patient (phone, fax, etc.); the date of the communication, and the number of times a GP uses specific billing codes (CD codes, telephone code, community conference fee code) for these shared patients. NOTE that currently, at any one time, the number of shared patients is low (range from 0 to perhaps 15). We expect that the number will go up, but still will not be onerous.
Appendix F:  Form for Recording the Number of Communications Between Family Physicians and Home Health Staff

Instructions: Please place a check mark next to the date under the appropriate column each time the doctor communicates with the South home health staff about a shared patient. If there is more than one communication per day, please place additional check marks corresponding to the number of communications made.

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<td></td>
<td></td>
</tr>
<tr>
<td>28-Aug-10</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>29-Aug-10</td>
<td></td>
<td></td>
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<tr>
<td>30-Aug-10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31-Aug-10</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix G:  Procedure for Quantitative Data Collection

Procedure for Accessing PARIS
1. Open Referral Module.
2. Enter client information and search for client.
3. Once client is found, click Enter to enter referral.
4. Client may or may not be currently receiving services from CHC.
   a. If client is currently receiving services from CHC, proceed to next step.
   b. If client is no longer receiving services from CHC, select “Yes” to open a new referral and create an AFIO referral to same South AOA team client previously seen by per PARIS Quick Steps with current date. Proceed to next step.
      i. If entered client more than once (i.e., a previously opened AFIO indicates this file has already been reviewed for this study), make new referral Entered in Error per PARIS Quick Steps and include the following casenote to the referral: “Entered in error. Already checked to count frequency of contacts between CHW and GP, research project.” Discharge and restart with new client.
5. Expand Aoa-6 team tab under Referral Module.
   a. Verify which disciplines are still seeing client and check each Referral Casenote for any communication with GP during study period.
      i. If contact occurred, record date and type of contact in Excel.
      ii. If no contact, nothing is recorded.
6. Open Casenotes Module.
   a. Expand all tabs.
   b. Close all tabs with casenotes/progress notes prior to April 1, 2010 and all other unnecessary tabs (e.g., Aoa-Van Residential Care).
   c. Enter each casenote starting April 1, 2010 to August 31, 2011* and check for any communication between CHW and GP.
      i. If contact occurred, record date and type of contact in Excel.
      ii. If conference occurred, record date in Excel. In separate spreadsheet, record # of staff attended, disciplines, # of clients discussed during conference.
      iii. If no contact, nothing is recorded.
7. Once complete check of casenotes is done, click Close All and restart.
   a. If AFIO was opened, add following casenote to AFIO referral: “Opened to count frequency of contacts between CHW and GP, research project.” discharge AFIO per PARIS Quick Steps, and click Close All to restart.

*Coding done June 2-15, 2011 reviewed casenotes from April 1, 2010 to May 31, 2011. Coding done Sep 12-21, cross referenced client lists such that all new clients not reviewed previously are coded for full study period of April 1, 2010 to August 31, 2011. The client files coded previously were then checked for the remainder of the study period, June 1, 2011 to August 31, 2011.
Recording Communication

- Study period = April 1, 2010 to August 31, 2011
- # recorded is # faxes or telephone calls made or received, # of conferences done total per day (not per client & irrespective of which CHW the contact is made with)
- Blank or 0 = no contact made that day
- Only Referral, Progress Notes, and Group Notes in Casenotes Module for South CHC (i.e., Aoa-6) teams are checked for communication
- Any uncertainty in the meaning of a casenote or clarification as to abbreviations or terms used in a casenote are verified via phone call to any AOA Program Assistant at South Health Unit, who may answer the question directly or speak with a clinician to clarify and confirm meaning.
- Assumptions/Decisions:
  - Receipt or provision of POF/instructions from/to GP without stated call or fax in casenote is assumed to be written fax contact
  - Assume one conference call per day therefore 0 or blank = no conference, 1 = conference
  - Any phone calls to GP office requesting & procuring client information from reception counted as telephone contact (indirect GP contact – e.g., )
  - Any notes indicating a “recommendation to contact GP” or “will contact GP” or contact to GP under “Plan” is not counted as contact unless stated contact is made following recommendation
  - Only notes indicating contact between CHW and GP is counted (not contact between client or client’s caretaker and GP that is relayed to CHW)
  - Messages left on voicemail to/from GP or with GP reception are counted as telephone contact (attempted contact)
  - Attempted calls with no contact with GP or reception counted as telephone contact (attempted contact)
  - Only conference notes with GP present counted and recorded
  - Any direct telephone contact with GP where written information was agreed to be exchanged, one contact is recorded for telephone and one for fax assuming written information was exchanged via fax on the same day unless a later casenote clearly confirms receipt of specified written document, in which case faxed contact will be recorded as normal (e.g., )
  - Any note indicating “multiple calls” is counted as one contact (e.g., )
  - Any note indicating only that “orders/POF received/sent” without specification or indication from where or which physician is assumed to be from GP and counted as one fax contact unless notes suggest is to another physician
  - Any note stating “GP involvement” or “clarified with GP” or “GP made aware” but unclear in what form or how involvement took place with whom is not counted (too vague)
  - Contact made or attempted with other physicians (not GP) not counted
  - Assume any communication noted regarding scheduling/changing of conference done via telephone and is counted as one telephone contact
  - Scheduled conferences that were unsuccessful (i.e., GP and CHW unable to connect) counted (attempted contact)
- Any face-to-face contact with GP during a home visit planned or unplanned is counted as telephone contact
- Unscheduled face-to-face meeting with GP and client counted as one telephone contact (e.g.,)
- Assume note beginning with “Teleconference with GP” is conference scheduled as per this study even though Casenote Reason not “Case Conference”
- Any note indicating “contact with GP” with a definite decision made for next steps is assumed to have been done via telephone and is counted as one contact
- Contact with any physician covering regular GP at GP office (i.e., GP locum) counted as contact with GP (e.g.,)
- Any exchange of written information via email is counted as fax contact

Audio-Conference Communication
- GP are numbered per below
- # of clients = # of clients discussed in the conference
- # of staff = # of CHW participating in the conference
- Disciplines = disciplines attended conference
  - 0 = no; 1 = yes

GPs numbered

(Had 1 – 24 with the GPs names)

Months
1. January
2. February
3. March
4. April
5. May
6. June
7. July
8. August
9. September
10. October
11. November
12. December

Notes:
CHC = Community Health Centre
CHW = Community Health Worker
AFIO = Access For Information Only
FD = family doctor = GP
POF = physician order form
NCP = nursing care plan
CDM = chronic disease management
OBC = on behalf of client
MOA = Medical Office Assistant
Most communication with GPs occurred between nursing and the GP, often by fax and phone call but may also be in person.

Email communication was also commonly used between home health workers and some GPs, often with case managers and occasionally with nurses.

Nursing will typically communicate by both a phone call and fax to the GP’s office.

- Most phone calls to the GP resulted in a voice message left for GP or contact with the receptionist/MOA, at which time nurses typically sent a fax as well. These messages were usually returned by a phone call from the GP within the same or next day.

- GPs often took longer to respond to faxed requests – sometimes a week or more, resulting in the nurses sending a second fax or calling to follow up.

Nurses actively assessed a client’s GP involvement and presence with continuous follow up with client regarding visits to GP, asking if they have a GP, referring client to Home Vive Program, contacting South Health Unit physicians if they are able to take on a new patient, etc.

In an attempt to communicate with a client’s GP and ensure clear understanding among the client, nurse, and GP, nurses often had the client contact or call their GP during home visits and may at that time also speak with the GP.

- Casenotes seemed to indicate that nurses felt that either GPs will respond better to pressure from clients than from themselves or clients will listen to care instructions better if heard directly from their physicians and this method garnered the most success either way as well as good success in reaching the GP.

Nurses did on occasion conduct joint home visits with GP – sometimes this was unplanned wherein the GP happens to drop in for a home visit at the same time as nurse is arriving/leaving/visiting or GP was in the home when nurse arrives or it may have been pre-planned.

- When this occurred, casenotes indicated positive outcomes in communication among all parties re: care plan, relationship building, and next steps.

- Casenotes seemed to indicate nurses do know or can easily determine when a client’s GP will be conducting a home visit and/or when client will be seeing their GP next and so a joint home visit may be pre-arranged if necessary/possible (i.e., nurses regularly ask their clients when they are seeing their GP next, if their GP does home visits, how often they see their GP, the involvement of the GP in their care, etc.)

Case Managers appeared to initiate and organize most of the conferences with GP alone and/or with other home health workers.

Rehab staff (i.e., nutrition, physiotherapy, occupational therapy) rarely communicated with GP, but when they did, it was typically by fax.

GPs who appeared to initiate conferences with home health team, did so very often for many or all their joint clients.

- Casenotes suggested these GPs really appreciated the conferences and discussion with home health team.
• The best outcomes for conferences appeared to be when client was palliative and/or many workers and GP were involved in the care, as per positive casenotes
• Conference discussions also often occur among different community services (e.g., FSSP, GF Strong) regarding clients, but it was not clear in the casenotes of the GP’s awareness of these or whether GP involvement in this may or may not have been helpful
• Some questions I had while collecting data:
  o Do the client’s various physicians (specialists and GP) communicate with each other? If so, is there a discussion among them regarding care and how is this relayed to the home health team?
  o Do home health workers act as a link between the different physicians/providers of care outside the health unit? (casenotes seemed to indicate they often do as they appeared very conscientious about continuity of information and care, but it is not clear if this is seen as part of their role) Is this an expectation of their role?
  o Could or would there have been more conferences conducted with GPs if nursing had taken more initiative in this method of communication rather than relying on the usual faxes and phone calls?
  o How long did the conferences last? What time of day were they typically done? What was the best time for them? (some casenotes recorded time, others did not, but seemed time of day was random)
• RE: data collection
  o Count made is conservative as many faxes and phone calls were noted in casenotes as “plans” or “will be done” without confirmation that it had been done and when so could not accurately be accounted for.
  o Reviewing casenotes was most confusing for very complex clients who receive care from various providers (specialists, GPs, home care workers, etc.) and/or had a number of family or social supports involved – keeping track of who was who and who did what was not always very clear in the notes recorded and so some re-reading of notes was necessary.
## Appendix H: Family Physician and Home Health Staff Demographic Information Collection Forms

