Moving patients across organizations: exploring the antecedents of effective and efficient patient referral processes

by

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Abstract

The purpose of this study was to explore what makes the interorganizational referral process effective and efficient from the perspectives of acute care referral senders and post acute care referral receivers. The referral process was conceptualized as the classic communication model involving a sender, receiver, information, a communication channel and contextual factors such as formalization and relationships. The hypotheses proposed that the relationships between each of the variables information usefulness, communication channel richness, and degree of formalization affected each of perceived referral process effectiveness and efficiency through the variable ‘relational coordination’. Key informants who either sent referrals from acute care settings or who received them in post acute care inpatient settings were asked to discuss each variable. These results were combined with those of a literature review to develop questionnaires containing a scale with
acceptable Chronbach alpha for each. Surveys were disseminated through networks and associations involved in acute and post acute stroke and hip fracture care and in discharge planning and Long Term Care. Useable responses included 114 surveys from referral senders and 171 from referral recipients. Baron and Kenny’s four step test for mediation was used to test the hypotheses. For senders, each of channel richness (adjR² = 10% p= 0.001), information usefulness (adjR² = 16% p= 0.000), and formalization (adjR² = 10% p= 0.000) were significantly related to perceived effectiveness. For channel richness, the relationship with perceived effectiveness was partially mediated by relational coordination (adjR² = 19% p= 0.001). This was also the case for the relationship between information usefulness and perceived effectiveness (adjR² = 0.20; p=000). For receivers, channel richness is related to perceived effectiveness through relational coordination (adjR² = 12% p= 0.003). This was also the case for information usefulness (adjR² = 13% p= 0.000). In neither group were any of the variables significantly related to efficiency. We may conclude that in the referral process, channel richness and information usefulness are related to perceived effectiveness for both senders and receivers. These may provide an important return on investment if chosen as an areas for referral process improvement, if accompanied by concurrent investments in relational coordination.
Dedication

This thesis is dedicated to my dear mother, Mrs. Bader Saryeddine who encourages me every day. It is also dedicated in loving memory of my late father, Mr. Mofid Saryeddine who passed away just over a year ago. Their own dedication to both family and education, as well as their plans, dreams, love and support for us, made my own realities possible. Thank you for being the ‘light of so many candles’ and for believing in me so staunchly, it was almost impossible not to believe in myself.
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To my committee members, Dr. Jan Barnsley and Dr. Whitney Berta of the Department of Health Policy, Management, and Evaluation and to Dr. Terry Amburgey, of the Rotman School of Management, thank you also for teaching me courses that inspired and interested me, and for being on my committee with such unwavering support, expertise, and guidance. I feel blessed to have crossed paths with you.

Dr. Olesya Falenchuk at the Ontario Institute for Studies in Education at the University of Toronto taught me the statistics I needed for this research. Thank you Olesya for being a truly gifted instructor, you not only managed to teach me the statistics, you even made me enjoy it!

Ms. Sarah Wilson assisted me with the data entry and Ms. Ellen Garfield and Ms. Rebecca MacBride did the transcription of interviews. Ms. Mariana Vardaei collected the surveys as they arrived and shared my joy each time we got a response. Ms. Seeta Parker and Ms. Christina Lopez navigated me through logistics. All of this was tremendously appreciated. Thank you.

Perhaps an usual thing to say in these acknowledgements, but it is important to me to note here that I completed this thesis through the flex time program at the Department of Health Policy Management and Evaluation. In my opinion, this type of program recognizes an entrepreneurial spirit that exists and that can be further nurtured within the research community. I think it breaks barriers that might otherwise preclude people from being able to do this at all. I believe that this type of program is an example of innovation in education and in research. I truly hope many other people will have access to this program and others like it for many years to come.
My research was also made feasible through the collaboration of a number of organizations that shared an interest in further understanding the referral process. I owe enormous thanks to Ms. Lucy Coppola and the Executive of the Association of Discharge Planning Coordinators of Ontario who were the first to sign on as collaborators in my project. I owe similar thanks to the Ontario Long Term Care Association (especially to the Research Committee, Ms. Krista Robinson-Holt, and Ms. Jennifer Langston), the Ontario Stroke Networks (especially to Ms. Christina O’Callaghan) and to the Ontario Bone and Joint Health Network (especially to Ms. Rhona McGlasson and Ms. Janet McMullen). Through these organizations, hundreds of people completed my surveys or participated in an interview. I want to thank all who participated so very much for this generosity and I truly look forward to sharing what I learned with you.

To Mr. Glenn Brimacombe who is the President & CEO of the Association of Canadian Academic Healthcare Organizations, thank you for the opportunity to be at ACAHO, which not only encouraged me to finish this thesis, but also to do so in my home-town close to my parents and family. I hope that the skills I’ve learned on this journey will benefit the organization and its goals and I look forward to the work ahead. To my colleagues Ms. Beatrice Keleher Raffoul and Ms. Alexandria Tougui, your friendship and talent are gifts. Thank you for your encouragement.

During the early parts of my program I worked at the GTA Rehab Network where I was able to take time off to go to class and also to benefit from the Toronto Rehabilitation Institute’s Tuition Assistance Program. I would like to thank Ms. Rika Vander Laan, Ms. Charissa Levy, Ms. Judy Moir, Ms. Heather Brien, Ms. Patty Aird, Mr. Robert Jessop, Ms. Linda Milan, and Ms. Sue Balogh for their encouragement during these years.

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I wrote the early parts of this thesis in the company of other writers at the Second Cup at Queen’s Quay in Toronto where the owner let us occupy tables for hours on end. One day, a
fellow writer, Mr. James Russell brought me a copy of his completed novel. In his acknowledgements, I saw my own name and when I asked why, he said because I was writing too and that meant something. I promised I would finish ‘my book’ and do the same – so here it is Mr. Russell. Thank you for the inspiration and for holding me to account!

In the many years that I spent on this thesis, my oldest friends (and sisters), Ms. Nadine Saryeddine and Ms. Randa Saryeddine (and Randa’s husband Mr. Carl Desmarais and most recently their sweet son Nabil) tolerated a somewhat moody or absent sister. Thank you for being there when I was not; for cheering me on; and as they say, for ‘liking me anyway’.

Finally, this thesis is dedicated to my parents. There are no words possibly powerful enough to express their role in this and everything else I have been able to do. It was my mother’s own love of family and education that prompted a journey that will hopefully continue for many generations to come. The strength, faith and support of my late father, live on for me in this paper, as they do in so many other gifts in my life. He would have been happy to share this moment with us, but I believe he always knew how this particular chapter would end.

While these words mark the last of this thesis, they also mark the beginning of a new journey. I hope that some of the ideas in this paper, about how people work together and relate, will find their way into useful places – and most importantly, that all of our relationships will continue to grow – in both quality and quantity.
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*In the electronic version of this thesis, the Appendices appear in a supplementary file.*
Chapter 1
Introduction

This thesis is called “Moving patients across organizations: exploring the antecedents of perceived effectiveness and efficiency in the referral process”. It is a study on a process - the interorganizational referral process - that occurs almost everyday in healthcare and that is often a precursor to the transition of a patient from acute care to post acute care settings.

There are many different types of referral processes. There are referral processes that rely on technology, that are informal, that are legislated, managed by a third party, or that are face to face, and the list goes on. This variation, while possibly reflecting a variety of preferences and scenarios, also creates a natural experiment for determining what makes a ‘good’ referral process.

The purpose of my research is therefore to explore what makes the referral process effective and efficient from the perspectives of acute care referral senders and post-acute care referral recipients. By understanding these perspectives, we can contribute to the design of innovations and better understand how we communicate across organizations.

The research is presented in nine chapters. Chapters 1-3 introduce the problem and background from a practical and theoretical perspective. Chapter 4 provides a review of the research studies related to the problem and Chapter 5 synthesizes content from the earlier chapters to present the model and hypotheses that drove this research. Chapter 6 then introduces the research study methods which unfolded in two phases. Phase 1 of the research involved key informant interviews to develop two versions of the survey tool that was used to test the hypotheses. In Phase II, I administered the surveys, gathered the data, and ran hypothesis tests. As such, Chapter 7 provides detailed procedures and results for the survey development process and Chapter 8 provides detailed procedures and results for the survey administration and hypothesis tests. In Chapter 9, I provide a discussion of the findings from both a theory and practical standpoint. I also discuss the limitations, implications for practice, future research, and concluding remarks.
Chapter 2
Background

This thesis is about the referral process and specifically about the perspectives of acute care referral senders and post acute care referral receivers who work in the context of an organization that has inpatient acute or post acute care beds. The perspectives of these individuals are important because it is these perspectives that can drive important investments and innovations designed to improve the referral process when it is deemed problematic. However, since the referral process affects patients, providers and the health system, I will begin with a brief discussion of its relevance in all regards, for context setting purposes only.

1 Problem

Each year, both in Ontario and abroad, thousands of patients are referred from an acute care to a post acute care setting (CIHI, 2007; Oxley, 2009). Many, although not all of these transitions are preceded by a referral (Anderson, 1991; Luker & Chalmers, 1989; Bowles, Foust, & Naylor, 2003; Bowles, Naylor & Foust, 2002). Some of these referrals may be within the same institution, like from the acute care floor to the rehabilitation and complex continuing care program in a large community hospital (CIHI, 2007; Anderson, 1991; Anderson & Helms, 1994; GTA Rehab Network, 2006). However, sometimes, the referral is from acute care at one organization to post acute care at another organization (CIHI, 2007; Anderson, 1991; Anderson & Helms, 1994; GTA Rehab Network, 2006; Jenks & Bobula, 1998). It is these interorganizational referrals that are of particular interest in this study.

Recognizing the pervasiveness of this phenomena and the need to address wait time problems in a manner other than simply expanding capacity through more resources, there has been an increase in the number of referral related improvements in the system (Institute for Healthcare Improvement, 2010; Centre for Healthcare Quality Improvement, 2007; Isaacksz & Casselman,

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1 Under the Graduate Student Data Access Program, the Canadian Institutes for Health Information provided me with access to 2006 discharge abstract data for all patients discharged from an acute care hospital for the most common patient population groups (Jaglal et al, 2001). Using this data I looked at patterns in the dataset that were used to make decisions for this research. Further discussion ensues in Chapter 5 and Appendix 1.
In fact, difficulties in the referral process have been known to discourage providers from making referrals, which in turn denies access to the patient and increases wait times, especially for populations who may be most in need (Mueller, Savage, Schneider, Howland, & Ades, 2009; Foster & Tilse, 2003; Dartington, 1979; Emerson, 1991).

In addition, over the past 10 years, the Government of Ontario, both through the Ministry of Health and Long Term Care (MOHLTC) and through Local Health Integration Networks (LHINs) has awarded different groups millions of dollars to develop inter-organizational referral systems (Sharpe, Neary, Bayley, Tahair, Kurji, & Rosanski, 2005; Mastouri, Berman, Yang, Casselman, & Morra, 2009). These systems differ in the manner through which the referral process is coordinated. For example, some processes rely on relationships, rules, trust, and technologies (Trist, 1983; Provan, 1984; Paulson, 1974; Hoffman, Stearns & Shrader, 1990; Ring & Van de Ven, 1992; Emerson, 1992; Mueller, Savage, Schneider, Howland, & Ades, 2009; Mastouri et al, 2009). There are even instances of legislation regulating the referral process. For example, the Long Term Care Homes Act (LTCHA, 2007) requires that the agencies falling under the Act, coordinate their services and refer patients in accordance with its regulations (LTCHA, 2007).

Different referral processes can also introduce differences in the manner through which information is exchanged. For example, in some cases referrals are sent electronically, while in other cases, information is exchanged by phone or through a third party (Vander Laan,
Why these differences in referral processes exist is not clear. They may simply reflect different populations’ needs and situations. They could also be due to historical factors, personal relationships, or other decisions that could have more to do with the structure of the relationship between the two organizations, than with actual patient need (Edwards, Davies, Ploeg, Virani, Skelly, 2007; Provan, 1984; Provan, Huang, & Milward, 2009; Luthans & Stewart, 1977; Seabright, Levinthal & Finchman, 1992; Emerson, 1991; Paulson, 1974; Jencks & Bobula, 1998; Kim, Chen, Keith, Yee, & Kushel, 2008). The variation could also introduce differences in the way patients access health services and in the manner through which continuity of care is maintained (Oxley, 2009).

As such, there is a need and an opportunity to understand the antecedents of perceived referral process effectiveness and efficiency. Understanding these antecedents, which is the primary purpose of this research, could provide practical guidance in terms of how to design referral systems, and help to bridge a theoretical gap about how healthcare providers in different organizations work together and the outcomes that are achieved in so doing (Graddy 2008; Vlaar, Van den Bosch, & Volberda, 2007).

As the Government of Ontario continues to evolve the Transformation Agenda, calling for better integration through Local Health Integrated Networks that will "organize health services along set geographic boundaries that reflect patient referral and healthcare patterns" (Richardson & Parle, 2004 p.1), this research contributes to a process that has significant impact in the health care system. In the next two sections, I discuss the relevance of the research problem from a practical perspective in terms of patient care and system planning. In the chapter that follows, I look at the relevance of the problem to the existing theory.

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7 In preparing the original research proposal different referral processes were examined from the Toronto ABI Network which has an individual who routes referrals to the Rehabilitation Network of Ottawa Carleton which has an electronic referral system. These systems are described on the respective websites.

8 It is noted that the theoretical literature acknowledges that a range of structures may be equally appropriate (Miles et al., 2003).