<table>
<thead>
<tr>
<th>GP, Practice and MOA Demographic Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
</tr>
<tr>
<td>Office Address</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Primary Language used in Practice</td>
</tr>
<tr>
<td>Other Languages used in Practice</td>
</tr>
<tr>
<td>Years in Practice</td>
</tr>
<tr>
<td>Years practicing in South Vancouver</td>
</tr>
<tr>
<td>Office Arrangement (solo, group)</td>
</tr>
<tr>
<td>If group, number of GPs</td>
</tr>
<tr>
<td>Practice Open - Hours per week</td>
</tr>
<tr>
<td>On Call Arrangements? (Y/N)</td>
</tr>
<tr>
<td>Case Load Size</td>
</tr>
<tr>
<td>Number of office support staff</td>
</tr>
<tr>
<td>Member BC College Family Physicians?</td>
</tr>
<tr>
<td>Member of other Physician Network? Name them</td>
</tr>
<tr>
<td>Receptionist/MOA/Other?</td>
</tr>
<tr>
<td>Name MOA/Receptionist</td>
</tr>
<tr>
<td>First Language MOA/Receptionist</td>
</tr>
<tr>
<td>Languages used in Practice MOA/Receptionist</td>
</tr>
<tr>
<td>Years in Practice MOA/Receptionist</td>
</tr>
<tr>
<td>Years with this GP MOA/Receptionist</td>
</tr>
<tr>
<td>Training MOA/Receptionist</td>
</tr>
<tr>
<td>Electronic or paper health record?</td>
</tr>
<tr>
<td><strong>Home Health Staff Demographic Information</strong></td>
</tr>
<tr>
<td>-------------------------------------------------------</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Professional Discipline</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Role at SCHC (HCN, OT, PT, CM, Nut, etc.)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>First Language</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Years in Practice</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Years of experience in Home Health</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Years practicing in South Vancouver</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Languages besides English used in Practice</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Member of Professional Networks? Name them</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
### Appendix I: Original Survey Published in Fairchild et al 2002

#### HOME HEALTH CARE CLINICIAN SURVEY INTERACTING WITH PHYSICIANS

**Please rate the following based on your experience collaborating with physicians:** Please circle one number for each item to indicate your response

<table>
<thead>
<tr>
<th></th>
<th>Excellent</th>
<th>Very Good</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ease of contacting your patient's MD to discuss an urgent patient care matter</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2. Ease of contacting a covering MD, when the primary care MD is unavailable</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3. Usefulness of the written information about the patient provided to you by MD office (on initial referral)</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>4. Ease of getting 485's (certification/plan of care) and additional orders/med change orders signed and returned in a prompt manner</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5. Usefulness of the written information about the patient provided to you by MD office on returned 485's or on other written forms</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>6. MD understanding of Medicare requirements re: patient being homebound and needing skilled services</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>7. MD communication with you after a patient has visited MD office (explaining change in status or treatment plan)</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>8. The degree to which you are involved prospectively in decision making about continuing home services</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>9. The degree to which MD's clearly express prognosis, desired goals/outcomes and number of visits for patients</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

**For questions 10-14:** Please check only one box

10. If we had greater coordination with physicians, do you feel that some inpatient re-admissions and ER visits could be avoided without compromising quality or patient outcomes?
   
<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Unsure</th>
</tr>
</thead>
</table>

10b. If "yes", please estimate what percentage of ER visits or inpatient re-admissions might be avoided

|   | 10% | 1-2% | 3-4% | 5-10% | 11-15% | 16-20% | 21-30% | 31-40% | 41-50% | 51-60% |

11. If we had greater coordination with physicians, do you feel that some patients could be discharged sooner from the acute care hospital to home health care without compromising quality or patient outcomes?

|   | Yes | No | Unsure |

11b. If "yes", please estimate what percentage of patients could be discharged to home health care one day earlier

|   | 10% | 1-2% | 3-4% | 5-10% | 11-20% | 21-30% | 31-40% | 41-50% | 51-70% | 71-100% |
12. Once a patient is at home receiving services, home care clinicians often make suggestions regarding types and duration of home therapies/services for patients. What percentage of the time do physicians accept your recommendations?

| | 0-10% | 11-25% | 26-40% | 41-60% | 61-80% | 81-100% |

13. How important do you think it is for a patient to have a continuity relationship with one home health clinician? (as opposed to being followed by a series of different home health clinicians)

| | extremely important | | moderately important | | slightly important | | not important at all |

14. Do you feel that clearly defined parameters are established by physicians regarding appropriate reasons for telephone calls?

| | Yes (skip to question 15) | | No | | Unsure |

14b. If physicians defined clear parameters regarding when to call them, do you think the amount of phone calls you make to physicians would:

| | Decrease a little | | Decrease a lot | | Stay the same | | Increase a lot | | Increase a little |

Please indicate whether you agree or disagree with the following statements about our current system for working with physicians: Please circle one number for each item to indicate your response:

| 15. MD’s (or their designated staff) promptly update home care clinicians regarding issues or changes which impact delivery of home care services |
| Strongly Agree | Agree | Somewhat Agree | Neither Agree nor Disagree | Disagree | Somewhat Disagree | Strongly Disagree |
| 5 | 4 | 3 | 2 | 1 |

| 16. Quality and efficiency of home care delivery could be enhanced with greater use of clinical pathways/care maps for specific diagnosis |
| 5 | 4 | 3 | 2 | 1 |

| 17. Case conferencing on complex cases (of large group practices with whom we work) would be helpful to us to improve outcomes for our patients |
| 5 | 4 | 3 | 2 | 1 |

| 18. Having general standardized parameters about when to call physicians re: blood glucose, BP level, etc. would make patient management easier |
| 5 | 4 | 3 | 2 | 1 |

19. Overall, you feel that the amount and duration of home care services provided to patients is:

| | much more than clinically necessary | | slightly more than clinically necessary | | about right | | slightly less than clinically necessary | | much less than clinically necessary |

20. If it were possible to provide home health practitioners with electronic access to patient records and e-mail access to physicians, how useful do you think this would be?

| | extremely useful | | moderately useful | | slightly useful | | not useful at all |

21. Please share something POSITIVE about your experience interacting with MD’s while caring for patients at home:

22. Please share something NEGATIVE about your experience interacting with MD’s while caring for patients at home:
Physician Satisfaction With Home Care Services

Please rate the following based on your experience with home care services: Please circle one number for each item to indicate your response

| 1. Ease of contacting your patient's home health provider to discuss an urgent patient care matter | Excellent 5 | Very Good 4 | Good 3 | Fair 2 | Poor 1 | Does Not Apply 8 |
| 2. Ease of coordinating home health services for your patients | 5 | 4 | 3 | 2 | 1 | 8 |
| 3. Usefulness of the written information provided to you from home health providers | 5 | 4 | 3 | 2 | 1 | 8 |
| 4. Commitment to continuity of care (one provider assigned to your patient over time) | 5 | 4 | 3 | 2 | 1 | 8 |
| 5. Ease of monitoring your patient's progress as a result of home care services | 5 | 4 | 3 | 2 | 1 | 8 |
| 6. The degree to which you are involved prospectively in decision making about starting or continuing services | 5 | 4 | 3 | 2 | 1 | 8 |

For questions 9–12: Please check only one box

7. On average, how thoroughly do you read the forms sent from the home health agencies for your signature:
   [1] I always read each carefully before I sign
   [2] I occasionally read the forms carefully before I sign
   [3] I rarely read the forms carefully before I sign
   [8] Other

8. If we had greater coordination with home health agencies facilitating closer management of our patients at home, do you feel that we could avoid some inpatient admissions without compromising quality or patient outcomes?
   [1] Yes
   [2] No
   [8] Unsure | Skip to question #10

9. If you answered "yes" to 8 (above): What percentage of inpatient admissions do you think might be prevented if we had greater coordination with home care providers?

10. If we had greater coordination with home health agencies facilitating closer management of our patients at home, do you feel that we could discharge some inpatients home sooner than we currently do without compromising quality or patient outcomes?
    [1] Yes
    [2] No
    [8] Unsure | Skip to question #12

11. If you answered "yes" to 10 (above): What percentage of your patients would you estimate could be discharged from the hospital a day earlier if we had greater coordination with home care agencies?

12. Once a patient is at home receiving services, providers and therapists often make suggestions regarding types and duration of home therapies for your patients. What percentage of the time do you modify, change, or specify additional orders beyond those suggested by the home care providers?
13. How important is it for your patients to have a continuity relationship with one home health provider?

14. Regarding the clinical appropriateness of telephone calls from home health providers, do you feel you get called:

15. On average, how many calls from home health providers do you personally receive a week?

Please indicate whether you agree or disagree with the following statements about our current system for working with home care agencies: Please circle one number for each item to indicate your response:

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree Somewhat</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree Somewhat</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

16. Home care providers anticipate problems and are proactive in the management of patients

17. Quality and efficiency of home nursing care could be enhanced with greater use of protocols and pathways for specific diagnoses

18. The number of different home health nurses currently following my patients at home is greater than necessary making communication about patient management inefficient

18. In the future, it may be possible to provide home health practitioners with electronic access to BWH records allowing them to record notes, access information, send you e-mail etc. How useful do you think this addition would be?

19. In general, who in your office handles initial telephone calls from home health providers?

20. Please share something POSITIVE about your experience with home health care services at BWH:

21. Please share something NEGATIVE about your experience with home health care services at BWH:

Please Return to: David Fairchild, M.D., BWPO, PBB-Admin-4 in attached envelope
Appendix J: Family Physician and Home Health Staff Surveys Adapted from Fairchild et al 2002

**Home Health Care Clinician Survey Interacting With Physicians**

Please rate the following based on your experience collaborating with physicians: *Please circle one number for each item to indicate your response*

<table>
<thead>
<tr>
<th></th>
<th>Excellent</th>
<th>Very Good</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ease of contacting your patient’s MD to discuss an urgent patient care matter</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2. Ease of contacting a covering MD, when the primary care MD is unavailable</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3. Usefulness of the written information about the patient provided to you by MD office (on initial referral)</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>4. Ease of getting orders/changes in orders signed and returned in a prompt manner</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5. Usefulness of the written information about the patient provided to you by MD office on returned orders or on other written forms</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>6. MD understanding of services offered by the A/OA program, and criteria for admission of their patients to the program</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>7. Helpfulness of MD communication with you after a patient has visited MD office (explaining change in status or treatment plan)</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
## Home Health Care Clinician Survey Interacting With Physicians

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Rating Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.</td>
<td>The degree to which MDs clearly express patient prognosis and desired goals of care for patients</td>
<td>5 4 3 2 1</td>
</tr>
<tr>
<td>9.</td>
<td>If we had greater coordination with physicians, do you feel that some inpatient re-admissions and ER visits could be avoided without compromising quality or patient outcomes?</td>
<td>[ ] Yes [ ] No [ ] Unsure</td>
</tr>
<tr>
<td>9b.</td>
<td>If “yes” please estimate what percentage of ER visits or inpatient re-admissions might be avoided.</td>
<td>0-10% 11-25% 26-40% 41-60% 61-80% 81-100%</td>
</tr>
<tr>
<td>10.</td>
<td>Home care clinicians often have suggestions regarding types and duration of services for patients. What percentage of the time do physicians consider your suggestions?</td>
<td>0-10% 11-25% 26-40% 41-60% 61-80% 81-100%</td>
</tr>
<tr>
<td>11.</td>
<td>Do you feel that there is a common understanding between MDs home health clinicians about reasons for telephone calls?</td>
<td>[ ] Yes (skip to question 15) [ ] No [ ] Unsure</td>
</tr>
<tr>
<td>11b.</td>
<td>If your answer to 11 (above) was &quot;no&quot; or &quot;unsure&quot;, do you feel that with clearly defined parameters regarding when to call MDs, the number of phone calls you make to physicians would:</td>
<td>Decrease a lot Decrease a little Stay the same Increase a little Increase a lot</td>
</tr>
</tbody>
</table>

Please indicate whether you agree or disagree with the following statements about our current system for working with physicians: *Please circle one number for each item to indicate your response*

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree Somewhat</th>
<th>Neither Agree Nor Disagree</th>
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<th>Strongly Disagree</th>
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211
## Home Health Care Clinician Survey Interacting With Physicians

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<tr>
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<th></th>
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<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>12.</td>
<td>MDs (or their designated staff) promptly update home care clinicians regarding issues or changes that impact delivery of home care services</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>13.</td>
<td>Quality and efficiency of home care delivery could be enhanced with greater use of clinical pathways/care maps for specific diagnoses</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>14.</td>
<td>Case conferencing on complex cases would be helpful to us to improve outcomes for our patients</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>15.</td>
<td>Having general standardized parameters about when to call physicians re: blood glucose, BP level, etc. would make patient management easier</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>16.</td>
<td>If it were possible to provide home health practitioners with electronic access to physicians, how useful do you think this would be?</td>
<td>Extremely useful</td>
<td>Moderately useful</td>
<td>Slightly useful</td>
<td>Not useful at all</td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>Please share something POSITIVE about your experience interacting with MDs while caring for patients at home</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>Please share something NEGATIVE about your experience interacting with MDs while caring for patients at home</td>
<td></td>
<td></td>
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</tbody>
</table>

Physician Survey Interacting With Home Health Clinicians

Please rate the following based on your experience with home care services: Please circle one number for each item to indicate your response

<table>
<thead>
<tr>
<th></th>
<th>Excellent</th>
<th>Very Good</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ease of contacting your patient’s home care provider to discuss an urgent patient care matter</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2. Ease of coordinating home care services for your patients</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3. Usefulness of the written information provided to you by home care providers</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>4. Ease of monitoring your patient’s progress as a result of home care services</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5. The degree to which you are involved prospectively in decision making about starting or continuing home care services</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

For questions 6-11: Please check only one box

<p>| | | | | |</p>
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<tbody>
<tr>
<td>7. If we had greater coordination with home care staff facilitating closer management of our patients at home, do you feel that we could avoid some inpatient admissions without compromising quality or patient outcomes?</td>
<td>[1] Yes</td>
<td>[2] No – Skip to Question 10</td>
<td>[8] Unsure – Skip to Question 10</td>
<td></td>
</tr>
</tbody>
</table>
## Physician Survey Interacting With Home Health Clinicians

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Percentage Options</th>
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<tbody>
<tr>
<td>8.</td>
<td>If you answered “yes” to 7 (above): What percentage of inpatient admissions do you think might be prevented if we had greater coordination with home care staff?</td>
<td>0-10%  11-25%  26-40%  41-60%  61-80%  81-100%</td>
</tr>
<tr>
<td>9.</td>
<td>Once a patient is at home receiving services, home care staff often make suggestions regarding types and duration of home therapies for patients. What percentage of the time do you modify, change, or specify additional orders beyond those suggested by home care staff?</td>
<td>0-10%  11-25%  26-40%  41-60%  61-80%  81-100%</td>
</tr>
<tr>
<td>10.</td>
<td>Regarding the clinical appropriateness of telephone calls from home care providers, do you feel that you get called:</td>
<td>Much too often  Slightly too often  About the right amount  Slightly too infrequently  Much too infrequently</td>
</tr>
<tr>
<td>11.</td>
<td>On average, how many calls from home care providers do you personally receive in a week?</td>
<td>0-1</td>
</tr>
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</table>

Please indicate whether you agree or disagree with the following statements about our current system for working with home care agencies: *Please circle one number for each item to indicate your response*

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<td>12.</td>
<td>Home care providers anticipate problems and are proactive in the management of patients</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
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</tbody>
</table>
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<td></td>
<td></td>
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Thank you for agreeing to participate in this interview/focus group. You have been involved in a study to determine whether use of specific communication strategies can increase the communication between GPs and home health staff about their shared patients. Today’s interview/focus group is to get your thoughts on what parts of the communication strategy you felt were successful or not successful, and to learn more about what it would take to sustain increased communication between home health staff and GPs.

This interview/focus group is completely voluntary, and you can stop the interview/leave the focus group at any point. If there are any questions you don’t want to answer you can pass (interview)/choose not to respond (focus group).

The interview/focus group should take between an hour and an hour and a half. I will take some notes, but I can’t remember everything that is said, so the interview/focus group will be recorded and transcribed.

(For interview) – All your responses will be kept confidential. This means that your responses will only be shared with the research team, and that all information included in final reports will not identify you as a respondent.

(For focus groups) – The transcripts for this session will only be shared with the research team. All information included in final reports will not identify individuals as respondents. In a group situation like this, it is not possible to guarantee anonymity, as you hear each other’s responses. I ask that you not discuss the opinions of individuals who are part of this process outside this focus group session.

Do you have any questions?

[Note – interviewer needs to record the following:

For HHS – who is participating (by discipline – HCN, OT, PT, Nutritionist, CM] and were they working at South throughout the study or did they start at South after the study was underway?

For GPs – were they part of the intervention arm or were they part of the control arm? If they were in the control arm, the questions in II and III will be scaled back.]

I. Quality of Patient Related Care Planning

The first topic I would like to explore with you is how you view the quality of patient related care planning between home health staff and GPs.

Can you describe the usual process of what you did the last time you communicated with a GP/a home health staff member regarding a patient/client?
Can you describe a particularly positive or negative experience you have had in communicating with home health staff member/GP regarding a client/patient?

What factors are important to ensure that communication between home health staff and GPs is effective and of high quality? (probe based on literature barriers – time, differing schedules, differing point of view about what is important to communicate)

What would you consider to be the ideal scenario for communication between home health staff and GPs? [probe: quality…..]

Is there anything else you would like to tell me about quality of communication about shared patients between home health staff and GPs that we have not touched on before we move on?

II. Change Since Before the Study

In the research study, scheduled audio-conferences and using the SBAR for community consultation have been used to increase effectiveness of communication between some GPs and home health staff. The next series of questions are going to explore whether or not you think the quality of communication between yourself and GPs/home health staff changed with the introduction of these strategies.

Has the quality of communication between you and home health staff/GPs changed with the introduction of the specific communication strategies?

1. EXCEPT FOR THE GPs IN THE CONTROL ARM: If not mentioned after the non-leading discussion, ask specifically about:
   a. Audio-conferencing
   b. pre-scheduled time
   c. automatic reminders about the audio-conference time
   d. SBAR communication tool

FOR GPs: In what ways has your practice changed since participating in the study? [probe: has it influenced your practice--referral process, more frequent care conferencing…..?]
   Are there areas that require less frequent communication now?
   Have less frequent misunderstandings?
   Has level of respect for the others’ role changed? Etc.]

FOR HHS: In what ways has your process for communicating about GPs changed due to participation in the study? [probe: has the process changed for other GPs how are not part of the intervention arm? Has understanding of what makes communication with GPs effective changed? Has level of respect for each others’ role changed? Are there areas where you communicate more or less now that before?]
Describe the impact of the study intervention on your time.
   [probing – want to know if the increased time for communication is perceived to decrease
time required in other ways; or even if the increased communication is not counter-balanced, is it
considered valuable and incorporated into the scope of their role?]

FOR GPs: Describe the impact of the increased communication on your fee-for-service billings.
   [probing – what fee codes are used for the communication? Do GPs perceive that they
break even, decrease, or increase fees collected?]

III. Sustainability (EXCEPT FOR GPs IN THE CONTROL ARM):

Thank you. The final area that I would like to explore is what would be required to sustain gains
in communication that you have achieved in this study period. During a project, extra resources
such as the research assistant, data collection support and technical support are available, and
after the project is ended these extra resources are no longer available.

What parts of the study intervention (audio-conferencing; pre-scheduled time to communicate;
automatic reminders about the audio-conference time; use of SBAR tool) are worth continuing
after the study is complete?

What will be required to sustain them?
   [probing – dollar, human, and logistic resources]

FOR HOME HEALTH STAFF: Would it be feasible to expand the communication strategies to
more GPs in South Vancouver? What would be required to make this workable for you?

We have completed the questions that I wanted to ask you.

Are there other comments about communication with GPs and home health staff that you would
like to provide that we have not covered?

Thank you very much for your time.

1. What was your role before the study began with regard to facilitating communication
   between home care staff and GPs?

2. How did your role change during the study?

3. From your perspective, what parts of the intervention worked to facilitate communication
   between GP and home care staff about shared patients? (PARIS reports, pre-scheduled
   conference times, SBAR). What parts didn’t work? What processes, tools or mechanisms
did you put in place to make the intervention work?
4. How could the increased communication be sustained? What would your role be? What kind of supports, training, changes in process would be required?

5. From your point of view, did increased communication make a difference for patients?
Appendix L: Summaries of Focus Groups Provided to Home Health Staff

Effectiveness of an intervention to increase communication and collaboration between solo/small group general practitioners and home health staff

Funded by CIHR (Catalyst Grant – Primary and Community based Health-care), VCH and TELUS Business Solutions

Focus Group for Case Managers; July 14 2011, Dr. Sabrina Wong facilitating. Also in attendance – Shannon Berg, Dillon Takata, South A/OA manager, South A/OA educator, 11 case managers (mix of RN, SW, OT by discipline)

THEMES

1. Traditional/current communication is by phone or fax
   a. Fax allows more detail and may get you a better response
   b. Phone or fax allows timely communication (where there are changes such as to wounds or medication)

2. Role of the case manager
   a. Prime responsibility is to manage the health care needs of clients in the community and be facilitator of the team
   b. Includes putting in home support, day care, waitlisting for AL or RC
   c. Mostly role is the same across disciplines, but there are discipline specific differences
      i. Med management/PAG letters, catheters maybe for RNs
      ii. OT case management role includes both clinical OT and case management
      iii. SW focus is on psychosocial – AGA cases, etc.
      iv. Variable case load size, from 65 for OT where clinical is included, to 100-150 for most, to 190 for the AL case manager. Over 120 becomes difficult to manage. Variability of client complexity is a factor that impacts manageability of case load size
      v. Second language adds another layer to practice
   d. Case management as triage – crisis managers – must deal with situations that are deteriorating in a timely way

3. Reasons for communicating with the GP
   a. Where clients don’t have a good reporting relationship with their own doctor
   b. Where clients are not providing home health staff with the information needed for planning, or home health can’t trust the reliability of the info
   c. Where there are cognitive or functional changes (which may lead to care plan changes or referrals)
   d. Where the family/caregivers are not in the loop about what the plan of care is