9 The Transformation agenda of the Ontario Government led to the creation of 14 Local Health Integration Networks which are based on the geographic boundaries. This is embodied through the Local Health Integration Network Act of 2006 and in the current Public Hospitals Act.
2 Practical relevance

For patients, the referral is a critical part of the journey through the health system. It is one of the processes through which a transition will occur and can influence the continuity of care they receive (Reid, Haggerty, & McKendry, 2002; Anderson & Helms, 1995; Anderson & Helms, 1994; Anderson & Helms, 2000; Anderson, Helms, Black & Myers, 2000; Brown, 1997). Furthermore, under the Canada Health Act, healthcare services must be deemed medically necessary in order to be covered (Canada Health Act, 1984). The referral process can often provide this critical affirmation.

For the provider and the organization, the referral process can also be important from a law and ethics perspective (Dartington, 1979; Emerson, 1991). Under the Public Hospitals Act in Ontario, patients must be appropriately discharged from hospital (Public Hospitals Act, 1990). Appropriate discharge may require a transfer of patients, through a referral to another organization or type of care. Transferring the care of a patient inappropriately can lead to serious legal issues. Finally, in Ontario, the Long Term Care Home Act actually dictates how referrals to long-term care should be made (LTCHA, 2007).

While workload, patient care, legal and ethical issues characterize the importance of studying the referral process from an individual provider perspective, understanding the antecedents of perceived effectiveness and efficiency of the referral process is also important from a planning or resource perspective. First, the types of patients that an organization receives will determine the costs that an organization incurs for patient care. Second, the number of patients that an organization receives will determine its legitimacy, critical mass, and client base (Hoffman, Stearns, & Shrader, 1990; Provan, 1984; Van de Ven & Walker, 1984; Tracy & Zelmer, 2005). Third we know from the literature that when an organization performs a large number of procedures or services of the same nature, it achieves critical mass which is associated with better outcomes and efficiencies (Tracy & Zelmer, 2005). If this were to be put in practice, we

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11 Notable court cases such as O’Neill v. Hamilton General Hospital, have arisen (Cassels and Brock, 1994) where a physician was found liable because of a transfer of care incident, a concept similar to a referral because it involves informational continuity of care.

12 By type of patient I mean complexity, resource intensity etc
would expect an increase in the reliance of interorganizational referrals to meet patient needs as the delivery of certain procedures would be consolidated at a fewer number of centres.

Also from both a resource perspective and a provider perspective as well, making or reviewing referrals is often perceived as a labour intensive process that impacts staff workload through the time required to work with other organizations in order to transfer information and complete the process (Anderson & Helms, 1994; Reicheldt & Newcomb, 1980; Grimmer, Moss & Gill, 2000; Grimmer & Moss, 2001; Mastouri et al, 2009; Sharpe et al, 2006).

Focussing on perceptions of the referral process is especially important because referral systems are designed to facilitate provider communication, and as such, performance is judged through the perceptions of the users (Weick, 1995). When the process is perceived to be problematic, we see investments in technology and process to improve what the perceived problems may be (Wehmeyer, Riemer, & Schneider, 2001; Nakhla, 2003; Dewett & Jones, 2001; Weick, 1995).

In addition to technology and processes however, providers also invest in personal relationships to help achieve the objectives they need to achieve for their patients. In fact, before technologies, forms, and other tools were introduced in the referral process, many referral processes in Ontario may have relied primarily on relationships between the providers involved. The investment in relationships as mechanisms to manage inter-dependencies, is known as relational coordination (Gittell, 2002; Gittell, 2010)

The investment in coordinating mechanisms, upon observation of a problem, and whether it be on the relationship side or on the technology and process side, is known as corrective coordination in work by Whener (1998) and related to Thompson’s 1967 concept of mutual adjustment, as described in Gittell (2010). These are seen in the referral process as a number of organizations have been funded to develop electronic referral systems and other innovations to improve the process (Sharpe et al, 2005; Mastouri et al, 2009; Vander Laan et al, 2001).

These systems, technologies and innovations are often based on different organizing principles (Kwait, Valente & Celentano, 2001; Paulson 1974; Hoffman et al, 1990). By
understanding the antecedents of perceived effectiveness and efficiency, we can better inform the design of the referral process from the onset and lead to more cost effective decision-making when it comes to investing in related technology.\textsuperscript{13}

Finally, referral relationships are about providers and organizations working together. While collaboration is often praised for the potential that it holds, the process can often suffer from “collaborative inertia” (Huxham & Vangen, 2000) and/or a lack of “collaborative know-how” (Simonin, 1997). This results in a much slower workflow than would normally be expected. By improving the coordination of relationships between organizations, uncertainty regarding the number of referrals, source of patients, and uncertainty in whether the patient’s resource needs would inappropriately tax the receiving organization can be decreased (Provan, 1984; Dartington, 1979; Emerson, 1991).\textsuperscript{14}

Given its importance from a patient care, legal, ethical and resource perspective, understanding how we can optimize the referral process for its users is important. Referrals are a reflection of the type and quality of relationships an organization is able to sustain with its surroundings, which is key to an organization’s resources, legitimacy, and mandate (Lin, Wang, Shang, & Yang, 2002; Oliver 1991; Oliver 1992). Understanding the antecedents to effective and efficient referral relationships is yet another way to build bridges for optimal relationships between organizations in the future. As per the maxim quoted by Jones (1999, p.57), "Noah began to build the ark before the rains began".

\textsuperscript{13} Organizations who have been funded or who are dedicating resources to develop these systems include the Regional Stroke Network, the Toronto Acquired Brain Injury, the Rehabilitation Network of Ottawa Carleton, and the GTA Rehab Network, among others.

\textsuperscript{14} For example, after the SARS crisis in the spring of 2003, discussions on referral processes resurfaced because patient referrals between organizations posed serious issues for infection control. The Commissioner of Public Safety and Security introduced the notion of a "new normal", in which hospitals would critically assess and improve upon common processes such as inter-organizational referrals. See Health Canada, 2003. Learning from SARS. Available: [http://www.phac-aspc.gc.ca/publicat/sars-sras/naylor/8-eng.php#s8b5](http://www.phac-aspc.gc.ca/publicat/sars-sras/naylor/8-eng.php#s8b5)
Chapter 3
Theoretical Perspectives

In the last chapter, I described the opportunity and the problem for this research in terms of a variety of referral processes that are intended to achieve the same goals, but which are very different in terms of their structures and processes. This raises the question “what works best?”. Described as such, this is a classic story line in organizational theory research that has been discussed by many authors (Luther & Trist, 2003; Nakhla, 2003; Kwiat et al, 2001; Provan, 1984; Ring & Van de Ven, 1992; Paulson, 1974; Leblebici & Salancik, 1982, among others). In this chapter, I situate the research in relevant theoretical perspectives. Chapter 4 follows with a review of the papers and research studies that have a more empirical focus.

1 Theoretical perspectives on the problem

If we define this study as a “what works best?” problem, some would argue that the answer is a variation of “it depends”. Through such a lens, one argument is that best practices depend on multiple conditions (Fiedler, 1964; Weill & Olfson, 1989). Identifying and measuring all of these conditions is complex because they can include institutional, technological, socio-cultural, environmental, and economic conditions among others (Weill & Olfson, 1989). They can also include consideration of resources, tasks, objectives, people, technology and structure. Using this type of lens, the variation in the referral processes across Ontario would be explained by differences in the providers, organizations, geographies, and populations involved.

At the opposite end of the spectrum to an answer like ‘it depends’, might be a perspective that posits, that there is actually one ‘best solution’, but that access to that solution is impaired by imperfect information and the bounds of the unknown. Using this lens, variation in the referral processes would be attributed to the need to hone in on a ‘good enough’ solution before the search costs get too high (Williamson, 1981).

Yet another way to look at the problem as described is to think of the elements of the referral process as the interaction of people, organizations, and objectives. These become the players, nodes, or actants within a ‘network’. In order for the ‘network’ to run smoothly, all of these...
elements must be in place (Latour, 1997; DeSanctis & Poole, 1994). This is discussed in the next section.

2 Components of the referral process

The referral process by definition, encompasses many components. Referrals are defined by Anderson and Helms (1994) as follows:

“Referrals communicate information about patients’ continuing care needs between health organizations as they transfer responsibility for providing different levels of care. According to the American Hospital Association (AHA) the purpose of a referral is to ensure that appropriate and timely information about patients medical conditions care needs and social situations is communicated to the next organization providing care. Thus the goal/outcome of referrals is the uninterrupted coordinated delivery of quality health care by the next service providers”. (Anderson and Helms, 1994, pp. 63)

In this definition, the terms communication, coordination and information are central in referral process. Elsewhere, Anderson (1991) described the referral process explicitly as a classic communication model. The elements are shown in figure 1.

Figure 1 The referral process described in terms of the classic communication model*

*Elements of the classic communication model are shown in black boxes
In this classic communication model, the components include a sender; a receiver; a message which can contain different types or amounts of information; a communication channel; and some sort of feedback loop (Anderson, 1991). The sender sends a message through a communication channel to a receiver who decodes it.

The purpose of such communication is to achieve the discharge of a patient from one level or phase of care to another (Anderson, 1991; Hoffman et al, 1990; Reicheldt and Newcomb, 1980, Kim et al, 2009; Rogoski, 2007). The sender will assess the patient and will provide a description of that patient to an organization that he or she believes matches the needs of the patient. The receiving organization needs to determine if the patient matches its program offerings and resources. The assumption is that the description of the patient, his or her context and his or her needs are accurate and complete and will match the patient. These elements are elegantly discussed and diagrammed by Foster and Tilse (2003) (Figure 2).

**Figure 2** Conceptual model for understanding post-acute care referral following Traumatic Brain Injury (TBI). (Adapted from Foster & Tilse, 2003 p. 2205)
Given the significance of the referral process in patient care, referrals are described in the words of Boje and Whetten (1981) as particularly important because they involve an ‘idealized purpose’ (p. 382). When combined with the resource perspective that relates the referral process to an organization’s ability to secure resources and accomplish its mandate (Provan, 1984), the referral process brings with it a “high stakes” interest in ensuring that risks are managed and that the relationship fulfills its intended purpose (Boje & Whetten, 1981; Provan, 1994; Van de Ven & Walker, 1981; Dartington 1979; Kwait et al, 2001; Emerson, 1991; Dartington, 1979). These stakes have to be managed and they are often done so by structuring the relationship in various ways. This is the topic of the next section.

3 Structure and the referral process

The structure-performance relationship between different organizations is an area that is considered under-studied (Kenis & Provan, 2009; Graddy, 2008). Structure can include governance, joint decision making, the intensity of interactions, and coordination of joint activities (Graddy, 2008) among other factors. However, one of the most salient structure questions in the referral process, in addition to the way information is exchanged, is the use of formal versus informal mechanisms of coordination.

Underpinning both formal and informal approaches, there is a need to structure relationships so that the organizations can manage risk, uncertainty, and conflict - and to do so in a manner that doesn’t exact high resource costs or limit autonomy (Oliver, 1991, Oliver 1992; Provan, 1984). Especially in situations like the referral process, where uncertainty prevails because of an absence or asymmetry of information and resources, interdependence and the need for collaboration increases (Gillespie & Murty, 1994; Lin 2002; Gersick, 1991). The relationship between information, coordination and contractual arrangements is expressed by Nakhla (2004):

“In situations of interdependence of activities and of uncertainty, a conflict can be shown between coordination based on a strict contractual approach and flexible modes of commitment that take advantage of the increase in information but may involve high coordination costs”. (p. 116)

A variety of theorists have therefore suggested that flexible approaches to interorganizational relationships yield more creative problem solving and prevent organizations from losing the
benefit of their autonomy (Granovetter, 1974; Pfeffer & Salancik, 1978; Seabright, 1994; Gulati, 2008; Walker et al, 1997; Oliver 1991; Oliver 1992). In particular, Granovetter’s 1974 work on the strength of weak ties suggests that multiple weak ties, those which are not characterized by intimacy, frequency, or commitment, enable the transmission of more information during periods of uncertainty (Granoveter, 1974). This is particularly salient in the referral process where each patient may be an “uncertain case” and information is needed to make a referral decision.

In informal relationships especially but also in formal relationships, social capital can also be used as a means of enforcing norms of behaviour among actors (Gulati, 2008). Firms do not want to risk inappropriate behaviour, even if there are no immediate consequences, because they may need to call on the relationship at a later time (Gulati, 2008). As such, they will want to maintain trust and be known as a trustworthy partner. Trust and trustworthiness are two important dimensions of social capital (Williams, 2005; McAllister, 1995).

In formal approaches, there can often be working agreements. The agreements take different forms ranging from hierarchical to fairly flexible (Leatt and Barnsley, 1994). Sometimes these arrangements can present consequences if there is a breech (Ring & Van de Ven, 1986; Leblebici & Salancik, 1982).

A number of authors also discuss the idea that relationships are dynamic processes that change over time (Amburgey, 1986; Paulson, 1974; Gales & Blackwell, 1990; Nakhle, 2003) and as a consequence there may be an iterative relationship between structure and performance, depending on the stage of the relationship.

For example, Uzzi (1997) develops a model in which voluntary non-contractual relationships form antecedents to embedded ties. The components of these ties include trust, information, and joint problem solving arrangements. The success of the relationship can lead to enforcement of routines and policies which leads to over embeddedness and then a lack of flexibility or a loss of autonomy over time, resulting in conflict (Weick, 1995; Granovetter, 1974; Paulson; 1974).
In another framework, an unexpected event triggers the need to deviate from the anticipated interaction (Whener et al, 2000). If the outcomes are not as expected, then the parties will engage in corrective cooperation. Regulation sometimes results in such cases, as an attempt to reduce uncertainty of the relationship and to impose consequences for deviating from the anticipated course of action (Ibid). These are all forms of coordination.