4. Use of SBAR
   a. Used SBAR only in communications with GPs, not with each other
   b. Used it to get focused, keep focused as to what the issue was, and be conscious that there was a time constraint
   c. Physicians did not seem to use it. Did not follow the SBAR pattern

5. Experience of pre-scheduled audioconferences
   a. POSITIVE
i. fixed time meant that GP and team were all available  
ii. Prior experience is that you can call and call, and maybe you get a  
response back in a couple of days, or maybe the doctor never called back  
iii. PA arranging the conference was a benefit  
iv. Got the GPs focused and they know the clients well too  
v. Ones where doctor requested it; he wanted to recap; feeling that no new  
info imparted but ensure everyone on the same page; GP said he would  
follow up on some things  
vi. Multiple patients on same audioconference  
vii. Everyone hears everyone else’s opinion  

b. NEGATIVE  
i. Fixed time meant that some team members were not available (home care  
nursing and rehab)  
ii. Appointment set for a time the GP wasn’t working  
iii. Tried to arrange one with other team members (including respite manager)  
with a GP not in the study and the GP said he was too busy  
iv. GPs need more education about the project  
v. Doesn’t work when there is urgency to contacting the GP (sudden  
cognition change, sudden change in functional level). Then the phone calls  
were made prior to the appointed time and no need for the  
audioconference  

6. Impact on case managers’ time  
a. Took more time than without conferencing  
b. Sometimes impacted on ability to visit clients during preset audioconference  
times  
c. Having PA support lessened impact on case managers’ time  

7. Teleconferencing added to the methods of communication already available  
a. Some case managers used audioconferences but also continued with usual  
practice of phone calls/faxes  
b. Some doctors more responsive to using audioconferences; others will continue  
with existing practices  
c. Is one of many resources for GP communication; can use phone, fax and  
audioconferences  
d. Experience of the audioconference increasing rapport, enhancing relationship and  
communication, so after audioconferences doctors may have been more  
responsive to phone calls and faxes  

8. The technology  
a. The polycom very useful  
b. Having the separate conference room  
c. Way of organizing communication with whole team around one table  
d. Tried to extend it to other team members as well (e.g. respite manager)  
e. Ability to dial in from car, cell phone, etc. when unable to be there in person a  
plus  

9. How to regularize it  
a. PA support critical – arrange conferences with MOAs, alert GPs about clients  
Home Health would like to discuss
i. On the road and don’t have time for the telephone tag to arrange

b. One experience of using it afterwards: team picked 3 times, asked the PAs to arrange, PAs arranged with MOA and gave info for the doctor to join in, and then they held the conference

c. More outreach/education to GPs, especially the “less accessible” ones

d. Get doctors who are more difficult to communicate on board

e. Ensure there is support to use the polycom. Not hard but need orientation and instructions

f. Use for other purposes – e.g. used for a family conference

10. Client and situation characteristics where preset conferences are useful or not useful

a. Useful
   i. For planning purpose
   ii. Where there are a lot of different doctors or specialists involved
   iii. Where a client is complex
   iv. Where there are client personality issues
   v. Where you need GP as the connector between medical specialties

b. Not useful
   i. Where there are acute issues and you need to get the doctor right away
   ii. Where the time chosen is not convenient for some disciplines such as rehab and home care nursing

11. Issue of consent

a. Client requested Home Health record, what the client told the case manager and what the GP told the case manager were different and when the client received her chart she would see that.

b. Issue of consent – did the client know that the case manager and the doctor would talk to each other?
Intervention to increase communication and collaboration between small group/solo GPs and home health staff.

THEMES FROM:

Home Care Nursing Focus Group, September 13 2011, South Community Health Office, 14 Nurses participating, Shannon facilitating, Nadia Batara taking notes

1. Usual Communication Method
   - Faxing of Physician Order Forms (POFs)
   - Telephone
   - Urgent by telephone, otherwise by fax

2. Barriers to Communication
   - Getting faxes back in a timely manner (or sometimes even getting the faxes back)
   - GPs who do not turn on their fax machines
   - When GPs are away or on vacation – several faxes sent with no response and buried under all the paperwork when they get back
   - GPs reading the faxes properly
   - GPs ordering inappropriate things (prescriptions)
   - GPs expecting RNs to take verbal orders
   - Calling the GP and he’s in a hurry and doesn’t know what you are talking about

3. Benefits of Conferencing
   - Knowing which home health staff were involved with specific complex clients – knowing who you needed if you wanted a conference
   - Uninterrupted, planned time with the GP where he had the chart and all the information in front of him
   - Having all disciplines involved at the conference, and addressing issues in a very short amount of time
   - Collaborative effort – for example, Having the benefit of team members reminding you if you happen to forget something you wanted addressed

4. Difficulties with Conferencing
   - Scheduled for days off so can’t participate even when you are the primary
   - Doctor late signing on – RNs only booked off for a certain length of time and then need to get back to client visits

5. Characteristics of Clients where Conferencing is Beneficial
   - Complex clients with more than one discipline involved with the same issue (e.g. nursing and physio both involved in wound care)
   - Patients where you are not seeing them progress; or patients that are declining
   - Multiple specialists
   - Cross-HA involvement of physicians/specialists
   - Seeing deterioration and there has been no assessment as to why
   - Patients with dementia and similar problems where they aren’t managing at home and the team is not clear what is happening
6. Ideas for sustainability of conferencing
   - For physicians that are open to conferencing, having a place in PARIS that shows that
     the GP is involved with the conferencing program, then for patients who need a
     conference staff would know they could call and set it up
   - End of the day times for conferencing when staff have visited and know what is going
     on with the patient (or next day)
   - It is easier for rehab and case management to schedule around nursing (because they
     self-schedule, while nursing has their schedule set for them), so if nursing can get a
     time for the conference then the other team members can likely make it work if you
     give them a quick call
   - If the GP had specific days of the week or times of day that worked better for him,
     this could also be recorded in PARIS so staff would know when to book
   - PA involvement to help book through the MOA and confirm with staff
   - For nurses involved, the conference time would be pre-scheduled on their daily
     assignment
   - When it is the GP who requests the conference, for the GP to give some indication of
     what the issue is he wants to discuss so that home care staff could be prepared
   - It could be that way for home care staff as well – maybe pre-fill in the SBAR and fax
     to the GP as sort of an agenda, and vice versa
   - Eventually, maybe a “virtual” document that GP and home care staff could be looking
     at the same time

7. Other ideas for increasing teamwork with GPs
   - Conferences that involve the specialists as well as the GP when there are multiple
     specialists involved
   - GPs coming to South for a care conference
   - Joint visit with the GP in the patient’s home
   - Coordinating GP home visit to match nursing timing, for example with wound care
     where GP takes dressing off and wants nursing to reapply
   - Conference with the GP in the client home with the client, staff member and GP all
     involved
   - Recording of conferences for accurate documentation
   - Doctors having access to, and using pixalere

8. Other issues
   - RNs not aware that GPs can bill for their time on the conferences
Effectiveness of an intervention to increase communication and collaboration between solo/small group general practitioners and home health staff

Funded by CIHR (Catalyst Grant – Primary and Community based health-care), VCH and TELUS Business Solutions

Focus Group for Rehab: July 27 2011, Dillon Takata facilitating. Also in attendance – Shannon Berg, 8 Rehab staff members (mix of OT and PT), South FSSP, Vancouver PT Practice Lead.

1. Typical Day/Caseload Size
   a. PT - First thing in the morning screen new referrals and ones that are waiting; do desk work (catching up on paperwork, booking clients); out on visits mid-morning to sometime in afternoon; paperwork, PARIS charting, and following up/making arrangements for clients end of day
   b. PT caseload – typically 4 visits a day, 6-10 charts you are working with on your desk a lot and another few you are doing little things on. Total caseload size 30-35 (more when very busy and unable to discharge in a timely way)
   c. OT – typical day similar but maybe less average visits as more follow up for equipment, etc. (e.g. justification letters)
   d. OT – Caseload more like 50-60. Some not actively involved with – may be waiting for equipment.

2. Usual communication method – strengths and weaknesses
   a. Fax or phone call are usual communication methods
   b. Also communicate with specialists, not just GPs, and use same methods
   c. Current methods – often slow; do not get a response right away. Wait for both GP and specialist (both phone call and fax)
   d. Fax can be efficient with yes/no, very direct questions. Then sometimes seem to get quicker response
   e. Fax can be done in a way that allows for them to respond when they can. Phone – you can call at a time that is hard for them to come to the phone.
   f. Usually phone call with GP is for one or two issues that are very rehab focused
   g. Phone – if you leave a message can get “garbled” (going through a 3rd person)
   h. May miss phone calls; even if you leave your cell phone number you don’t necessarily answer it when with a client so doctors’ message goes to voice mail. Telephone tag.
   i. If response needed more urgently, explain to the receptionist and she will usually ask you to hang on and will interrupt the doctor.
   j. Sometimes don’t trust faxes – not sure the GP has actually read it; when talking to them by phone you know they have heard what you are asking of them

3. Reasons for needing to communicate with GPs
   a. Where there is something more urgent such as suspected DVT (get their advice, determine whether to send them to the hospital); or clarify weightbearing orders (client coming out of emerg with no weightbearing orders and they want to get up and walk)

4. Variability of response/awareness across GPs
   a. Some GPs are easier to reach
b. Some don’t often come to the phone

c. Some don’t work everyday; aren’t there

d. Clients seen in walk-in clinics and they don’t have a regular GP; have to try to track down the physician who say them

e. GPs may not be aware that home care is involved unless you have been communicating with them about that client before

5. Experience of audioconference
   a. One GP- 2 conferences and both time requested by him; really just him asking questions
   b. One where staff requested it and GP just wanted updates; he had no pressing concerns related to the clients
   c. Seemed he wanted to be involved with his patients; GP said he was happy to know what was being done and that he would follow up on some things
   d. GP asked for conference for one patient on the list, but when done he wanted to know about the rest; but the staff involved with the rest weren’t present at the audioconference. PT who was there was trying to get him the information he wanted as quickly as possible. GP seemed to think everyone was in the room.
   e. Was useful to communicate - there were challenges with the clients and GP was very supportive. This particular GP communicates anyway, so may not have needed to be in preset audioconference time.
   f. Useful to have the whole interdisciplinary group there with the GP as well for a complex client; having all team members together with the physician speaking; all on same page
   g. For one client, incredibly useful because client wasn’t communicating clearly and it was helpful to have discussion with the doctor who was seeing it quite clearly, but South team were not getting that impression from the family
   h. Interesting to find out what the GP knew and what he was following up on. Staff didn’t previously know how much the GP was involved with some of the issues the client was having.
   i. The device is positive – allows all to sit and a table and speak
   j. Had positive effect on care planning

6. Preset times
   a. If you have to wait for a preset time the issue may not be as relevant as you’ve likely had to address it already or have already contacted the GP
   b. From the GP point of view, found they may have tended to be more prepared and have read the chart more, therefore more ability to engage in the conversation than if they have just been pulled cold turkey from a visit

7. Kinds of patients audioconference useful for
   a. Multiple disciplines involved
   b. Complex case
      i. Follow up question – what is meant by complex? Where many specialists are involved; where many disciplines are involved; where you are getting conflicting information from family and doctor; when families are inaccurate historians about their medical histories; when medical condition is changing rapidly and planning is a challenge; when client is not understanding the
specialists; palliation/end of life – making plans; transitioning from chronic disease to a palliative approach

c. Lot of different client issues
d. Client involved with many specialists, to hear what the GP knows from the other specialists (don’t usually get all the reports but the GP does
e. Where it will be helpful to treat the client as a team as opposed to individual disciplines

8. PARIS shared patient reports
   a. May have been useful to GPs so they know who all was seeing their patients
   b. Sometimes South staff refer back and forth to each other and GP may not be aware of who all is involved
   c. Not that useful to rehab because every time you open PARIS you see who else is involved with your client
   d. Maybe more helpful to case managers as sometimes client issues are not as immediate and seeing the full list of client names may have been a reminder of which clients are complicated and could benefit from involving the GP in care planning

9. Ideas to improve audioconferences
   a. Might be useful to have follow up conference call

10. After study experience
    a. Had one since as a result of an issue and wanted GP input to resolve it. Worked out well, to have PAs organize it.
    b. Rehab staff member tried to organize it with their receptionist when they sat down for the conference GP wasn’t there. So rebooked for another time through the PA.