In the words of Bachmann (2003), coordination roles are also a means of “speeding up and simplifying the trust formation processes in interorganizational settings” (Wehmeyer, Riemer, & Schneider, 2001; Bachmann, 2003). Trust can be institutional or interpersonal; achieved through a mediating function like a 3rd party or a process; based on affect (emotion) or on effect (reason); past experience, familiarity; perceptions of competence; perceptions of shared goals, and perceptions of beneficence (McAllister, 1995; Bhattacharya, Devinney, & Pillutla, 1998; Williams, 2005; Curral & Judge, 1995).

Currently in Ontario and internationally, we see instances of a 3rd party being called upon to assist in coordination and to facilitate trust issues (LTCHA, 2007; Vander Laan et al, 2001; Lemak, Johnson & Goodrick, 2004). For example, in physician referrals in the US fee for service setting, a physician determines to whom a referral will be made and makes the referral. By contrast, in a managed care setting a 3rd party determines to whom the patient will be referred (Anthony, 2003). Anthony’s study showed that there were more appropriate referrals in the fee for service setting where the referral was made without the intervention of a third party because the interpersonal relationship facilitates the exchange of information.

This is further discussed in studies looking at the performance of inter-organizational relationships in retail operations. Gales and Blackburn (1990) hypothesized that closer ties, characterized by greater levels of formalization and intensity, resulted in better outcomes and lower uncertainty. They found that performance and information exchange were positively related but formalization and information exchange were unrelated. He did find however that as the relationship was perceived to be more complex, the extent of formalization also increased. Dollinger’s (1984) research showed similar findings, linking integrative complexity or the ability to process information, and the tolerance of ambiguity with boundary spanning activity and performance. Kwait et al (2001) call for a more explicit study of this issue:
“A critical direction for future research is to address the impact of different types of interorganizational linkages on client outcome. Are ad hoc relationships less effective than more structured and formalized ties in promoting access to care?” (p. 484)

4 Information in the referral process

Given that referrals are communication processes, information in the referral process is important and has been studied extensively (Anderson, 1991; Anderson & Helms, 1994; Anderson & Helms, 1995; Anderson & Helms, 2000; Edwards et al, 2009; Kim et al, 2009; Bowles et al, 2003). Anderson and Helms developed a “referral data inventory (RDI)” which provides a list of the information that is ideally required on a referral in order to facilitate the transition from acute to home care settings based on an extensive literature review and expert validation process (Anderson 1991, Anderson & Helms, 1994).

However, in spite of the establishment of these data elements, Anderson and Helms (1994, 2003) and others (Bowles et al, 2003; Foster & Tilse, 2003; Reicheldt & Newcomb, 1980) acknowledge that the selection and use of information in the referral process still requires judgment. This is not surprising since referrals describe individuals with rich and complex personal, medical, social and functional situations. This information is used for descriptive purposes by the sender and for decision making purposes by the receiver.

One of the factors known to influence decision-making in general is the degree of uncertainty either in the amount of information provided or in the availability of resources (Ring and Van de Ven, 1992). Uncertainty, when defined in the context of insufficiency of information needed to make a decision, is relevant in a referral relationship because of information asymmetry. The referrer knows the patient and must describe him or her to the receiver often without knowing the intricacies of the situation or the program to which he or she is referring (Emerson, 1991). Similarly, the receiver knows the program, but must rely on the referrer to describe the patient in terms that are accurate and relevant (Emerson, 1991; Dartington, 1979; Foster & Tilse, 2003).

Since the exchange of information between the sender and the receiver is also a process through which the individuals learn about the situation and the patient being referred, the participants must therefore be able to absorb and process the information that is being conveyed (Kwok & Gao, 2005; Bowles et al, 2003).
However, in spite of initiatives like the referral data inventory and given the amount of judgment involved, both in terms of what information the sender must convey and in terms of what information the receiver feels is needed to make a decision, information in the referral process has to be thought of in broader terms than simply the informational elements that are exchanged.

For example, rather than focusing on specific data elements, antecedents of ‘useful information’ were studied extensively by Ginsburg (2003). In the context of information from Hospital Report Cards, she found that characteristics of the information (such as accuracy and relevance) as well as characteristics of the organization, influenced the perceived usefulness of information.

Information can also be thought of as a “good”. This good doesn’t necessarily have direct costs, but it can demand exorbitant indirect costs through the time required to gather, analyze and process it (Thiede, 2005; Nakhla, 2004). This is consistent with various information processing theories which differentiate the amount of information and the method and structures used to process it (McDaniel 2003; Lord & Maher, 1990).

Furthermore, the information must be perceived as true and the messenger, as trustworthy. Trust is defined by Currall and Judge (1995) as an individual's behavioural reliance on another person under a condition of risk. It reduces transaction costs and increases efficiency between organizations (Bhattacharya, 1998; Curral and Judge, 1995; Ring and Van de Ven, 1995).

Information, relationships, and performance have also been shown to be linked (Gittell, 2010). Between the information and the relationships are individuals who are exchanging this information. How they interact to exchange information may be influenced by various structural choices in the referral process.

For example, both in the literature and in the field, we see examples of how standardized forms, telephones, faxes, electronic referrals, care pathways, and clinical practice guidelines, are used to convey and/or process information related to the referral (Anderson 1991; Anderson and Helms, 1994, Anderson and Helms, 1995; Anderson and Helms, 2000; Edwards et al., 2009; Mastouri et al., 2009; Kim et al., 2009).

How information is processed may also be influenced by the manner in which information is being exchanged and the way the communication channel enables participants to gather
information (Beltrami & Sirsi, 1989; Miller & Jablin, 1991; Dennis & Valcich, 1999; Kwok & Gao, 2005). Specifically, communication channel richness is a measure of the extent to which the communication channel enables the participants to change their understanding of the information within a given period of time.

The original work on media richness proposed that ‘richness’ was an intrinsic quality of the channel itself (Daft & Lengle, 1976). However, more recent thought is that channel richness is more related to the extent to which feedback, multiple cues, language variety, and personal focus lend themselves to the needs of the situation, through the channel (Trevino, Lengel & Daft, 1987; Kwok & Gao, 2005).

In this regard, channel richness and information processing lenses would focus on how the referral process allows organizations to deal with uncertainty by either better understanding the questions that should be asked or by better understanding the implications and applications of the information for the questions that the players have identified (Kwok & Gao, 2005; Dennis & Valcich, 1999; Trevino, Lengel & Daft, 1987). This can occur at either the individual or organizational levels.

In turn, the nature of the communication channel can also be influenced by various technologies. Dewett and Jones (2000) show that information technology moderates the relationship between organizational characteristics and outcomes. They cite Daft and Lengle’s (1976) work on the difference between rich and lean communication where rich communication involves interpersonal relationships and lean communication involves concrete information elements. Their findings are consistent with the research on the impact of technology on working relationships (Orlikowsky, 1984; Giddens, 2010). Gittell further shows that in some cases information technology can undermine relationships by attempting to replace necessary interactions (2002).

5 Relational coordination

Thus far, I have discussed a number of possible tensions in the design of referral processes, such as the need for mechanisms to control and coordinate the process versus the need to have trusting relationships between the individuals and organizations involved. The theory of relational
coordination, proposed by Jody Hoffer Gittell, appears to offer a proposal for reconciling many of these tensions. It is described as follows:

“According to the theory of relational coordination, coordination that occurs through frequent, high quality communication supported by relationships of shared goals, shared knowledge and mutual respect enables organizations to better achieve their desired outcomes. Specifically, relational coordination is a mutually reinforcing process of interaction between communication and relationships carried out for the purpose of task integration.” (Gittell 2002, pp 301).

The theory of relational coordination builds on the 1967 work of James Thompson which suggested that coordination can evolve through experiences, which in turn provide learnings to guide future interactions (Gittell, 2010). However, Thompson also suggested that coordination can occur in a more efficient way through mechanisms such as supervision, routines, scheduling or standardization (Ibid).

These forms of coordination, which were touted for their efficiency because of their independence from the need for interaction between participants, also relied on an assumption of low information processing needs and low task complexity in the work process. When the task is more complex however, as it often is in processes like referrals, the learning that occurs through mutual adjustment and the relationship itself, becomes important. Many authors have therefore discussed theories that capture the relational aspect of coordination. These include theories of sense-making, energy in conversation, and transactive memory (Ibid).

However, the theory of relational coordination also has at least two distinguishing characteristics: (1) It posits that a shared understanding and shared knowledge is necessary for coordination but it is not sufficient. These must occur in the context of shared goals and mutual respect. It therefore offers distinct dimensions of this concept; (2) Relational coordination focusses on roles instead of personal ties. Inculcating mutual respect at the level of the role instead of the person, enables different people to experience the same conditions and would not necessarily rely solely on individual personalities.

Gittell’s seminal papers on relational coordination are cited extensively in other publications, many of which are focussed on testing the application of the construct in various scenarios. However, these papers also contain model which consistently places a variety of coordinating or
work design factors as independent variables, the relational coordination variable as mediator, and various effectiveness and efficiency outcomes as dependent variables (Ibid). In this way, Gittell is suggesting possible models for an extensive range of variables and scenarios. Her own work has ranged from airlines to healthcare, but other researchers have used the concept in many other fields as well (Gittell, 2010).

In this chapter, I have looked at what selected theories tell us about inter-organizational referral relationships by abstracting perspectives from studies which may or may not have involved the referral process. In the next chapter, I will discuss what the empirical research related to the referral process specifically tells us in order to further inform the question, “What makes the referral process effective and efficient?”.
Chapter 4
Literature Review

1 Introduction
The purpose of this literature review is to answer two questions: (1) What do we know about what makes the referral process effective and efficient?; and (2) How are referral process effectiveness and efficiency, or referral process performance, measured? In this chapter, I appraise the existing research to answer these questions. At the end of the chapter, I present an integrated model of factors influencing the effectiveness and efficiency of the referral process based on the papers reviewed.

2 Approach
I based this literature review on a conceptual map of the referral process, which (1) deconstructs the referral process as a classic communication model (Anderson, 1991); (2) contextualizes it as part of the discharge planning process (Emerson, 1991; Dartington, 1979; Bowles et al, 2003; etc); and (3) contextualizes it as an interorganizational relationship (Provan, 1984; Paulson, 1974; Van de Ven, 1984). The review combines literature from each of these perspectives as described in Figure 3.

Figure 3 Conceptual map of the referral process used to guide literature review
These three conceptualizations of the referral process, formed the three prongs of a search strategy. Keywords used in the search are shown in Table 1. The databases that were used for the literature review included the following: Ovid MEDLINE(R) 1950 to 2010; EMBASE 1980 to 2008; AMED (Allied and Complementary Medicine) 1985 to 2010; CAB Abstracts 1973 to 2008; Ovid Healthstar 1966 to 2008; Social Work Abstracts 1968 to 2008; EMBASE Classic+EMBASE 1947 to 2008; PsycINFO 1987 to 2008.

Table 1 Summary of keywords used in the search strategy for the literature review

<table>
<thead>
<tr>
<th>Search strategy</th>
<th>Keywords</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>(Referral Process) AND (Effectiveness OR Efficiency OR Performance)</td>
</tr>
<tr>
<td>2</td>
<td>(Referral Process) AND (Discharge Planning)</td>
</tr>
<tr>
<td>3</td>
<td>Referral AND Interorganizational Relationship$ and communication</td>
</tr>
<tr>
<td>4</td>
<td>E-Referral OR Electronic Referral</td>
</tr>
</tbody>
</table>

The inclusion criteria consisted of papers that related directly to the referral process itself, that had an abstract, that were available in English, and that were available directly or indirectly through the University of Toronto Holdings. Papers were selected if they were considered relevant to the question “what makes the referral process effective and efficient”. Articles were excluded if they did not have a primary focus on the referral process itself. Often such articles would reference the referral process in the context of other topics, such as: (1) the referral process in the context of a “consult” between physicians; (2) using the referral process as a predictor of appointment or care attendance; and (3) focusing on referrals as clinical interventions.

However, if any of the selected papers had references to other articles that appeared to be relevant and important, these articles were then also included in the review. This resulted in 53 papers. All papers were reviewed and analyzed in terms of objectives, methods, context, and variables. The articles were also assessed for items that were alluded to as potential “predictors” and potential ‘outcome measures’, although these terms are used loosely given the limitations of the methods that are used in the papers. For example, only in a very small proportion of papers are there actually independent and dependent variables. In the next section, I will discuss the methods used or types of studies in the papers that were reviewed.
3 Types of studies

Across the 53 papers reviewed, I observed at least six categories papers when grouped by their methods. I will discuss each very briefly. The first group of papers is characterized by their focus on either a literature review and/or a theory synthesis and discussion (Emerson, 1991; Dartington, 1979; Foster and Tilse, 2003; Anderson, 2000; Coffey, 2006; Granner & Sharpe, 2004; Gottlieb & Olfson, 1987; Anderson, 1991; Einbeinder et al, 1997).

Within this group of review papers, there are reviews on discharge planning (Coffey, 2006); referral decision making (Emerson, 1991; Dartington, 1971; Einbeider et al 1997); referral communication (Anderson, 1991; Herrington et al, 2003; Gottlieb & Olfson, 1987); successful collaboration in health (Granner & Sharpe, 2004), and the impact of education on referrals (Sibley et al, 2004; Grimshaw, 2005). The relevance of these diverse literature reviews speaks to the diversity of papers published on the referral process and the decision to integrate the different bodies of work for this review.

The second group of papers are written as commentaries or anecdotal experiences of existing referral processes (Wilson et al, 2005; Rosenthal et al, 1996; McGuire et al, 1996; Rogoski, 2007). These papers describe experiences and opinions. They often make recommendations for the future. They do not usually have a theoretical underpinning or a research methodology. The pervasiveness of this type of paper as it pertains to referrals, has been previously noted. For example, in Provan (1984):

“There is a considerable body of literature on referrals as they affect clients and client services particularly among health care organizations. However, though referral can be an important means by which clients flow to and from an organization, with some exceptions, there have been a few attempts by researchers having organizational perspective to explore the topic in any depth” (p.812)

Anderson (1991) makes a similar observation:

“The ample amount of literature contained primarily professional opinion articles and anecdotal papers. The literature was prescriptive, as opposed to descriptive, and discussed “what ought to be”, “what should be”, “how to do it,” and “how we did it”. Noticeably absent were scholarly pieces grounded in theoretical framework describing practice” (p. 16)
The third group of papers used qualitative methods to develop theories about the referral process (Forrest et al, 2003; Luker and Chalmers, 1989; Fargason et al, 1995; Bowles et al, 2003; Wells et al, 2002, Cleenence and Seamark, 2003).

These papers use either case study methods or key informant interviews to look at the mechanics of the referral process, satisfaction with the process under different structural designs; and perceptions of both sender and receiver sides of the referral process. Due to their hypothesis-generating nature, they do not test any of the factors. Only one of the papers (Luker & Chalmers, 1989) uses a qualitative research methodology grounded in one of the five traditions associated with qualitative research methods (Creswell, 1997).

A fourth group of papers used questionnaires which were either administered by phone or for completion by the individual in order to understand perceptions of the referral process (Kim et al, 2009; Ghandi et al, 2000; Forrest et al, 2003; Edwards et al, 2007; Mastouri et al, 2009; Kim et al, 2009; Peters et al, 1997; Rotarius et al, 2003; Weech-Maldonado et al, 2003; Brown, 1997; Graham et al, 2005). However, the survey tools are not discussed in terms of their development, reliability and validity, nor does there appear to be a theoretical underpinning to the research design. As a consequence the survey data is more descriptive than inferential in nature.

These papers also include studies of both physician referrals and interorganizational referrals. Grouping these together relies on the assumption proposed by Anderson (1991), that in the referral process, “inter-organizational communication” has some similarities to “inter-personal communication” (p. 22)

The fifth group of papers includes articles that present an organizational theory underpinning to a detailed empirical analysis (Gittell, 2009; Provan 2003; Van de Ven & Walker, 1984; Paulson, 1974; Kwaite et al, 2004; Hoffman et al, 1990). In some cases, there is hypothesis testing, however, in other cases network analysis is used to describe the referral process (Boje and Whetten, 1981; Provan 2003, Kwait 2000). They may focus on either the network, a dyad of sender and receiver organizations; or on senders and receivers separately, as the units of analysis.
It should be noted that a few of the papers in this group combine both qualitative and quantitative methods (Paulson, 1974; Provan, 1984; Kwaite, 2001; Atwal and Caldwell, 2002; Lemak et al, 2004).

The sixth group of papers uses content analysis of discharge letters, referral forms, and patient records to study elements of the referral process (Sackley & Pound, 2001; Anderson, 1991; Anderson & Helms, 1992; Anderson & Helms, 1995; Anderson et al, 2000; Anderson and Helms, 2003). In this group, the work by Anderson and Helms specifically focused on the referral process in the context of discharge planning and inter-organizational communication. It is linked by two common threads.

The first was a consistent methodology, which used a closed case analysis of 300-400 medical records depending on the study. The second was the development and use of a referral data inventory (RDI). The RDI was a set of data elements that were pooled, studied, and validated to be important information in a referral from a hospital to community-based setting. The RDI serves as a comparison to actual information exchanged. Using these tools, the authors explore the impact of different variables on the quality and quantity of referral information exchanged.

4 How is referral process performance measured?

The question driving this literature review, “what makes the referral process effective and efficient?” implies a list of predictors or contributing factors of referral process outcomes, which I will discuss in the next section. However, it also implies a set of metrics or measures for discussing referral process effectiveness and efficiency which are the dependent variables in this study. These measures and metrics are the subject of this section.

Effectiveness is defined as the extent to which goals are achieved (Harvey, 2004-9). By contrast, efficiency is more complex as a concept because across the health field, there are differences in conceptual understanding of the term, multiple objectives, and scope for extensive measurement error (Jacobs et al, 2006). Jacobs et al, describe efficiency as follows:
“Efficiency is generally concerned with measuring competence with which inputs are converted into valued outputs” (Ibid, 2006 p. 5).

In keeping with this theme and specifically as it pertains to a study of interorganizational relationships, Paulson defined efficiency as follows: “the amount of resources expended relative to goal attainment” (Paulson, 1974, p. 321).

Given the broad definition of effectiveness and difficulties in the conceptualization of efficiency, it was not surprising that in the initial scan of papers, beyond the broadest level of the definitions, the terms effectiveness and efficiency in the referral process are not consistently defined and measured.

In addition, the conceptual map of the referral process, which includes discharge planning, communication and interorganizational relationships would also entail a diversity of interpretations of these terms.

To address these issues, for the purpose of this review only, I grouped effectiveness and efficiency loosely under the heading of referral process performance. This allowed me to look specifically at what the papers are studying more holistically and before turning to the idea of predictors.

In Table 2, I have summarized the themes or ideas that were used in relation to assessing referral process performance either qualitatively or qualitatively by paper. These include items that relate to the level of the patient, provider, organization and system. It should be noted that while 53 papers were reviewed, a few of the papers did not lend themselves to the extraction of performance indicators and so the table only has 49 articles. It should also be noted that the measures or indicators in the table reflect how they are treated in the paper. In a few cases, the item might be viewed intuitively as a process or predictor type item, but they are addressed in the paper as a descriptor, measure or indicator of outcome or performance.
Table 2 Descriptors of referral process effectiveness and efficiency in papers reviewed

<table>
<thead>
<tr>
<th>Author</th>
<th>Potential Performance Measures or Indicators (Potential Dependent Variables)</th>
</tr>
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<tbody>
<tr>
<td>Anderson, 1991</td>
<td>Amount of information</td>
</tr>
<tr>
<td>Anderson &amp; Helms, 1993</td>
<td>Amount of information</td>
</tr>
<tr>
<td>Anderson &amp; Helms, 1994</td>
<td>Timing of referrals</td>
</tr>
<tr>
<td>Anderson &amp; Helms, 1995</td>
<td>Amount of information transferred, type of information transferred</td>
</tr>
<tr>
<td>Anderson &amp; Helms, 1998a</td>
<td>Amount of data exchanged, timeliness</td>
</tr>
<tr>
<td>Anderson &amp; Helms, 1998b</td>
<td>Amount of data exchanged, timeliness</td>
</tr>
<tr>
<td>Anderson &amp; Helms, 2000</td>
<td>Continuity of care</td>
</tr>
<tr>
<td>Anderson et al, 2000</td>
<td>Amount and type of information transferred</td>
</tr>
<tr>
<td>Atwal &amp; Caldwell, 2002</td>
<td>Inter-professional collaboration</td>
</tr>
<tr>
<td>Boje &amp; Whetten, 1981</td>
<td>Influence, power, referral flow</td>
</tr>
<tr>
<td>Bookvar &amp; Burack, 2007</td>
<td>Communication, adherence to goals, satisfaction.</td>
</tr>
<tr>
<td>Bowles et al, 2003</td>
<td>Access, appropriate discharge</td>
</tr>
<tr>
<td>Brown, 1997</td>
<td>Perceptions of quality choice, wait time, access, information provided, quality and cost</td>
</tr>
<tr>
<td>Cleemance &amp; Seemark, 2003</td>
<td>Appropriateness</td>
</tr>
<tr>
<td>Coleman et al, 2005</td>
<td>Quality of care transitions</td>
</tr>
<tr>
<td>Dai et al, 2003</td>
<td>Length of stay, activities of daily living, home placement, unplanned readmission</td>
</tr>
<tr>
<td>Dartington, 1979</td>
<td>Access to care, whether a referral is made</td>
</tr>
<tr>
<td>Edwards et al, 2007</td>
<td>Familiarity with options, choice to appropriately refer</td>
</tr>
<tr>
<td>Emerson, 1991</td>
<td>Number of referrals, whether a referral is made</td>
</tr>
<tr>
<td>Forrest et al, 2003</td>
<td>Access, satisfaction, percentage of office visits</td>
</tr>
<tr>
<td>Foster &amp; Tilse, 2003</td>
<td>Access to care, whether a referral is made</td>
</tr>
<tr>
<td>Gittell et al, 2009</td>
<td>Perceptions of quality and efficiency by the patient, hospital length of stay</td>
</tr>
<tr>
<td>Graham et al, 2005</td>
<td>Satisfaction, timeliness, quality of communication</td>
</tr>
<tr>
<td>Jenks &amp; Bobula, 1988</td>
<td>Cost of referrals</td>
</tr>
<tr>
<td>Kim et al, 2009</td>
<td>Access, wait time, tracking</td>
</tr>
<tr>
<td>Kwait et al, 2001</td>
<td>Completeness of the information exchanged, are referrals made, number of referrals</td>
</tr>
<tr>
<td>Lemak et al, 2004</td>
<td>Integration and coordination</td>
</tr>
<tr>
<td>Lin et al, 2004</td>
<td>Effectiveness of discharge planning</td>
</tr>
<tr>
<td>Luker &amp; Chalmers, 1989</td>
<td>Access given, need addressed</td>
</tr>
<tr>
<td>Mastouri et al, 2009</td>
<td>Satisfaction, time</td>
</tr>
<tr>
<td>Mueller et al, 2009</td>
<td>Rates of cardiac rehab referral and utilization</td>
</tr>
<tr>
<td>Parfrey et al, 1994</td>
<td>Shorter length of stay</td>
</tr>
<tr>
<td>Paulson, 1974</td>
<td>Efficiency and effectiveness, productivity and satisfaction</td>
</tr>
<tr>
<td>Peak &amp; Maclaren, 2000</td>
<td>Information incomplete, workload, length of time</td>
</tr>
<tr>
<td>Peters et al, 1997</td>
<td>Continuity of care, discharge planning outcomes</td>
</tr>
<tr>
<td>Provan, 1984</td>
<td>Percentage of referrals</td>
</tr>
<tr>
<td>Reicheldt &amp; Newcomb, 1980</td>
<td>Patient outcomes, discharge outcomes</td>
</tr>
<tr>
<td>Rivard &amp; Morrissey, 2005</td>
<td>Coordination in terms of goal achievement</td>
</tr>
<tr>
<td>Rosenthal et al, 1996</td>
<td>Communication</td>
</tr>
<tr>
<td>Rotarius et al, 2003</td>
<td>Clinical quality, service orientation, market share, profitability, cost effectiveness, fulfillment of stakeholder needs</td>
</tr>
<tr>
<td>Rouliidis &amp; Shulman, 2006</td>
<td>Managed care, less communications, impersonal</td>
</tr>
<tr>
<td>Sibley et al, 2004</td>
<td>Referral patterns (as a result of the process)</td>
</tr>
<tr>
<td>Simpson &amp; Stallard, 2004</td>
<td>Simple, efficient, electronic, training, no delays, eligibility criteria</td>
</tr>
<tr>
<td>Van de Ven &amp; Walker, 1984</td>
<td>Number of referrals made</td>
</tr>
<tr>
<td>Warren, 1994</td>
<td>Clinical appropriateness of referrals made</td>
</tr>
<tr>
<td>Weech-Maldonado et al, 2003</td>
<td>Effectiveness of collaboration (as an outcome measured)</td>
</tr>
<tr>
<td>Wilber et al, 2003</td>
<td>Acceptance rates</td>
</tr>
<tr>
<td>Wilson et al, 2005</td>
<td>Confidence and awareness</td>
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</tbody>
</table>
Patient related items include whether access was achieved; continuity of care; length of stay; quality of care; choice; appropriate discharge; rate of readmission, and perception of transition quality (Emerson, 1991; Dartington, 1979; Foster & Tilse, 2003; Coleman et al, 2005; Reicheldt & Newcomb, 1980; Dai et al, 2005; Peters et al, 2005; Luker & Chalmers, 1989; Rotarious et al, 2003; Mueller et al, 2009; Brown, 1997; Graham et al, 2005; Clemance & Seamark, 2003).

At the level of the organization, measures included utilization; number of referrals made; cost of referrals; quality, quantity and completeness of information exchanged; market share, profitability; appropriateness, resource expended; efficiency; timeliness; perceptions of control and power dynamics (Emerson, 1991; Dartington, 1979; Foster & Tilse, 2003; Boje & Whetten, 1981; Van de Ven & Walker, 1984; Rotarious, Fotler & Blair, 2003; Anderson & Helms, 1993, 1994, 1995, 1998, 2000).