11. Sustainability
    a. Good to have some flexibility
    b. If you know generally when a GP would be open to, or available for a conference, could contact them ahead of time to arrange it (not just every second Tuesday at 10, but maybe when he is in his office doing paperwork and available)
    c. Maybe if the GPs find lists useful could that be continued
    d. PA support for logistics; organizing it (takes a lot of time). PAs can actually answer calls and confirm things when staff are out and would miss the call from the GP office or forget.
    e. Whenever care planning for a complex case together, remember to go to the conference room where the polycon is and involve the GP

12. Issue of follow up after audioconferences
    a. Why didn’t follow up happen? There was another conference right after so end of conference was rushed and no follow up set up
    b. Would a trigger on the SBAR work? Probably – maybe add to the follow up section “Follow up required? Yes/No/When”
Effectiveness of an intervention to increase communication and collaboration between solo/small group general practitioners and home health staff

Funded by CIHR (Catalyst Grant – Primary and Community based health-care), VCH and TELUS Business Solutions

Focus Group for Program Assistants: July 19 2011, Dillon Takata facilitating. Also in attendance – Shannon Berg, South Admin Coordinator, 4 Program Assistants (2 with formal involvement in the project).

1. Program Assistant role
   a. Answering phones (calls from patients, public wanting general info, doctors’ offices)
   b. Do the files for home care nurses, OT, PT, case managers, nutritionist
   c. Get PARIS listing of files to be made up
   d. Do faxes, put faxes and paperwork together in charts
   e. Do all main house filing
   f. Activities for clinicians such as faxing, photocopying
   g. Meet the public and triage (to intake or see a clinician)
   h. Help with switchboard
   i. Language interpretation
   j. Orientation of new staff to PARIS program and how it affects the office as a whole

2. Current Methods for Home Care/Physician communication and strengths/weaknesses
   a. Phone call or fax
   b. PHONE CALLS – a lot of telephone tag (clinician on a visit and doctor on a visit – takes time to connect)
   c. FAXES – doctors who don’t turn on fax machine and PA needs to call and tell him to turn it on to receive a fax
   d. FAXES more efficient timewise if fax machine is on
   e. Not sure that doctors know what Home Health does, so may not know when to communicate (personal experience of one participant where a home care nursing referral was not made by a GP when need was obvious)

3. Ideal communication scenario
   a. Clinician calls the office and the doctor talks to them immediately

4. How the project changed the PA role
   a. Got busier
   b. Complicated at first
   c. People needed to learn how to do the conference call part
   d. Part of PA role was educating the MOAs (they are the ones the doctors look to when they can’t figure something out), especially if MOA was superconfused

5. Feedback by clinicians heard by PAs
   a. Both good and bad feedback but more good
   b. Raised issues for clinicians which is a good thing
   c. When they talked to GPs both the doctor and the clinicians learned stuff from each other about the patient
d. A lot of clinicians happy to have a full attention of the GP about certain clients, due to the set time. Dr wasn’t running to their next patient

e. Bad – when the doctor would schedule the time and then not show up

f. Feedback that in audioconferences clinicians would find out that patients were telling their doctor different stories than they were telling home care staff.

g. Having rehab, long term care, and family doctor there allowed issues to be raised that others didn’t know about

h. Being happy to that all of them are getting same info from the doctor about one patient made them want to try the conference again with another patient

6. Intervention process issues
a. Technical difficulties – they didn’t understand what the project was about
b. Lots of confusion for weeks
c. Clinicians getting lists and not knowing why or what to do with them
d. Confusion with MOAs at first, but it got better when they started to understand the project. But some doctors remained confused

e. Initial set up was confusing – tried one thing and it didn’t work so changed it (like the calendar)
f. By the end, with the regulars, no real time issue as the process works smoothly.
g. PARIS lists may have helped doctors; they have lots of patients and may not know who is connected to community. So having shared patient list may have initiated conversation.
h. Doing the PARIS lists impacted on workload to the extent that Navi and Simi needed to lean on the rest of their team to pick up the slack

i. Had to nag and remind clinicians; sometimes they were not pleasant. But once started to hear good feedback made it worth it

j. Perception of which disciplines used it most – case management, followed by nurses.
k. Perception that nurses may have wanted it more but times didn’t always match up. Case managers have a bit more flexibility

l. When other disciplines couldn’t attend, the clinician who could used the SBAR to capture info from colleagues and pass it on, so still communicating even if not sitting in on the conference

7. Change
a. Some clinicians in the beginning not on board because it’s something new
b. Eventually got better, doctors did try it and then tried again with new patients. Regulars who began to look forward to it. Lots of repeats for clinicians as well. Coming to an end and not so bad.
c. Same issue for PAs in the project – “sitting in the meeting, writing things down with confused look on my face. I don’t know what they’re talking about, no idea, saying, somebody speak English, it’s not making any sense. “Then the 2 sat down and compared notes and figured it out.
d. Didn’t want to do it at the beginning. It was new.

8. Education
a. More education required for both the doctors and clinicians about how the conference works (more for doctors)
b. Lots of education – clearer directions on how to do things, even 6 months into it, clinicians who have done conferences in the past still need “refresher”
c. Maybe a tutorial session for everyone because some people are more visual learners and can’t follow written instructions as well
d. Marketing to the doctors – they need to know this is out there. Not every doctor will jump on but some will find it useful
e. Aware that Shannon and Henry went out at least twice to educate MOAs and still they were confused and needed more for South PAs.

9. Client Benefit
a. Positive benefit for patients because of the exchange of information between doctors and clinicians
b. Helpful when doctors and clinicians became aware that patient was giving each of them different information

10. Physicians who didn’t use at all
a. Don’t know and there’s no way to tell whether it was because they didn’t have the time, did not ‘get it’, couldn’t be bothered, or what?

11. Sustainability
a. Probably South would initiate most of the calls
b. Don’t foresee the conferences being a lot of added work; some but not a lot
c. Not difficult to expand
d. Would only happen for certain clients – complex ones
e. PARIS lists weekly to all the South doctors is doable in large volumes. PARIS lists took the most time; a lot of time. Printing them, photocopying them, faxing them, handing them out to clinicians all over the building was the biggest chunk of work
f. Use of the South code and any doctor can use it, not just one of the 12 in the study
g. Lots of clinicians and the doctors who became regulars will still use the other forms of communication (phone calls not as a conference call and fax) in addition to keeping the conferences

12. PA Role if intervention expanded
a. Would include booking clinicians/making appointments
b. Almost like a MOA role
c. Making sure the doctor has the calling code and directions for using it
d. Education
e. Is already happening and this is how it is working: clinicians give a few times where they are available (times and days); they phone MOA and ask about those times and days; doctor was able to fit it into one of the spots as long as there were a few potentials; or if none of them work go back to the clinicians and get some more
f. PARIS lists as a reminder that the project is out there, here are the clients
g. You gave the script you use: I’m calling from South Unit, I’m calling regarding such and such a patient, one of our clinicians at the office is also involved with this patient and would like to speak to the doctor through an audioconference. These are the dates and times the clinician is available.” Once a time is confirmed, you tell the MOA the phone number and the code and then you tell her you are going to fax the information over right after you hang up.
h. There could be busy and quiet times (less and more conferences)
i. Right now there is a calendar but that would go

13. Uses outside the research project
   a. Approached by case manager to talk to someone at Mental Health – then all are on VCH global address list and conference can be arranged by email
# Appendix M: Family Physician Information Package About Billing Codes

## Most Useful Billing Codes for Care Planning/Service Coordination with Home Health Staff

August 23 2010

Created for CIHR Funded Study: Effectiveness of an intervention to increase communication and collaboration between solo/small group practice general practitioners and home health staff

**Telephone Advice**

<table>
<thead>
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<th>Code</th>
<th>Description</th>
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<tr>
<td>13005</td>
<td>Advice about a patient in Community Care</td>
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**Facility Patient Conference Fee**

<table>
<thead>
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<th>Code</th>
<th>Description</th>
<th>Fee</th>
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</thead>
<tbody>
<tr>
<td>G14015</td>
<td>General Practice Facility Patient Conference: when requested by a facility to review ongoing management of the patient in that facility or to determine whether a patient in a facility with complex supportive care needs can safely return to the community or transition to a supportive care or long-term facility - per 15 minutes or greater portion thereof</td>
<td>40.00</td>
</tr>
</tbody>
</table>

**Community Patient Conference Fee**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>G14016</td>
<td>General Practice Community Patient Conference Fee: Creation of a coordinated clinical action plan for the care of community-based patients with more complex needs. Payable only when coordination of care and two-way collaborative conferencing with other health care providers is required (e.g. specialists, psychologists or counsellors, long-term care case managers, home care or specialty care nurses, physiotherapists, occupational therapists, social workers, specialists in medicine or psychiatry) as well as with the patient and possibly family members (as required due to the severity of the patients condition) - per 15 minutes or greater portion thereof</td>
<td>40.00</td>
</tr>
</tbody>
</table>

The community patient conferencing fee is billable for conferences that occur as a result of care provided in the following community locations for patients who are resident in the community:
- Community GP Office
- Patient Home
- Community placement agency
- Disease clinic (DEC, arthritis, CHF, Asthma, Cancer or other palliative diagnoses, etc.)