At the level of the partnership, dyad, system or network, noted indicators include: quality of collaboration, extent to which shared goals are achieved; inter-professional collaboration, and rates of referral (Lemak et al, 2004; Atwal & Caldwell, 2002; Kwait et al, 2001; Provan, 1984)

It should be noted that in some of the articles, the corporate objectives of the referral process are alluded to in the context of the referral process itself and in the need to move patients through the system and facilitate the appropriate use of resources (Provan, 1984; Van de Ven & Walker, 1984; Hoffman et al, 2001). It is in this regard that the differentiation between patient level and organizational level goals becomes murky.

For example, as organizations are pressured to move patients through the system, there may be an attempt to discharge or refer the patient before it is actually appropriate to do so. Clemance and Seamark (2003) discuss this problem in the context of “referral appropriateness” identifying three groups of referrals: “appropriate, load sharing and load dumping”. However, even the identification of “appropriate referrals” can be subject to a genuine conflict in perceptions and understanding of what constitutes an appropriate referral, depending on whether the perspective of the referral sender or the referral receiver is involved (Dartington, 1979; Emerson, 1991).
Several authors (Provan, 1984; Provan, Nakama, Veazie, Teufel-Stone & Huddleston, 2003; Weech-Maldonado et al, 2003; Boje & Whetten, 1981) note that the referral process has different implications depending on whether the focus is on the patient, the corporation, the partnership or dyad, the network, or the system overall. We see this in the list of potential performance measures listed.

When we use these lenses, the large group of indicators in Table 3 can be framed more succinctly into clinically-related measures; access measures; continuity of care measures; appropriate discharge measures; relationship satisfaction measures; quality and quantity of information measures; number of referrals available to the corporation; cost of referral and patient flow, length of stay, and clinical staff workload.

1. Clinically-related measures: Papers referring to clinical outcomes as performance measures (Dai et al, 2003; Bookvar & Burack, 2007; Rotarius et al, 2003; Brown, 1997; Coleman et al, 2005; Reicheldt & Newcomb, 1980, etc.), focus on whether the broader reason for referral. For example, considering whether the patient’s needs are met through the referral process, by tracking whether or not there was a readmission, where otherwise it would be unnecessary.

2. Access to care: Some of the papers focus on whether or not the patient received access to care by asking whether the referral is made or accepted. The assumption is that an accepted referral leads to access to care (Bowles et al, 2003; Luker and Chalmers, 1989; Dartington, 1979; Foster and Tilse, 2003; Brown, 1997; Kim et al, 2009; Forrest et al, 2003; Luker and Chalmers, 1989).

3. Continuity of care: A number of papers look at referral-related outcomes in the context of different dimensions of continuity of care, or “how one patient experiences care over time as coherent and linked” (Reid et al, 2002 p. i). It is often discussed through the perceptions of providers, but they refer to the patient experience (as opposed to the organizations’ experience within a system).

4. Appropriate discharge: Another nuance of the patient care experience that begins to verge on the corporate experience is the appropriateness of the discharge. In this group, indicators are related to both meeting patient care needs and to doing so with the appropriate resource. (Bowles et al, 2003; Clemance & Seakmark, 2003; Edwards et al, 2007; Warren, 1994; Reicheldt & Newcomb, 1980; Peters et al, 1997).

5. Perception of the relationship: A number of papers focus specifically on indicators that are related to the providers perception of the relationship. The perception of the relationship, may be influenced by access, continuity of care, or appropriate discharge, but the focus is on the satisfaction of providers. (Simpson & Stallard, 2004; Mastouri et
al, 2009; Bookvar & Burack, 2007; Forrest et al, 2003; Gittell, 2009; Graham et al, 2005

6. **Quality and quantity of information:** Given that the referral process involves
information, it is not surprising that many papers discuss the quality of the information as
an outcome of the referral process (Simpson & Stallard, 2004; Mastouri et al, 2009;
Bookvar & Burack, 2007; Forrest et al, 2003; Graham et al, 2005; Wilson et al, 2005;
Roulidis & Shulman, 2006; Boje & Whetten, 1981). The assumption in these papers is
that quality and quantity of information is important for decision making and outcomes.

7. **Number of referrals for the corporation:** A number of papers focus on the
corporation and the importance of referrals for maintaining resources and legitimacy.
These papers are heavily focussed at the level of the organization (Dai et al, 2003;
Mueller et al, 2009; Emerson, 1991; Dartington, 1979; Foster & Tilse, 2003; Kwaite et al,

8. **Cost of the referral:** Still another set of measures are the costs associated with
referrals. This is discussed as an outcome measure in papers provided by Paulson, 1974;
Brown, 1999; Jenks & Bobula, 1988; Paulson, 1974; Simpson & Stallard, 2004; Dai et al,

9. **Patient Flow, hospital length of stay, and clinical staff workload:** The link between
patient care factors and organizational factors is captured in indicators of referral process
performance that involve multiple patients. For example, overall patient flow through the
system, length of stay, wait times, and workload. (Boje & Whetten, 1981; Sibley et al,
Brown, 1997; Peak & Maclaren, 2000; Rotarius et al, 2003; Mastouri et al, 2009; Graham
et al, 2005)

In Figure 4, I have taken these themes, and plotted them against whether they may be related
more to goals of the referral process (effectiveness) or more to the resources used in the referral
process (efficiency). The vertical dimension shows the focus on the patient versus the
organization. A diagonal dimension shows indicators that appear to have a focus on the provider
or on the relationship. The Figure illustrates the diversity of referral process measures, but it also
points to the need for a more systematic study which is part of the motivation for this study.
Figure 4: Types of indicators of referral process performance found in the reviewed papers.

*The boxed items highlight those that are considered to be more related to resources and the efficiency concept, compared to other groupings that appear more goal oriented or related to effectiveness.
5 What predicts referral process performance?

Having discussed the performance measures or descriptors that are used in the papers, I’d like to go back to the potential independent variables that might influence referral process performance and describe what factors are included in the papers reviewed.

Table 3 presents a summary of these items. Again, some of the papers may not have been suitable for the abstraction of indicators so the table may not reflect all 53 articles. Immediately after the table, I will discuss some of these papers by looking at possible predictors in the context of the specific outcome measures that the authors were focussed upon. The reader should note however, that my focus in this section is on the predictors. After the discussion, I offer seven categories of possible ‘independent variables’ that we see in different papers.

**Table 3** Possible predictors of referral process performance in papers reviewed

<table>
<thead>
<tr>
<th>Author</th>
<th>Possible Predictors (Independent Variables)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anderson &amp; Helms, 1993</td>
<td>Amount of information; discharge planning models</td>
</tr>
<tr>
<td>Anderson &amp; Helms, 1994</td>
<td>Timing of referrals, size of hospitals</td>
</tr>
<tr>
<td>Anderson &amp; Helms, 1995</td>
<td>Referral data inventory elements, standardized forms</td>
</tr>
<tr>
<td>Anderson &amp; Helms, 1998</td>
<td>Type of organizational affiliation, formal channels</td>
</tr>
<tr>
<td>Anderson &amp; Helms, 2000</td>
<td>Provider characteristics, organizational characteristic size, hospital type</td>
</tr>
<tr>
<td>Anderson &amp; Helms, 2000</td>
<td>Mixed media, hospital affiliation</td>
</tr>
<tr>
<td>Atwal &amp; Caldwell, 2002</td>
<td>Communication, integration, teamwork, integrated documentation</td>
</tr>
<tr>
<td></td>
<td>Care pathways</td>
</tr>
<tr>
<td>Boje &amp; Whetten, 1981</td>
<td>Communication</td>
</tr>
<tr>
<td>Bookvar &amp; Burack, 2007</td>
<td>Travel time, affiliation with same system, same corporate owner, trainees from the same institution, agreements, physician care, size, teaching status, specialty care</td>
</tr>
<tr>
<td>Bowles et al, 2003</td>
<td>Patient characteristics, workload and staffing, education</td>
</tr>
<tr>
<td>Brown, 1997</td>
<td>Patient perception of referral process</td>
</tr>
<tr>
<td>Coleman et al, 2005</td>
<td>Information transfer, patient and provider preparation, empowerment of options, support for self management</td>
</tr>
<tr>
<td>Dai et al, 2003</td>
<td>Nurse led discharge planner</td>
</tr>
<tr>
<td>Dartington, 1979</td>
<td>Power dynamics, relationships, beneficence, management of complexity</td>
</tr>
<tr>
<td>Edwards et al, 2007</td>
<td>Best practice guidelines</td>
</tr>
<tr>
<td>Emerson, 1991</td>
<td>Power dynamics, relationships, richness, management of complexity</td>
</tr>
<tr>
<td>Forrest et al, 2003</td>
<td>Proportion of visits referred, gate keeping plans</td>
</tr>
<tr>
<td>Foster and Tilse, 2003</td>
<td>Context, decision making factors, soft factors</td>
</tr>
<tr>
<td>Gittell, 2009</td>
<td>Team meetings, boundary spanners, routines</td>
</tr>
<tr>
<td>Gottlieb &amp; Olfson, 1987</td>
<td>Capacity to recognize and define mental illness, the availability of resources, economic incentives, amount of clinical information available, patient attitudes, the practice, background, role of perception, practitioner-patient interaction, inter-practitioner relations, provider group influences.</td>
</tr>
<tr>
<td>Graham et al, 2005</td>
<td>Referral process communication</td>
</tr>
<tr>
<td>Hoffman et al, 2001</td>
<td>Centralization and formalization</td>
</tr>
<tr>
<td>Jencks &amp; Bobula, 1988</td>
<td>Importance and complexity of patients</td>
</tr>
<tr>
<td>Kim et al, 2009</td>
<td>Electronic referrals</td>
</tr>
</tbody>
</table>
Table 3 shows that a number of the papers focus on organizational predictors of the referral process. These include papers by Anderson & Helms (1991, 1993, 1994, 1995, 1998, 2001), Provan (1984), Roulidis and Shulman, (2006); Bookvar and Burack (2007); Van de Ven and Walker (1984); and Hoffman et al (2001). The structural components range from the size and ownership of the referring and receiving organizations: the organization’s position in a network, the way its services are designed and delivered; the intensity of the technology it uses; and the extent of formalization.

Some of the studies even test hypotheses on these predictors. In Provan’s 1984 study, the author showed that the intensity of service technology as well as interagency activity, as measured by inter-executive activity rather than joint programs, predicted number of referrals. Anderson and Helms’ 2003 study, showed that larger organizations transferred less referral information than smaller organizations and that affiliation between a hospital and long term care home predicted more information exchange.
Similarly, Granner and Sharpe (2004) discuss the importance of organization size and ownership on the outcomes of collaboration in the referral process. However, they do not test any hypotheses in this regard. Hoffman et al (2001) tested hypotheses that discussed the centralization and decentralization of decision making and the formalization of the process in relation to the number of referrals sent and received. This study showed that if the decision making was more centralized and formalized there were less referrals accepted but more referrals sent. In Roulidis and Shulman’s 2006 study, the authors compared referrals in managed care settings to fee for service settings, they showed that in managed care settings there were less referrals between physicians and specialists and attributed this to the absence of interpersonal relationships between the professionals involved.

The importance of relationships as predictors of referral process performance is also discussed in several papers (Emerson, 1991; Dartington, 1979; Foster & Tilse, 2003; Gittell, 2009; Roulidis & Shulman, 2006; Reicheldt & Newcomb, 1980; Wilson et al, 2005; Rosenthal et al, 1996; and Clemance & Seamark, 2003).

Specifically, Dartington (1979) and Emerson (1991) talk about the referral process as a process that is by its nature ‘existential’ but conflict laden because providers need to care for the patient whose needs may not be met in a “fragmented system” while protecting the resources of their organization. They propose that the system in which providers are working may not be aligned with the natural aging and in some cases dying process and so providers themselves need to use a collaborative mindset to help connect fragmented system components to meet the needs of the patient.

This concept is discussed in more operational terms by Foster and Tilse (2003) who re-frame this conflict as a matter of matching the characteristics of the patient and program as well as the process of interaction between the sending and receiving organizations. The idea of matching capacity and demand is also discussed in Mastouri et al (2009) and is also a common theme in papers that introduce electronic referral evaluations (Mueller et al, 2009; Kim et al, 2009). In these cases, the electronic referral is considered the predictor of referral process performance. The electronic referral brings automation to the process so that referrals are often made without
the need for case by case decision making. In other cases they clarify and standardize the information and method of information exchange.

In some papers, the focus is not on the electronic referral, but on the standardized referral form which serves to accomplish the latter objective. In these cases, use of a standardized referral form is considered the predictor (Peak & MacLaren, 2000; Anderson & Helms, 1995; Roulidis & Shulman, 2006). While the referral form is considered to be a mechanism for improving the usefulness and quality of the information, in the papers by Anderson and Helms (1995, 2000 etc.), the usefulness of information is treated as the outcome measure rather than the predictor. Instead, in some of their papers, as predictors, Anderson and Helms have focussed on the role of various types of professionals in the type of information that gets exchanged in the referral process. In this regard, both the profession and the position of that professional are predictors of referral process success with information as the proxy for performance.

With regard to the impact of profession, Anderson and Helms (1993) show differences in the type of information that is provided depending on whether a social worker or a nurse provides the information. With respect to roles, Anderson and Helms (2003), discuss how five different discharge planning models can influence the success of the referral by allowing the professional to have dedicated time and expectations in terms of managing the process. Their study shows that the liaison nurse model, whereby a nurse is assigned the specific function of discharge planning for multiple patients, is most effective. This is supported by the importance of a specified discharge planner in the success of the referral process (Reicheldt & Newcomb, 1980; Peters et al, 2003; Lemak et al, 2004).