**Home Visits**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>00103</td>
<td>Home visit (service rendered between 0800 and 2300 hours – any day)</td>
<td>108.41</td>
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</table>

SOURCE: Extracted from General Practice Services Committee (GPSC) Webpage - [http://www.gpsc.ca/billing-guide-fees](http://www.gpsc.ca/billing-guide-fees)
GP SERVICES COMMITTEE
CHRONIC DISEASE MANAGEMENT INCENTIVES

Revised
2010
Chronic Disease Management (CDM) Payments
This program is a continuation of the Full Service Family Practice Condition Payment introduced in 2003. The program payments recognize that additional work, beyond the office visit payments, of providing guideline based care to patients over a year. The purpose of the condition based payments is to improve patient care. Effective January 1, 2009, there must be at least 2 encounters or visits billed on each CDM patient in the 12 months prior to billing the CDM incentive.

They are payable in recognition of the work that has been done and are not payable in advance of the work being done. The program was enhanced in 2006 through an increased annual bonus amount for provision of clinical guidelines based diabetes and congestive heart failure care (from $75 to $125 per person) and introduction of a $50 bonus payment for clinical guidelines based hypertension management.

Additionally, effective September 15, 2009, a new CDM incentive for Chronic Obstructive Pulmonary Disease has been introduced. With this condition payment, there is no flow sheet, but the patient must be given a copy of their COPD Action Plan (template included in appendix 1). As a part of enhancing the management of COPD patients, the GPSC has also introduced a telephone/e-mail follow up management fee for these patients payable up to 4 times in the 12 months following the successful billing of the 14053.

Eligibility:
These payments are available to:
All general practitioners who have a valid BC Medical Service Plan practitioner number (registered specialty 00), except those who have billed any specialty consultation fee in the previous 12 months; and:
- Whose majority professional activity is in full service family practice as described in the introduction, and
- Who has provided the patient the majority of their longitudinal general practice care over the preceding year, and
- Has provided the requisite level of guideline-based care.

G14050 Annual Chronic Care Bonus – Diabetes Mellitus
Notes:
i) General Practitioners who have a valid MSP practitioner number (registered specialty 00) are eligible to bill. Physicians who have billed a specialty consultation fee within the preceding 12 months are not eligible.

ii) Payable to the general practice full service family physician who has provided the majority of the patient’s longitudinal general practice care over the preceding year and who has provided the requisite level of guideline-based care.

iii) Applicable only for patients with confirmed diagnosis of diabetes mellitus.

iv) Care provided must be consistent with the BC clinical guideline recommendations for Diabetes Mellitus and may only be billed after one year of care has been provided and the patient has been seen at least twice in the preceding 12 months.

v) Claim must include the ICD-9 code for diabetes (250).

vi) This item may only be claimed once per patient in a consecutive 12 month period.

vii) Payable when other CDM items G14051 or G14053 have been paid on the same patient.

viii) If a visit is provided on the same date the bonus is billed; both services will be paid at the full fee.
G14051 Annual Chronic Care Bonus – Congestive Heart Failure

Notes:

i) General Practitioners who have a valid MSP practitioner number (registered specialty 00) are eligible to bill. Physicians who have billed a specialty consultation fee within the preceding 12 months are not eligible.

ii) Payable to the general practice full service family physician who has provided the majority of the patient’s longitudinal general practice care over the preceding year and who has provided the requisite level of guideline-based care.

iii) Applicable only for patients with confirmed diagnosis of congestive heart failure.

iv) Care provided must be consistent with the BC clinical guideline recommendations for Congestive Heart failure and may only be billed after one year of care has been provided and the patient has been seen at least twice in the preceding 12 months.

v) Claim must include the ICD-9 code for congestive heart failure (428).

vi) This item may only be claimed once per patient in a consecutive 12 month period.

vii) Payable when other CDM items G14050 or G14053 have been paid on the same patient.

viii) If a visit is provided on the same date the bonus is billed; both services will be paid at the full fee.

G14052 Annual Chronic Care Bonus – Hypertension

Notes:

i) General Practitioners who have a valid MSP practitioner number (registered specialty 00) are eligible to bill. Physicians who have billed a specialty consultation fee within the preceding 12 months are not eligible.

ii) Payable to the general practice full service family physician who has provided the majority of the patient’s longitudinal general practice care over the preceding year and who has provided the requisite level of guideline-based care.

iii) Applicable only for patients with confirmed diagnosis of hypertension.

iv) Care provided must be consistent with the BC clinical guideline recommendations for Hypertension and may only be billed after one year of care has been provided and the patient has been seen at least twice in the preceding 12 months. The patient must be given a copy of their flow sheet in order to facilitate patient self management.

v) Claim must include the ICD-9 code for hypertension (401).

vi) This item may only be claimed once per patient in a consecutive 12 month period.

vii) Not payable if G14050 or G14051 claimed within the previous 12 months.

viii) If a visit is provided on the same date the bonus is billed; both services will be paid at the full fee.

G14053 Annual Chronic Care Bonus – Chronic Obstructive Pulmonary Disease- COPD

Notes:

i) General Practitioners who have a valid MSP practitioner number (registered specialty 00) are eligible to bill. Physicians who have billed a specialty consultation fee within the preceding 12 months are not eligible.

ii) Payable to the general practice full service family physician who has provided the majority of the patient’s longitudinal general practice care over the preceding year and who has provided the requisite level of guideline-based care.

iii) Applicable only for patients with confirmed diagnosis of COPD.

iv) Care provided must be consistent with the BC clinical guideline recommendations for COPD and may only be billed after one year of
care has been provided and the patient has been seen at least twice in
the preceding 12 months. The patient must be given a copy of their
personalized COPD care plan in order to facilitate patient self
management.

v) Claim must include the ICD-9 code for chronic bronchitis (491), emphysema (492),
bronchiectasis (494) or chronic airways obstruction—not elsewhere classified
(496).

vi) This item may only be claimed once per patient in a consecutive 12 month period.

vii) Payable when other CDM items G14050, G14051 or G14052 have been paid on the
same patient.

viii) If a visit is provided on the same date the bonus is billed; both services will be paid
at the full fee.

G14073 COPD Telephone/Email Management Fee
This fee is payable for 2-way communication with eligible patients via telephone or email for the
provision of clinical follow-up management of a patient's COPD by the GP who has billed and
been paid for the GPSC Annual Chronic Care Bonus for COPD (G14053) This fee is not to be
billed for simple appointment reminders or referral notification.

Notes:

i) Payable to a maximum of 4 times per patient in the 12 months following
the successful billing of the GPSC Annual Chronic Care Bonus for COPD
(G14053).

ii) Not payable unless the GP/FP is eligible for and has been paid for the GPSC Annual
Chronic Care Bonus for COPD (G14053).

iii) Telephone/Email Management requires two-way communication between the
patient and physician or medical office staff on a clinical level; it is not payable
for simple notification of office or laboratory appointments or of referrals.

iv) Payable only to the physician paid for the GPSC Annual Chronic Care
Bonus for COPD (G14053) unless that physician has agreed to share care with
another delegated physician.

v) G14016, Community Patient Conferencing Fee, payable on same day for same
patient if all criteria met. Time spent on telephone with patient under this fee
does not count toward the time requirement for the G14016.

vi) Not payable on the same calendar day as a visit or service fee by same physician
for same patient with the exception of G14016.

vii) Chart entry must record the name of the person who communicated with the
patient or patient's medical representative, as well as capture the elements of
care discussed.

BILLING PROCEDURE
The chronic care incentive payments may be applied for once continuity of monitoring the
patient's chronic conditions using GPAC guideline informed care has been established as
indicated below in the flow sheet section.

The CDM incentives are submitted through the MSP claims system the same way you would
submit an MSP fee-for-service claim. The submission must include the relevant ICD-9 code
(250 for diabetes; 428 for congestive heart failure; 401 for hypertension; 491, 492, 494 or
496 for COPD).

FLOW SHEETS & ACTION PLANS
All the GPSC Chronic Disease Management Incentives are payable to the physician who has
provided the majority of the patient's longitudinal general practice care over the preceding
year. Chronic Care flow sheets are a useful tool for tracking care provided to patients over time. The
GPSC requires physicians to track and document adequately the care provided to their patients to ensure they are providing guideline informed care. While it is not mandatory to utilize official GPAC flow sheets, if you use a different flow sheet, all essential elements from the GPAC guideline must be included. There are other requirements that are incentive specific as outlined below:

- **Diabetes Patient Care Flow Sheet**
  Fee item 14050 may be billed after the patient has been provided guideline informed care for one year. Although you are not required to give the patient a copy of the flow sheet, this is highly recommended to assist in patient self management by the GP Services Committee.

- **Congestive Heart Failure Care Flow Sheet**
  Fee item 14051 may be billed after the patient has been provided guideline informed care for one year. Although you are not required to give the patient a copy of the flow sheet, this is highly recommended to assist in patient self management by the GP Services Committee.

- **Hypertension Care Flow Sheet**
  Fee item 14052 may be billed after the patient has been provided guideline informed care for one year. To assist in patient self management the patient **must** be given copies of their flow sheet for the year to assist in patient self management.

- **COPD Patient Action Plan**
  Fee item 14053 may be billed after the patient has been provided guideline informed care for one year. There is no flow sheet for the 14053, however, to facilitate self management, the patient must be provided with their COPD Action plan which has been jointly developed between the patient and GP, and is to be reviewed and updated regularly.

**FREQUENTLY ASKED QUESTIONS**

1. **How do I claim the condition-based payments?**

   Effective September 15, 2009, in addition to the existing codes for diabetes (14050) congestive heart failure (14051) and hypertension (14052), code 14053 has been added for COPD. The incentive payments are payable if the patient has a confirmed diagnosis of diabetes mellitus (*please note this incentive payment is not payable for pre diabetes patients*), congestive heart failure, hypertension or chronic obstructive pulmonary disease. Only one payment per diagnosis is payable per patient per year. The bonus 14052 (hypertension) is not payable if a bonus payment 14050 (diabetes mellitus) or 14051 (congestive heart failure) has been paid for the patient in the preceding year. 14052 (hypertension) is payable in addition to 14053 for those patients who also have COPD. 14052 (hypertension) is only billable for patients with hypertension who do not also have a diagnosis of diabetes mellitus and/or congestive heart failure.

   Condition-based bonus claims are submitted through the MSP Claims system the same way you would submit a MSP fee-for-service claim. The submission must include the relevant ICD 9 codes:
   
   Congestive heart failure - 428;  
   Diabetes mellitus – 250;  
   Hypertension – 401;  
   COPD – 491 or 492 or 494 or 496.

2. **Is it possible to claim all Chronic Disease Management fees in the same patient?**

   If a patient has any of the three conditions diabetes mellitus, congestive heart failure, and/or COPD and criteria are met for each condition, each annual incentive bonuses may be billed separately. If a patient has hypertension, the 14052 cannot be billed in addition to Diabetes or
CHF, as management of hypertension is included in the guideline for these 2 conditions. If the patient has hypertension and COPD without diabetes or CHF, then both the 14052 and 14053 may be billed on the same patient if all criteria are met.

CDM Allowable Combinations in Single Patient

<table>
<thead>
<tr>
<th></th>
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<td>14053</td>
<td>Yes</td>
<td>Yes</td>
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<td>Yes</td>
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</tbody>
</table>

3. When should the incentive bonus be billed?
All the GPSC Chronic Disease Management Incentives are payable to the physician who has provided the majority of the patient's longitudinal general practice care over the preceding year. The Chronic Care Incentive bonus fees may be billed the patient has been provided guideline informed care for one year for that particular condition.

Although you are not required to give the patient a copy of the flow sheet for diabetes (G14050) or CHF (G14051), this is highly recommended to assist in patient self management by the GP Services Committee. For the billing of the hypertension CDM (G14052), it is mandatory to provide the patient with a copy of their flow sheet or other documentation self management documentation that covers all guideline specific information. For the billing of the COPD CDM (G14053), there is no flow sheet, but it is mandatory to provide the patient with a copy of their jointly developed COPD Action Plan.

Once successfully billed, the CDM incentives may be billed on or about the anniversary date of the initial billing, provided guideline informed care has continued to be provided in the intervening 12 months.

4. Will payment item 14050, 14051, 14052 and 14053 replace the usual visit fees for those patients who have diabetes, congestive heart failure, hypertension or COPD?
No. Billing for office visits should continue as usual. This bonus is billed in addition to any other fees incurred by usual patient care. It is a management bonus, intended to compensate for the time taken to maintain patient care plans in accordance with the BC clinical guidelines.

5. Do I have to see the patient to bill the payment?
You will have to see the patient to provide care according to the guidelines, but you do not have to see the patient to fill in the flow sheet or on the day of billing the payment. However, effective January 1, 2009, there must be at least 2 visits billed on each CDM patient in the 12 months prior to billing the CDM incentive.

6. Do I have to provide all follow up care to the patient face to face?
After successfully billing the G14053, some follow up management may be provided to patients by telephone or e-mail, for which you can bill the G14073 COPD up to 4 times in the following 12 months (in addition to at least 2 face to face visits).

7. Can I still bill if the patient is in a long-term care facility?
Patients in long-term care facilities are eligible; however clinical judgment may be needed about the appropriateness of following these guidelines in patients with dementia or very limited life expectancy. If the COPD incentive (14053) is billed for resident in a long-term care facility a personalized Clinical Action plan must be entered in the patient's chart.

8. Where can I find the clinical guidelines and flow sheets?
The full Diabetes Care, Heart Failure Care, and the Treatment of Essential Hypertension guidelines are found on the Guidelines and Protocols page of the Medical Services Plan website, along with all other current guidelines.
9. Will other flow sheets be admissible for the bonus?
Other flow sheets can be used if they are consistent with the BC clinical guidelines for diabetes, heart failure, and/or essential hypertension management, and contain the same information included in the patient flow sheets that are part of the BC clinical guideline. It is a requirement to give hypertension patients a copy of their flow sheet as an aid to patient self management. Physicians are not required to submit the completed flow sheets to the Ministry of Health in order to receive the incentive payment. Instead, this program will be subject to the usual process of random audit through the Ministry of Health’s Billing Integrity Program. Therefore, it is important that you keep all of your completed patient flow sheets on file.

10. Where can I find the COPD Action Plan template?
As part of the patient self management handout, a COPD Care plan template can be found at the end of this document.

11. Can I bill the payment even if the clinical or laboratory objectives have not been met?
The payment is provided for the provision of guideline-based care, and is NOT a payment simply because the patient has a diagnosis of diabetes, congestive heart failure, or hypertension. However, you may still claim for the payment if you have attempted to provide guideline based care but for some reason care objectives have not been met. If this is the case, however, for audit purposes you must have clear chart entries that show that you attempted to provide the recommended level of care and did not achieve targets, or you explicitly established different targets based on the unique circumstances of your patient.

12. Can I bill for patients covered by other provinces?
Patients covered by other provinces who are temporarily in BC are not eligible as their regular physician is in the other province. If they stay in BC and obtain coverage under the Medical Services Plan then they become eligible for the program. In few border communities a BC physician may provide the majority of care for an Alberta or Yukon patient, and these patients will be eligible.

13. I have assumed the practice of another GP within the last 12 months. May I still bill for patients’ Chronic Disease Management fees?
If the practice you assumed has provided the requisite care to the patient (see bullet 3 in this section) you may bill the Chronic Disease Management payment on its anniversary date, without having to wait a full 12 months from the time you assumed responsibility for the practice. You may not bill the Chronic Disease Management fees if a patient did not receive the requisite level of care, or a chronic disease management fee code has been billed for the patient in the preceding 12 months.

14. Are the payments eligible for the rural premiums?
No.

15. Are general practitioners who are paid by service contract, sessional or salary payments eligible to receive the chronic care bonus payments?
Yes.
CDM Fee Values

<table>
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<tr>
<th>Code</th>
<th>Description</th>
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<tr>
<td>G14051</td>
<td>Annual Chronic Care Bonus – Congestive Heart Failure</td>
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</tr>
<tr>
<td>G14052</td>
<td>Annual Chronic Care Bonus – Hypertension</td>
<td>$50.00</td>
</tr>
<tr>
<td>G14053</td>
<td>Annual Chronic Care Bonus – Chronic Obstructive Pulmonary Disease</td>
<td>$125.00</td>
</tr>
<tr>
<td>G14073</td>
<td>COPD Telephone/Email Management Fee</td>
<td>$15.00</td>
</tr>
</tbody>
</table>

Billing Scenario

Mr. William S is a 76 year old former smoker who has a past history of Diabetes, hypertension and COPD. You have been his family physician for the past 12 years. When the initial GPSC CDM incentive program began, you had pulled all your charts for eligible patients including Mr. S, and started utilizing the CDM flow sheets for following the care of his diabetes. You see have also been undertaking the complex care management planning visits with Mr. S and find he is due for a CPX as per the guideline recommendations. Mr. S was seen in February for follow up of his diabetes. The Complex Care Management Planning visit was provided in April of this calendar year. Mr. S has seen you in June and returns in September for his planned CPX in the same month as the anniversary date of his Diabetes CDM. You review his complex care plan and his diabetes management. As well, you provide him with a COPD Action plan for the coming winter. He returns in November for his annual seasonal flu shot given by your office nurse. Later that month, after a visit with his daughter and grandchildren he phones the office with some increased shortness of breath and a change in his sputum but no fever. You advise him on the management of his COPD according to his COPD action plan. You follow up with him at an office visit 2 weeks later. The billings for his management for this calendar year are:

<table>
<thead>
<tr>
<th>Date</th>
<th>Service Description</th>
<th>Fee Code</th>
<th>Diagnostic Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb</td>
<td>Office Visit</td>
<td>17100</td>
<td>250</td>
</tr>
<tr>
<td>April</td>
<td>Complex Care Management Planning Visit</td>
<td>14033</td>
<td>R250</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17100</td>
<td>496</td>
</tr>
<tr>
<td>June</td>
<td>Office Visit</td>
<td>17100</td>
<td>250</td>
</tr>
<tr>
<td>September</td>
<td>CPX plus CDM review and COPD Action Plan update</td>
<td>17101</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>Diabetes CDM</td>
<td>14050</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>COPD CDM</td>
<td>14053</td>
<td>496</td>
</tr>
<tr>
<td>November</td>
<td>Seasonal Flu shot by office nurse</td>
<td>00010</td>
<td>33A</td>
</tr>
<tr>
<td>November</td>
<td>Phone Follow up of COPD</td>
<td>14079</td>
<td>496</td>
</tr>
<tr>
<td>December</td>
<td>Office Follow up of COPD</td>
<td>17100</td>
<td>496</td>
</tr>
</tbody>
</table>
Chronic Obstructive Pulmonary Disease
A Guide for Patients
Adapted from 2005 GPAC COPD Guideline

**Chronic Obstructive Pulmonary Disease (COPD)**
Chronic obstructive pulmonary disease includes respiratory disorders such as chronic bronchitis and emphysema that make breathing difficult. Smoking is the most important cause of these diseases. If you smoke, quitting will reduce the severity of the disease and help you improve the quality of life over a much longer time.

**Chronic bronchitis and emphysema**
In chronic bronchitis, inflammation occurring in the bronchial tubes may cause narrowing, which makes breathing difficult. A chronic cough that brings up sputum is present.
In emphysema, lung tissue and the small air sacs (alveoli) at the end of the airways become damaged and air becomes trapped in the lungs leading to shortness of breath.

**COPD Exacerbations**
An exacerbation is a worsening of the condition that includes the following signs:
- rapid increase in cough
- mucus production (especially if yellow or green)
- increased shortness of breath
- blue lips or fingers

Exacerbations can be serious and life-threatening. Prompt and effective treatment can help most people recover to the level of breathing before the exacerbation.

**Diagnosis**
A medical history, physical examination and breathing tests are used to diagnose COPD.

**Treatment**
Although there is no cure for COPD, the best way to slow the progression of the disease is to quit smoking. Medications may reduce or relieve symptoms. Counseling, education, and exercise can help improve quality of life. Pulmonary rehabilitation programs are available in some areas and these have been proven effective.
The use of a COPD Action Plan that has been jointly developed with your physician will assist you in managing your symptoms on a daily basis.

**Quitnow by Phone**
A free telephone service offering advice, information and support about quitting smoking. Call toll-free within British Columbia: 1 877 455-2233. The Quitnow Helpline is staffed from 10am to 6pm. After hours and on weekends, callers are invited to leave a message and a Quit Specialist will return the call during service hours.

The BC Smokers’ Helpline service is tailored to the individual needs of each caller.
- **Smokers who want to quit** can get information about all the different methods, help with deciding what method may be best for them, and what to expect once they quit.
- **People who have just quit** may wish information about coping with withdrawal, and how to manage concerns about things like weight gain or sleep disturbance.
- **Smokers who are thinking of quitting** can discuss the pros and cons with a trained Quit Specialist. And the best thing is: no hassle, no pressure.
• Smokers who wish to keep smoking are also welcome to call the line; they don’t push anyone to quit smoking and don’t judge people for smoking, and a chat may provide useful information.
• Friends and family members concerned about someone’s smoking are encouraged to call to discuss what they can do to help.

Living with COPD
Remove factors that can worsen your condition such as smoking. Balance exercise and rest periods. Participation in a pulmonary rehabilitation program or a chronic disease self-management program can be helpful. The BC Lung Association has a list of contacts for Better Breathers clubs in different areas of the province (see web site below) or call 1800 665-5864 for further information including other programs such as Breathworks 1866 717-2673.

End of Life Planning
Planning for end of life circumstances is necessary for many patients in the advanced stages of COPD.

Consider discussing end of life concerns with your physician and writing a legal document (advance directive) that helps ensure your health care wishes will be respected. An advance directive contains your preferences for treatment, a living will and a power of attorney. More details related to end of life care can be found at the BC HealthGuide web site listed below.