Other coordination mechanisms discussed in the papers as predictors of referral process success include the use of clinical practice guidelines (Atwal & Caldwell, 2002; Edwards, Davies, Ploeg, Virani, & Skelly, 2007, Sibley et al, 2004). In these cases, the practice guidelines have two objectives, the first is to educate and inform on referral or discharge options and the second is to facilitate decision making criteria. Each of these studies, using different methods, showed that the use of such guidelines in the referral process did increase education and awareness of the discharge or referral options, but that they did not actually change the referral process or referral outcomes for reasons unrelated to the information provided.
Examples of other types of organizational factors that are predictive of the success of the referral process are discussed by Rivard and Morrissey (2005) in the context of coordination at an organizational level, these include: (1) having an influence on policy; (2) maintaining a relationship over time; (3) interacting with few partners rather than many; and (4) operating in the same service sector. The suggestion from their analysis is that the choice of formal versus informal relationships in achieving outcomes depends on the specific outcome desired.

In Hoffman et al (2001) who used the number of referrals sent and received as outcome measures, the focus was on formalized coordination through hierarchy and centralization as predictors. They showed that if the organization gave discretion to a manager on who to accept, more referrals would be accepted. If the organization had strict policies and procedures, fewer referrals would be accepted. By contrast, referrals were sent less frequently if the decision on who to refer was decentralized and more frequently if it was centralized.

In Anderson and Helms (2003), using the methodology described earlier and the amount of desired information presented through the referral process as a measure of referral process effectiveness, the authors found that the smaller organizations, joint ownership or affiliation agreements, longer the lengths of stay, and more formalized communication channels, yielded more effective the referral process as measured through information quality and quantity. They explained their results in terms of ease of communication. The longer the length of stay and the smaller the organization, the more time and less complexity there would be in assembling referral information. Finally, as discussed by Rotarius et al (2003), the affiliation between hospitals stabilized the type and expectation around information exchanged.

Especially if we work with the assumption that interorganizational relationships are analogous to interpersonal relationships, articles which focus on the physician-specialist relationship, although not the focus for this study are very informative in terms of identifying potential antecedents of effective and efficient referral process. Although the body of literature is extensive, a number of literature reviews have synthesized much of the findings (Grimshaw, 2007, Herrington et al, 2003). The review by Herrington et al (2003) review describes and evaluates the literature between 1999 and 2002 on referral of patients by GPs to specialists. This literature is synthesized
into a model which includes the following components: patients, processes, and perceptions of the providers.

More specifically, the importance of perceptions in the referral process is also discussed by authors such as Brown (1997) who looks at how perceptions of the referral process and satisfaction with the referral process can actually influence perceptions of the quality of care. The notion of “satisfaction” in the referral process is also discussed across several of the articles (Simpson & Stallard, 2004; Mastouri et al, 2009; Bookvar & Burack, 2007; Forrest et al, 2003; Graham et al, 2005 Wilson et al, 2005; Rouidis & Shulman, 2006; Boje & Whetten, 1981).

Having said this, there does not appear to be consensus on what constitutes satisfaction or an index of satisfaction. Some of the factors identified by Piterman and Koritsas (2005) as influencing this dimension include standardized letters and forms that provide structured information. A second important factor was education and awareness of the referral process and who to refer (Harris et al, 2007; Paterman & Koritsas, 2005; Kibbee et al, 1983).

With respect to education in the referral process, Grimshaw et al (2005) conducted a literature review specifically about educational interventions, in the referral process. Through this systematic review, it was found that there was evidence for the effectiveness of education for improving the referral process if it was accompanied by an intervention to enforce, facilitate or encourage use.

Given this wide range of predictors, I have also grouped the papers with these predictors into the following categories, recognizing that the predictors were used in contexts as broad as those described in Table 2:

1. **Organization level predictors** refer to those predictors that are associated with characteristics of the organization, such as its size, affiliation, ownership, resource base, gatekeeping structures, provider groups, proximity and technologies. These are seen in Anderson and Helms, 1994; Anderson & Helms, 1998; Anderson & Helms, 2000; Anderson et al, 2000; Atwal & Caldwell, 2002; Bookvar & Burack, 2007; Forrest et al, 2003; Gottlieb & Offson, 1987; Kwait et al, 2001; Paulson, 1974; Provan, 1984; Rivard & Morrissey, 2005; Rouidis & Shulman, 2006).

3. **Communication level predictors** have to do with how the individuals in the referral process communicate and the communication channel they use to do so (Anderson and Helms, 1998; Anderson and Helms, 2000; Atwal and Caldwell, 2002; Boje & Whetten, 1981; Emerson, 1991; Gittell, 2009; Graham et al, 2005; Kim et al, 2009; Mueller et al, 2009; Peak & MacLaren, 2000; Provan, 1984; Van de Ven & Walker, 1984).

4. **Information related predictors** refer specifically to the quality and quantity of information in the referral process. Information as part of the referral is discussed specifically (Anderson & Helms, 1993; Anderson & Helms, 1995; Emerson, 1991; Kwaite et al, 2001; Mueller et al, 2009; Peak & MacLaren, 2000). However there is also the concept of information as educative. This includes examples like guidelines and care pathways that help to guide decision making or provide information on referral options (Edwards et al, 2007; Reicheldt & Newcomb, 1980; Sibley et al, 2004; Simpson & Stallard, 2004; Wilson et al, 2005).

5. **Relationship level** predictors are about the softer elements of the referral process such as shared goals, problem solving and trust (Dartington, 1979; Emerson, 1991; Foster & Tilse, Gittell, 2009; 2003; Rivard & Morrissey, 2005; Van de Ven & Walker, 1984; Wilber et al, 2003).

6. **Provider level predictors** are about the role of the professional or type of professional in the referral process. This includes the discharge planning model (Anderson & Helms, 2000; Bowles et al, 2003; Dai et al, 2003; Gottlieb & Olfson, 1987; Lemak et al, 2004; Lin et al, 2004; Luker & Chalmers, 1989; Peters et al, 1997; Reicheldt and Newcomb, 1980; Wilson et al, 2005; Parfrey et al, 1994; Anderson & Helms, 1993).

7. **Patient level predictors** are about diagnosis, complexity and expectations or perceptions of the patient in the referral process (Brown, 1997; Foster & Tilse, 2003; Jencks & Bobula, 1988; Parfrey et al, 1994; Wilber et al, 2003; Bowles et al, 2003; Gottlieb & Olfson, 1987).

### 6 Discussion

Through the analysis of potential performance measures and potential predictors, I have identified 7 categories of predictors of what could make the referral process effective and efficient. I have also identified possible performance metrics that relate to effectiveness and efficiency in the relationship. However, the methods used in the papers that were reviewed, limit
this synthesis to themes rather than conclusive measures. They do however provide a starting point for an integrated model that links predictors of referral process performance with some possible measures of effectiveness and efficiency. I have summarized these in Figure 5 below.

In Figure 5, the left and right sides of the diagram show the factors abstracted as part of the objectives of the literature review, which were (1) to determine predictors of referral process effectiveness and efficiency (the independent variable side of the equation, on the left in figure 5); and (2) to identify possible measures and indicators of referral process performance (the dependent variable side of the equation, on the right in figure 5).

**Figure 5** Synthesis of possible predictors and outcome measures from literature review.
When we look across the predictors, which are shown in the left side of the diagram, we see that some are functions of the contexts and situations in which the referral process is embedded (like patient factors (examples, complexity and population group), organization-related predictors (examples, size and structure), and provider-related considerations (examples, roles and professional background).

Other factors in this list of predictors however relate to the ability to control or coordinate the relationship. For example, formalization introduces rules and consequences, while relationships introduce trust and considerations of reputation. These control and coordination type predictors are also found in the conceptualization of the referral process as a classic communication model that were highlighted by Anderson (1991).

When we look at the right side of the diagram, we see the 9 groups of potential performance measures that were previously (see Figure 4) mapped against their relationship to referral process goals, which underpins effectiveness or to resource type considerations, which underpin efficiency. In Figure 5, I have shown the resource-related items in white boxes and the goal-related items in shaded boxes.

What was not available in the literature however, especially when we compare it to the theoretical perspectives discussed in Chapter 3, is an indication of how the predictors relate to the outcome measures. For example, there is very little discussion on the mechanisms through which the predictors affect the outcomes.

In the next chapter, I will talk about how I propose that the independent and dependent variables relate to each other, with a special focus on the idea of relationships, the diagonal dimension shown in Figure 4 and the relationship item that appears as both predictor and outcome measure in Figure 5.

7 Conclusions

This literature review has integrated findings from three bodies of work: interorganizational relationships, referrals as part of the discharge planning process, and referrals themselves. It has synthesized potential measures of referral performance and identified variables influencing the referral process.
The literature review itself has revealed an abundance of articles on the referral process. However the papers available are limited by the lack of hypothesis testing research in the area. This offers a rich and fertile opportunity for research that builds on this body of knowledge.

It also suggests an important opportunity to develop survey tools that have a theoretical underpinning. This will allow for the generation of research that could possibly lend itself to generalizability so that the literature’s heavy focus on prescriptive approaches and cases, can be supported with what may be considered a higher level of evidence.
Chapter 5
Model and Hypotheses

1 Overview

In this chapter, I present the model and hypotheses upon which this research is based as well as the definitions and rationale. I begin this chapter with the model (Figure 6) and the listing of hypotheses below. This is immediately followed by a brief explanation. The nominal definitions for each of the variables in question are then provided in section two of this chapter. After the definitions, I provide a more detailed discussion of the rationale for these hypotheses.

**H1:** The relationship between channel richness and the perceived effectiveness of the referral process will be mediated by relational coordination.

**H2:** The relationship between channel richness and the perceived efficiency of the communication channel will be mediated by relational coordination.

**H3:** The relationship between information usefulness and referral process effectiveness will be mediated by relational coordination.

**H4:** The relationships between information usefulness and referral process efficiency will be mediated by relational coordination.

**H5:** The relationship between formalization and perceived effectiveness of the referral process will be mediated by relational coordination.

**H6:** The relationship between formalization and perceived efficiency of the referral process, will be mediated by relational coordination.

*Figure 6* Overview of proposed model and hypotheses

![Diagram showing the relationships between channel richness, information usefulness, formalization, relational coordination, perceived effectiveness, and perceived efficiency.](image-url)
Models are, by definition, ‘speculative’ and based on observations and abstraction of the theory and empirical research available (Lave & March, 1975). As such, the model and hypotheses presented, take into account (1) theoretical perspectives discussed in Chapter 3 and (2) the literature reviewed in Chapter 4. The model proposed in this chapter looks at what might make the referral process effective and efficient from the perspectives of the providers sending and receiving referrals.

The model is premised on the conceptualization of the referral process as the classic communication model. This involves a sender, a receiver, a communication channel, information, and contextual factors (Anderson, 1991). It also involves a relationship between the individuals (Anderson, 1991; Gittel, 2002). The communication is functional in the sense that it is intended to achieve the goals of the participants (perceived effectiveness) and to do so in consideration of resources needed (efficiency) (Jacobs, Smith & Street, 2006). These components formed part of Figure 5 which I discussed in the literature review chapter (see page 46).

Given that I am making a choice to focus on only those predictors from the literature review that relate to the classic communication model, I’d like to speak briefly about the other potential independent variables. In addition to reasons of choice, interest and feasibility, the other variables, namely patient characteristics, provider characteristics and organizational factors, are excluded because they are not factors that can be manipulated in the same way if we were to look at the referral process as a process for improvement. For example, we can make a choice to change communication channels or information, but changing patient characteristics or organizational factors is a different matter and may form part of an interesting study in the future.

As such, as the independent variables, I have chosen elements of the classic communication model, which include (1) the richness of the communication channel (i.e., the extent to which it enables the user to change his or her understanding of an issue); (2) the usefulness of the information exchanged (i.e., accuracy, practicality, and relevance), and (3) the degree of formalization in the relationship (i.e., the extent to which there are policies and procedures in
place and enforced). The dependent variables are (1) perceived effectiveness (the extent to which goals are achieved) and (2) efficiency (the amount of time needed).

In addition, I will propose that both the communication and the relationship elements of coordination, which taken together, are known as relational coordination (Gittell, 2001; Gittell, 2009), is also an antecedent to each of efficient and effective referral processes from the perspectives of both senders and receivers.

However, I also propose that relational coordination serves a mediating function through which each of the independent variables in this study, will impact each of perceived effectiveness and efficiency. I will discuss mediation more on page 55. However, in order to explain the rationale for this model, I turn now to the nominal definition for each variable. It should be noted however, that operationalizing many of these variables is part of Phase I of the study which is discussed in Chapter 7.

2 Dependent variables

Perceived Effectiveness
The perceived effectiveness of a process, such as the referral process, can be assessed by considering the extent to which the goals are achieved (Harvey, 2004-2009). In the literature review, we identified groups of observable goals which included achieving access, clinical outcomes, appropriate discharge, patient flow, satisfaction and availability of referrals. Some of these goals related to factors relevant to the level of patient care (examples, Luker & Chalmers; Provan, 1984; Bowles et al, 2003 etc) while others related to the level of the organization or system (example Provan, 1984; Paulson, 1974; Hoffman et al, 2001; Kwait et al, 2001 etc.). For this study therefore, the nominal definition of effectiveness is the extent to which goals are achieved. The goals themselves will be identified through the key informant interviews. The perceptions of interest are those of the referral senders in acute care and referral receivers in post acute care.