British Columbia Internet Resources

The BC Ministry of Health Chronic Disease Management web site has more detailed information about the management of diseases such as COPD.
http://www.health.gov.bc.ca/cdm/patients

The BC HealthGuide Online provides detailed information on managing COPD and end of life planning.
http://bchealthguide.org

BC Lung Association offers excellent materials for the control of COPD.
http://www.bc.lung.ca

Contact the BC Lung Association or your local Health Authority for access to a Pulmonary Rehabilitation Program
COPD ACTION PLAN

Patient Name: ___________________________ Date: ___________________________

PHN: ___________________________ Date of Birth: ___________________________

Family Contact: ___________________________ Phone #: ___________________________

Physician: ___________________________ Phone #: ___________________________

After Hours Phone #: ___________________________

You have been diagnosed with Chronic Obstructive Pulmonary Disease (COPD). As someone with COPD, you are either in your stable, everyday state or having a flare up. This Flare up Plan is a written contract between you and your doctor about how you will manage your COPD flare ups. This Plan will help you and your doctor to quickly recognize and treat flare ups to improve your health.

COPD (chronic obstructive pulmonary disease) has 2 states:

- When you are am stable:
  1. Breathing without shortness of breath
  2. Able to do daily activities
  3. Mucous is easy to cough up
  4. Sleep well
  5. Able to exercise as directed by physician

- How to tell if you are having a flare up
  A flare up may occur after you get a cold, get run down or are exposed to air pollution or very hot or cold weather. There are 3 things that define a flare up:
  1. Increased shortness of breath from your usual level
  2. Increased amount of sputum from your normal level
  3. Sputum changes from its normal colour to yellow, green or rust colour
  Some people may feel a change in mood, fatigue or low energy prior to a flare-up.

If any 2 or all of these symptoms persist for 48 or more hours do the following:

(Your physician will check the desired action plan for you)

☐ Take your rescue inhaler 2-4 puffs as needed (up to 4-6 times per day) for shortness of breath.

☐ Contact your family doctor immediately for a check up and medication review.

☐ Take your prescribed antibiotic for a COPD flare up (see over).

☐ Take your prescribed prednisone for a COPD flare up (see over).

☐ Contact your doctor if you feel worse or do not feel better after 48 hours of treatment.

☐ Other ___________________________

If you are extremely breathless, anxious, fearful, drowsy or having chest pain, call 911 for an ambulance to take you to the emergency room.

Physician Signature______________________________

Patient/Caregiver Signature_________________________ Please turn over
**COPD MAINTENANCE MEDICATION RECORD**

**Patient Name:** __________________________  **Date:** __________________________

**PHN:** __________________________  **Date of Birth:** __________________________

**Family Contact:** __________________________  **Phone #:** __________________________

**Physician:** __________________________  **Phone #:** __________________________

**After Hours Phone #:** __________________________

**Patients:** Take the following maintenance medications **every day** to help maintain control of your COPD symptoms.

**Physicians:** Please fill in prescribed maintenance medications.

<table>
<thead>
<tr>
<th>Medication Prescribed</th>
<th>How Much to Take</th>
<th>When To Take</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**COPD FLARE-UP MEDICATION RECORD**

**Patients:** Please fill in date when you start and finish your flare-up medications.

**Physicians:** Please fill in prescribed flare-up (antibiotics & prednisone) medications.

<table>
<thead>
<tr>
<th>MedicationPrescribed</th>
<th>Start Date / Finish Date</th>
<th>Start Date / Finish Date</th>
<th>Start Date / Finish Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

*Make sure to take prescribed medication until all finished.*
Appendix N: Final Coding Scheme

<table>
<thead>
<tr>
<th>CODE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Criteria for conference</td>
<td>Reasons why participants would find a conference useful</td>
</tr>
<tr>
<td>1.1 Medical/functional Complexity of the patient</td>
<td>Med management; functional or medical decline; Palliation;</td>
</tr>
<tr>
<td>1.2 Social Complexity</td>
<td>Social or family dynamics;</td>
</tr>
<tr>
<td>1.3 Coordination of care</td>
<td>Multiple doctors/specialists Coordination of care and consistency across providers when there was a perceived lack of consistency</td>
</tr>
<tr>
<td>1.4 Clients in transition</td>
<td>Becoming familiar with new admission or patients who have undergone recent transition; change in status of shared client</td>
</tr>
<tr>
<td>1.5 Pro-active (vs. reactive) approach through shared analysis</td>
<td>Pro-active vs. reactive care; perceived un-met need (home health think client need medical attention or MD thinks client has unmet need from home health)</td>
</tr>
<tr>
<td>2. System Silos</td>
<td>GPs work in one “health system” and home health teams work in a completely separate “health system” and the two systems are not set up to connect</td>
</tr>
<tr>
<td>2.1 Difference Work Flows</td>
<td>Factors such as preparation for conferences, lack of coordination, different schedules, working across different systems (hospital, specialists, home health, GP)</td>
</tr>
<tr>
<td>2.2 Assumptions</td>
<td>Common understandings of why things happen the way they do, or why people behave the way they do; misunderstanding of what GP believes home health staff know and vice versa</td>
</tr>
<tr>
<td>2.3 Structural Barriers</td>
<td>Accountability (drs accountable to their practice and other doctors, home health accountable to the team); assumptions made are personalized rather than understood as due to the system, and then reinforced until they become a “culture”; drs have ambulatory work flow (what comes in the door is the focus; GP agenda set by patient initiating contact); documentation; geographical barriers – doctors panel not defined by geographic catchment, home health teams’ panel is; absence of shared records</td>
</tr>
<tr>
<td>3. Communication within and across silos</td>
<td></td>
</tr>
<tr>
<td>3.1 Tools</td>
<td>SBAR; faxes; the polycon and audioconference numbers; the scheduling board; the PARIS shared patient reports;</td>
</tr>
<tr>
<td>Type of communication</td>
<td>Immediate need to contact MD, going over case</td>
</tr>
<tr>
<td>3.2 Traditional communication methods</td>
<td>Phone and fax; when they work and don’t work; challenges of communicating with “hard to reach” MDs irrespective of modality</td>
</tr>
<tr>
<td>3.3 Clerical</td>
<td>MOA and PA</td>
</tr>
<tr>
<td>3.4 Conference as a communication method</td>
<td>Conference as efficient; conference as a bridge across the silos; conference as an increased draw on time; negative experiences of conferences</td>
</tr>
<tr>
<td>CODE</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>3.4 Increased communication</td>
<td>Perception of improved care quality with client conferencing</td>
</tr>
<tr>
<td>4. Recommendations</td>
<td>Ideas coming from GPs and home health staff to improve communication and collaboration</td>
</tr>
<tr>
<td>4.1 Immediate</td>
<td>Ideas that will sustain the audio-conferencing format used during the study beyond the study period</td>
</tr>
<tr>
<td>4.2 Imagining the future</td>
<td>e-wound software shared with drs; other technologies; real time communication such as text messaging</td>
</tr>
<tr>
<td>5. Relationships</td>
<td>Building relationships that meant future communication was facilitated; building trust</td>
</tr>
<tr>
<td>6. Change</td>
<td>New things are hard at first; Change related issues; What it takes to start something new</td>
</tr>
<tr>
<td>7. Great Quotes</td>
<td></td>
</tr>
</tbody>
</table>
Appendix O: R-generated Model Outputs for Models Included in Results Section

\[
\log(\mu_{ij}) \text{Average Patients per month for Control FP in the Baseline Phase} = (1.7 \text{(Patients)} + 1.13 \text{(Random Effects per FP)} + 0.43 \\
\text{(Intervention Group)} - 0.01 \text{(Pre-study Phase)} - 0.01 \text{(Intervention Phase)}
\]

```r
> patmod <- lmer(Patients ~ Group + Phase + (1|GP), data = ContactsPatients, family = "poisson")

> summary(patmod)

Generalized linear mixed model fit by the Laplace approximation
Formula: Patients ~ Group + Phase + (1 | GP)
Data: ContactsPatients

AIC BIC logLik deviance
218.6 237.3 -104.3 208.6

Random effects:
Groups Name Variance Std.Dev.
GP (Intercept) 1.1319 1.0639

Number of obs: 308, groups: GP, 22

Fixed effects: Estimate Std. Error z value Pr(>|z|)
(Intercept) 1.702698 0.326822 5.210 1.89e-07 ***
GroupI 0.432966 0.458028 0.945 0.345
PhaseI -0.012617 0.045449 -0.278 0.781
PhaseP -0.006016 0.054802 -0.110 0.913
---
Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Correlation of Fixed Effects:

<table>
<thead>
<tr>
<th></th>
<th>(Intr)</th>
<th>GroupI</th>
<th>PhaseI</th>
</tr>
</thead>
<tbody>
<tr>
<td>GroupI</td>
<td>-0.706</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PhaseI</td>
<td>-0.101</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>PhaseP</td>
<td>-0.084</td>
<td>0.000</td>
<td>0.601</td>
</tr>
</tbody>
</table>
log(µ_{it}) Total Contacts = log (Patients) + (− 2.26 \text{ (Total Contacts per patient for Control FPs in Baseline phase)} + 0.21 \text{ (Random effects FP)} + 0.44 \text{ (Intervention group)} + 0.43 \text{ (Pre-study phase)} + 0.19 \text{ (Intervention phase)}

> contacttot <- lmer(Total ~ Group + Phase + (1|GP), offset = log(Patients), data = ContactsPatients20, family = "poisson")

> summary (contacttot)

Generalized linear mixed model fit by the Laplace approximation
Formula: Total ~ Group + Phase + (1 | GP)
Data: ContactsPatients20

AIC    BIC    logLik   deviance
674.2  692.4  -332.1   664.2

Random effects:
Groups   Name      Variance  Std.Dev.
GP (Intercept) 0.20984   0.45809

Number of obs: 280, groups: GP, 20

Fixed effects:

|            | Estimate | Std. Error | z value | Pr(>|z|) |
|------------|----------|------------|---------|----------|
| (Intercept)| -2.2569  | 0.1930     | -11.693 | < 2e-16  *** |
| GroupI     | 0.4375   | 0.2319     | 1.887   | 0.0592   |
| PhaseI     | 0.4282   | 0.1085     | 3.947   | 7.91e-05 *** |
| PhaseP     | 0.1850   | 0.1316     | 1.405   | 0.1599   |

---

Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Correlation of Fixed Effects:

<table>
<thead>
<tr>
<th></th>
<th>(Intr)</th>
<th>GroupI</th>
<th>PhaseI</th>
</tr>
</thead>
<tbody>
<tr>
<td>GroupI</td>
<td>-0.655</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PhaseI</td>
<td>-0.454</td>
<td>0.004</td>
<td></td>
</tr>
<tr>
<td>PhaseP</td>
<td>-0.370</td>
<td>0.002</td>
<td>0.656</td>
</tr>
</tbody>
</table>