Efficiency
As discussed on pages 31-32, efficiency, in general terms is the amount of resource required to achieve the goals desired (Jacobs, Smith & Street, 2006). Possible observable measures
were discussed in the literature review Chapter on page 32 but when we conceptualize the referral process as a classic communication channel, the most relevant relate to the investment of time and ease of use. Having said this and given that the conceptualization of the referral process in this study is specifically set, the operationalization of the efficiency variable will be explored further through the key informant interviews in Chapter 7. The nominal definition of efficiency in this study is therefore the amount of resource needed (Jacobs et al, 2006; Paulson, 1974).

3 Independent variables

As previously discussed, the independent variables selected for this research come from the conceptualization of the referral process as the classic communication model (Anderson, 1991). While the classic communication model always has a sender, a receiver, a message or information, a channel, interactions between the individuals, and various contextual factors, each of these can have its own variations.

For example, the information can have various degrees of usefulness, quality and quantity (Anderson and Helms, 1993, Anderson and Helms, 1998, Anderson and Helms 2000, Peak & McLaren, 2000; Coleman, 2005; Kwait et al, 2001), the nature of the communication channel can range from a phone call to a form to an in person meeting (Anderson & Helms, 1998; Dai et al, 2003; Graham et al, 2005), and the context in which referrals occur can range from very flexible to highly regulated or rule-based (Provan, 1984; Paulson, 1974; Van de Ven & Walker, 1984; Hoffman et al, 2001). Each of these are discussed in sequence.

Information Usefulness

We have conceptualized the referral process as a classic communication model which involves the transmission of information between a referral sender and a referral receiver. The objectives are to use the information to achieve the goals of the referral process in an efficient manner.

What constitutes the usefulness of this information? Anderson and Helms studied this question by focussing on what information points or data elements were desired in a referral. However, they and others (Bowles et al, 2003) acknowledge that these data elements need to
be processed, a phenomena which is often complex, especially considering that we are describing people who may have rich and complex, social, psychological, medical, nursing and social situations.

Information usefulness is looked at more holistically in the of work Ginsburg (2003), on the usefulness of information from *Hospital Report Cards* which assess various dimensions of hospital performance. In spite of the difference between Hospital Report Cards which focus on performance, and referrals, which describe patients, both hospital report cards and referrals contain information that is intended to improve patient care and accountability (Ginsburg, 2003; Provan, 1984).

Ginsburg’s study also reviewed the literature on information usefulness and tested hypotheses to identify the antecedents of information usefulness. Her study found that both characteristics of the information and characteristics of the context were important in determining information usefulness (2003). Also in Ginsburg’s study, information usefulness is assessed as a perception of the user. The focus on perceptions is important because in the referral process, decision making involves using information under conditions of uncertainty, risk and judgment so the perception of the person involved is important.

In this study, I therefore define information usefulness as the extent to which the information is perceived as accurate, practical and relevant. In Chapter 7, I will provide a discussion of what information this relates to from the perspectives of both senders and receivers.

**Channel Richness**

The second area in which we see variation in the referral process is the communication channel. Various authors have described or alluded to variations in the referral process ranging from standardized forms, to electronic referrals, to phone calls (for example, Anderson & Helms, 2000; Mastouri et al, 2009, Dai et al, 2003 etc). The communication channel can be characterized by a number of different technologies. It can be verbal, written or a combination of both. It can also be manual or automated. It can be person-to-person or it can be through a third party (Anderson & Helms, 2003; Roulidis & Schulman, 1994). Finally, the communication channel itself can be something that was formally developed and invested in
Communication channels are also often described in terms of their richness. Daft and Lengle (1976), defined richness as the extent to which the information channel enabled a person to change their understanding of information within a period of time. They had originally posited that richness was an intrinsic quality of the medium and not of the person or of the interpreter. They therefore assigned richness levels to different types of communication, giving the highest richness score to person to person communication and the lowest score to numerical communication. Empirical studies however have actually contradicted the order of richness of various communications media (Thomas et al, 1992; Ngwenyama & Lee, 1997; Trevino et al, 1987), attributing the discrepancy to a failure to consider contextual elements.

For this reason, in my study, I will follow an approach used by Rice (1992) and not assign an order of richness to different channels, but will consider the flexibility of the channel in accommodating immediate feedback, various degrees of personalization, and language variety. In the referral process, this may include the ability to mix communication media, the degree of flexibility in what information can be exchanged (for example, open fields versus limited fields) and the extent of direct communication versus communication through a 3rd party (Cleman & Seamark, 2002; Anderson 1994).

**Formalization**

According to Bodewes’ (2002) review of the literature on formalization, formalization can be determined by three dimensions: (1) the extent to which there are policies and procedures in place; (2) the extent to which there are consequences for breaking them; and (3) the degree to which the organization is committed to the relationship. This is the nominal definition of formalization used in this study.

Bodewes notes that across the literature, the definition of formalization is used inconsistently; that it is not always appropriate to study formalization at the organizational level; and that formalization has to be considered in the context of rule observation. He also identifies three dimensions of formalization: (1) that it is an organizational or departmental property; (2) that it is a means of controlling operations; and (3) formalization can be a template for behaviour.
In Ontario, as in other places, the referral process can exist in an environment which is legislated, such as the way referrals to long term care are governed by the Long Term Care Home Act (2007); they can exist in a context in which organizations have a contract or memorandum of understanding, or they can exist in a context in which players have come to consensus on rules or protocols which relate to aspects of the referral process other than the type of information and the means through which it is exchanged. These are all reflections of the degree to which the referral process is operating in a formalized context.

4 Mediating variable
Mediating variables are those through which an independent variable affects a dependent variable. The mediating variable is sometimes called the intervening or process variable because the mediating variable is presumed to cause the outcome or to be the mechanism through which something occurs (Kenny, 2009).

Relational Coordination
As previously discussed, in this study the mediating variable is relational coordination Gittell (2001, 2010). It is nominally defined as a mutually reinforcing process of interaction between communication and relationship carried out for the purpose of coordination” (Gittell, 2002b, p. 313). The construct has seven dimensions which include four that are related to communication (frequency, timeliness, accuracy, problem solving orientation) and 3 that are related to relationships (shared goals, shared knowledge, mutual respect) (Gittell, 2010). In the next section, I will discuss the rationale for these mediational hypotheses.

5 Hypotheses
As previously discussed, the referral process is (1) a classic communication model; (2) part of discharge planning; and (3) an inter-organizational relationship. The objective at the patient care level is for the provider to achieve access to the next phase of care for the patient; and at the corporate level to both leverage and protect an organization’s mandate and resources by ensuring a flow of appropriate patients and resource utilization.

In order for this to occur, the sender must describe the patient to the receiver and the receiver must use that information. Senders will need to know what information to send and how to
tailor it for the receivers’ needs. Receivers will need to process the information to make decisions. In both cases there is either a context of imperfect information about the program to which the referral is being made and uncertainty about the description of the patient (Foster and Tilse, 2003).

Channel richness is one of the variables that allows the participants in the communication process to change their understanding of the information, in other words to seek clarification or enhance their knowledge, within a given period of time. This definition contains elements that are relevant to both effectiveness and efficiency.

For effectiveness, which is defined as the extent to which goals are achieved, channel richness is proposed to allow the participants to seek clarification or change their understanding of the information provided. This might allow them to make better decisions and to reduce uncertainty and risk which ultimately would influence the perception of referral process effectiveness.

However channel richness is not only about a change in understanding, but a change in understanding as a function of time. In this study, efficiency is defined as the amount of effort or resource needed to achieve the specific objectives of the referral process. The proposition is therefore that if the channel allows for a change in understanding within a period of time judged appropriate to the nature of the query and the information at hand, it will influence efficiency as defined by the amount of resource required to achieve the goals of the process.

Using the original channel richness theory (Daft and Lengle, 1976) we would expect different communication channels to have different capacities for changing the understanding of information within a given period of time, that is, to have varying degrees of “richness”. The richer the communication channel, the more efficient the referral process because less effort is required to achieve the same objectives. However authors such as such as Ngwenyama and Lee (2003) have found a lack of empirical support for the suggestion that richness is an intrinsic characteristic of the media. They contend that in addition to the channel itself, context is important in determining the actual richness of the communication channel.

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15 It is for this reason, that in this study, no richness values will be assigned to each type of channel, but that the perceived richness of the channel is assessed by the respondent.
In the case of the referral process, there are many relevant contextual factors. From the classic communication model, these can include coordinating mechanisms such as formalization, where there are explicit rules in place and consequences for breaking them and relational coordination (Gittell, 2000), in which there is communication and relationship interaction to manage interdependent tasks.

As previously discussed, relational coordination is an investment in communications and relationships to enable the management of interdependencies. It marries coordination, communication, and trust-related elements. Given that the effectiveness of the referral process depends on the ability to make decisions and achieve goals in the context of imperfect information, I propose that investing in the relationship, through coordinative and communicative efforts, builds trust and impacts perceived effectiveness. Trust in turn has been shown to positively influence the efficiency of the process.

For example, in the Theory of Negotiated Order (Bennington, Shetler, & Shaw, 2003), each interaction is considered a negotiation. As parties interact, they negotiate an order through which there are shared expectations and norms and develop interpersonal relationships. These interpersonal relationships can lead to increased levels of trust which increase efficiency and secure the relationship (Bachmann, 2003; Trist, 1993; Gulati & Jackson, 2008; Seabright, 1992). Shared expectations, trust and comfort in seeking information arise. Granoveter’s work on weak ties (ties which are characterized by low levels of frequency, intimacy and commitment), would suggest that informal relationships are often ideal for exchanging information because they enable creative problem solving without reducing autonomy (1973).

The ability to negotiate the interaction through personal relationships is especially important because it facilitates the correct matching of media richness with the needs of the situation. For example, if the message was very ambiguous, a richer communication media would be perceived as more effective. On the other hand, a very rich communication medium for a simple message could be considered inefficient. It is therefore possible that personal relationships enable the individuals to manipulate the amount and depth of information that is exchanged, as warranted by the situation.
However, while relational coordination can occur through inter-personal relations (McKeehan, 1994; Clemance & Seamark, 1992) on a routine basis, there are two other ways relational coordination can impact the effectiveness and efficiency of the referral process. First, if individuals who are involved in the referral process contribute towards the development of the process, they may not only become vested in the process, but they also learn about each other and about how to work together. Their initial investment may lead to the “negotiated order” discussed earlier (Bennington et al, 2003). This leads to the first two hypotheses that focus on channel richness as an antecedent to each of perceived effectiveness and efficiency.

**H1:** The relationship between perceived referral process effectiveness and richness of the communication channel will be mediated by relational coordination.

**H2:** The relationships between referral process efficiency and richness of the communication channel will be mediated by relational coordination.

Although for clarity, I have discussed a situation in which the information is kept consistent in order to compare the effect of communication channel, in reality, the content of the information is variable. *I propose* that the perceived usefulness of this information will also have an impact on the perceived effectiveness of the referral process, irrespective of the communication channel. Using Ginsburg’s findings on the usefulness of information, and given that Report Card information and referral information are both used for decision-making, I will propose that the perceived quality, relevance, and practicality of the information, labeled together as “information usefulness”, are antecedents to each of perceived effectiveness and efficiency.

As previously noted, because there are many subjective elements in the referral process (Anderson & Helms, 2009; Bowles et al, 2003 etc.), it is hypothesized that the perceived quality and relevance of information will increase with the extent to which there has been discussion and dialogue between the referring parties on what information is required. This will promote open communication between the parties and build trust, which are antecedents to future working relationships (Gulati, 2008). I therefore *propose*, following the same logic as for the mediating effect of relational coordination on channel richness, that the relationship between the usefulness of information and each of efficiency and effectiveness of the referral
process will be mediated by the extent to which the referrers and receivers have engaged in coordination regarding what information should be exchanged.

**H3:** The relationship between information *usefulness* and referral process *effectiveness* will be mediated by relational coordination

**H4:** The relationships between information *usefulness* and referral process *efficiency* will be mediated by relational coordination

While relational coordination can lead to a shared understanding, it might also involve routines, standards and even formalization. This is demonstrated in a dynamic model of inter-organizational relationships developed by Whener (1998) which proposes that when something goes wrong in a relationship or process, corrective coordination can lead to the formalization of rules and that once the rules are in place; the relationship becomes a routine and then less formalized. This leads to an ability to improve the process by addressing problems and enforcing solutions.

However, this is not the only common perspective on the issue of formalization. Authors like Provan (1984) also looked at the idea of formalization in referral relationships. He found that providers often failed to seek nuanced information where there were formalized policies and procedures; the opportunity for consensus building and problem solving decreased; and the interpersonal relationships weakened (Provan, 1984). These ideas seem almost diametrically opposed. To reconcile them, I *propose* that while formalization can introduce policies and procedures that act as antecedents to referral process effectiveness and efficiency, its effect occurs through relational coordination to allow for the benefits of formalization without the pitfalls noted.

**H5:** The relationship between formalization and perceived effectiveness of the referral process will be mediated by relational coordination.

**H6:** The relationship between formalization and efficiency of the referral process, will be mediated by relational coordination.

With these hypotheses and an overall model in place, I now turn to an overview of the methods which were used to test these hypotheses.
Chapter 6
Overview of Methods

In this chapter I provide the reader with a high level overview of the methods used in this research, the rationale for the methods chosen, and a description of the population under study. It should be noted, that this study unfolded in a cyclical manner and in two phases (Figure 7) which are described in this chapter. The first phase was the development and testing of survey instruments. The second phase of the study was the administration of the survey instruments and the testing of hypotheses. The detailed procedures for each of these two phases are presented with their results in Chapter 7 on phase I and Chapter 8 of phase II.

Figure 7 Overview of Research Methods
1 Overview of the methods

To develop this study, the background work involved a review the literature and from that, the development of a model and hypotheses. The next background step was to look at patient Discharge Abstract Database (DAD) data from the Canadian Institute of Health Information, to find out which populations were most frequently referred between organizations and what the most common discharge destinations were. I also wanted to get a sense of whether organizations had only one referral partner or if they had multiple referral partners (Appendix 1).

With this background in place, Phase I of the study involved conducting key informant interviews that would allow for the development of the survey questionnaire. The survey questionnaire was drafted based on the analysis of the interview transcripts and the findings from the literature reviews, and discussed in draft form with a number of key informants. A pilot was conducted to test the scales for reliability and validity. The survey was then adjusted as needed.

The surveys were administered by email through the Networks and Association that agreed to partner in the study and who enabled identification of and contact with relevant participants. Data was collected and entered into SPSS and then validated by rechecking the data entry for all the surveys in one dataset and then a random sample of surveys in the second dataset. The hypotheses were tested using Baron and Kenny’s conditional four-step test for mediational hypotheses. The model was then revised based on the findings.

2 Rationale for the choice of methods

This study draws from what Creswell and Plano Clark refer to as a Mixed Methods Exploratory Survey Instrument Development Model, with some variation (Creswell & Plano-Clark, 2007). As per the adaptation shown in Figure 8, the first phase is qualitatively focussed because it involved a series of key informant interviews which allowed for the exploration and identification of an exhaustive list of dimensions of referral process effectiveness, efficiency, information usefulness, formalization, channel richness and relational coordination.
It also included a pilot study in which 40 individuals completed the survey and the data analysis was run to determine if the questions specified formed reliable scales for each variable. More details on the methods of Phase I are provided in Chapter 7.

In Phase II, the Ontario Stroke Networks and the Ontario Bone and Joint Health Networks distributed the surveys directly to their members which include all of the hospitals in Ontario that are involved in the care of stroke and hip fracture patients from either the acute care side and/or from the inpatient rehabilitation and complex continuing care side. In addition the Ontario Long Term Care Association sent the surveys to their members which include about 80% of all Long Term Care Homes in Ontario. The data was entered into SPSS, the scales re-tested for reliability, descriptive statistics were run and the Baron and Kenny four-step conditional hypothesis tests were run. Detailed methods of Phase II are provided in Chapter 8.

It should also be noted that in both Phase I and Phase II, each phase was conducted once for the acute care side and once for the post acute care side. The rationale for this decision will be discussed in the next section of this chapter, in the context of the empirical landscape and the populations under study.

However, there are three main considerations that drove the choice of methods for this study. The first was the appraisal of the literature showing a large proportion of papers of prescriptive nature and calling for more research that is based on theoretical frameworks and accepted research methods (Anderson, 1991; Provan, 1984). The second was the number of innovations in the referral process in Ontario and the need to look at how these innovations apply across settings (CHQI, 2009). The third consideration is the landscape in which the research would occur and the number of assumptions about the population, sampling frame and feasibility that would need to be confirmed.

For the first and second considerations, as previously discussed, millions of dollars are being spent on the development and implementation of referral process forms, protocols, and models. This is a response to the belief that resolving issues in the referral process will contribute to reducing the number of patients who wait in acute care for post acute care services due to process-related reasons and that it will improve workflow and time spent in the referral process and therefore away from direct patient care (OACCAC et al, 2006; Mastouri et al, 2009; Isaacksz & Casselman, 2009).
Figure 8 Overview of the Mixed Methods Exploratory Design Instrument Development Model (modified/adapted from Creswell & Plano Clark, 2007, page 53):

Phase I - Instrument Development

Qual data collection

Procedures:
One on one semi-structured interviews

Products:
Field notes
Transcripts

Qual data analysis

Procedures:
Coding
Thematic

Products:
Coded text
Themes

Qual findings

Procedures:
Describe themes

Product:
Description of themes (dimensions)

Develop & test instruments

Procedures:
Consider the themes subscales
Write items
Conduct pilot

Products:
Items and subscales
Chronbach alphas

Phase II - Hypothesis Testing

QUAN data collection

Procedures:
Administer survey

Products:
Data from surveys

QUAN data analysis

Procedures:
Baron and Kenny Four step model of mediated hypothesis testing

Products:
Results of hypotheses tests & construct validity discussion

Overall results & interpretation

Procedures:
Discussion of results

Products:
Contextualization and discussion of findings
Opportunities for future research
As a consequence, there have been dozens of innovations in this area and extensive diversity across these innovations. While contingency theory would predict different processes for different situations (Fiedler, 1964; Weill & Olson, 1989), the practical question is what can we learn from different innovations in different situations.

The current empirical setting therefore offers the opportunity to look across this variation in referral processes in order to understand what variables influence referral process effectiveness and efficiency. Developing survey instruments and testing hypotheses are a step towards the ability to generalize across the innovations about what makes the referral process effective and efficient.

On the other hand, much as the idea of a survey leading to eventual generalization is attractive, qualitative research is often considered to be more suitable when the body of research in the field is in the early stages or when it is insufficiently developed (Creswell, 2007; Jackson, 2002). Aspects of the current empirical and theoretical landscape for this research would also favour qualitative methods because of: (1) the need to take an exploratory approach in light of a dearth of past empirical research; (2) the importance of context to the research problem; (3) the intricacies of human relationships as part of the referral process and therefore the area of interest; and (4) the focus on perceptions and their relationships to outcomes.

The review of the literature on referral processes confirmed that with the exception of a few papers there has been little empirical research on the referral process. There is also very little clarity about how to measure referral process effectiveness and efficiency. Finally and perhaps most importantly, there is a dearth of information about the study population that makes referrals, both in terms of their characteristics and their numbers.

By contrast to this dearth of empirical research and knowledge of the study population, because the referral process is conceptualized as a relationship, there is a large body of theoretical work that can be applied. At the same time, there is a large body of descriptive writings on the referral process. For these reasons, the referral process, as an area of study, can be simultaneously considered exploratory and amenable to theory testing on the other hand.
The Mixed Methods Exploratory Design, Instrument Development Model (Plano-Clark & Creswell, 2007), mimics the traditional survey design approach and it incorporates explicit elements of a mixed methods approach that helps to improve the inferential quality and validity of the data drawn from the traditional survey development approach. It also respects the exploratory phase of the study.

These undertones reflect the pragmatic and participatory world-views of research. In the pragmatic point of view, both subjective and objective knowledge is valued. When it is tied to mixed methods, Tashakkori and Teddlie, as discussed in Creswell and Plano-Clark (2007, pp 26-27), proposed that: (1) qualitative and quantitative designs can be used together; (2) the question is more important than the method; (3) the forced choice between post positivism, which suggests one correct answer (example hypotheses tests) and constructivism, which accepts multiple realities (example providing quotes to illustrate multiple perspectives) should be rejected; (4) the use of concepts like truth and reality from metaphysics should be abandoned; and (5) practical and applied research philosophy should guide methods.

In the participatory point of view, participants in the research are collaborators in the sense that they contribute to an intended outcome and that the research, will use language that can help to influence change in the area of interest. This was particularly important in allowing me to describe the research to participants and structure the social exchange relationship recommended to increase response rates (Dillman, 2007). In this regard, it is important to understand that my research sought entry through a variety of Networks. As such, I had to be able to situate the research for the Networks in relation to their own objectives. By participating in the research, the Networks were also addressing their own needs. The reader will note that in the discussion Chapter, I provide 5 recommendations deliberately intended to contribute to the practice setting.

3 Populations and setting under study

To the extent possible in this research, significant attention was paid to the realities of the empirical context or what is happening in Ontario in the area of patient referrals. This has resulted in a series of choices, not only about the study design, but also about how to select and study the units of analysis, interest and populations. In this section, I discuss these choices, why they were made, and their significance.
**Populations**

As previously mentioned, in the early stages of this research, data from CIHI’s Discharge Abstract database which contained a record of every patient discharged from acute care in Ontario Hospitals in 2006 and whose primary diagnosis for hospital admission was one of eight frequently hospitalized groups as identified in a study by Jaglal et al (2001), was explored to help identify the populations that should be selected for study (Appendix 1).

Using Network analysis software, we looked at volumes and patterns of interorganizational referrals by population group, by local Health Integrated Network (Ontario has 14 LHINs that reflect geographic clustering of services), by complexity of patients, and by number of referral partners. We found that in most cases, within populations and within referral settings, most organizations had multiple referral partners as identified by the number of different “organizations to” numbers that were listed as discharge destination when the discharge destination was to another organization as opposed to the person’s home. The three most common settings were long term care, inpatient rehabilitation and continuing care.

We also found that (1) hip fracture and stroke are the two groups which have both a high volume and a high proportion of inter-organizational referrals; (2) other populations like cardiac and respiratory conditions may have a high volumes of referrals, but these may be within the same organization; (3) still other populations, like diabetes may not be referred after acute care because they may be treated on an outpatient basis; (4) for patients that are referred, there did not appear to be a particular concentration of patients by ‘PLX’ or level of complexity. As a result of this analysis, we decided to choose sampling frames that would allow us to look at referrals involving hip fracture and stroke patients at acute care hospitals in Ontario to post acute long term care, inpatient rehabilitation and inpatient continuing care.

**Units of interest**

While the referral process itself is a single phenomena, it involves both a receiver and a sender. Even at face-value, the senders and receivers have different goals and objectives from the same referral process. Therefore, one of the choices that had to be made in the study was whether to study the perspectives of referral senders and recipients in a separate but parallel fashion or as
sender-receiver dyads. The second choice was whether the post acute care settings (of which there are three) should be lumped together or split. I discuss each of these two choices.

**Studying acute care and post acute care separately**

The choice was made to study the perspectives of senders and receivers in parallel fashion for both conceptual and feasibility reasons. First, data examined from Ontario’s Acute Care Hospital Discharge Abstract Database (DAD) showed that most organizations have multiple referral partners even within the same patient grouping. Second, as the referral process is a relationship, individuals responding as part of a dyad would have to identify a particular organization or individual as their partner. This may discourage participation (Dillman, 2007) without bringing a significant enhancement to this particular study.

**Lumping post acute care settings**

With the choice made to study acute care separately from post acute care and with the knowledge that there is more than one post acute care setting involved, a decision had to be made about whether the post acute care settings had to be split or lumped together.

The decision was made to group rehabilitation, continuing care, and long term care together as they all have similarities for the purpose of this project. They are all inpatient settings and are among the three most common settings to which patients who can not be discharged home are sent. However, they also have some differences that need to be acknowledged.

For example, when a patient is referred to a Long Term Care (LTC) Home, the intent in most cases is a permanent transition, as LTC is intended to provide the day to day care of an individual who is not able to continue the aging process alone in the home safely for medical or psycho-social reasons. If this individual is being referred from acute care, they would likely have had a life-altering episode that precipitates this decision. Given the permanent nature of the transition from acute care to long term care, the decision making process involves more than the medical and functional aspects of the person’s needs.

By contrast, inpatient rehabilitation and complex continuing care settings are usually designed to enable the recovery of health and function after a critical incident such as a stroke or hip fracture. The stay in the post acute care setting is intended to be time-limited. Rehabilitation is generally
intended to be more function or goal oriented and shorter term. Complex Continuing Care (CCC) is generally intended to focus on nursing or medical care issues as well as functional issues, however, the length of stay may be much longer. Further differentiating rehabilitation and complex continuing care is more complex but perhaps less relevant in this particular study. For example, rehabilitation and CCC are often co-located and in some cases the definitions, program descriptions, and program offerings may overlap. For example, what is considered slow stream rehabilitation in one organization may be CCC in another setting (OACCAC et al, 2006)

What is important however is that accessing each of long term care, rehabilitation and complex continuing care, involves interorganizational relationships and some form of referral process which is contextualized within a corporate environment that involves the care of multiple patients by many providers.

Organizational diversity within the acute care referral sender group is also important, although not as pronounced as it is in the post acute care settings. Acute care settings may differ in terms of size, organization, and degree of specialization. For example, they may have a dedicated stroke unit or a floor with all medical or all surgical patients.

However, what is of most interest in the context of this research as it pertains to acute care, is the discharge planning model used by the organization. Anderson and Helms (2003) identified five models that exist across settings and that involve different numbers and types of professionals. For example, an organization may have one individual referring all patient populations; they may have a 3rd party referring populations, they may have each staff person involved in the referral of his or her patient, or they may have a dedicated nurse or social worker for each population or each floor. This has radical implications for the size of the sample.

With this introduction of the general methods, the next two chapters will provide both the specific procedures and the results associated with each of Phase I and Phase II of the study.
Chapter 7
Phase I - Survey Instruments

1 Overview
This chapter provides the reader with the methods and results of Phase I of the study. Phase I pertained to the development of the two survey instruments, one for use with acute care senders and one for use with post acute care referral recipients. The chapter begins with the procedures that were used in developing both versions of the survey instrument. The next section focuses on the acute care (PRET-ACS) survey development process. It includes the sample, the themes from the key informants and the manner in which the themes translated into survey items. It also includes a discussion of the pilot and reliability testing. The section that follows takes mostly the same approach but for the post acute care version of the survey.

2 Methods used to develop the items
The survey instruments developed are called (1) Perceptions of Referral Effectiveness Tool (PRET) - Acute Care Sender (ACS) version; and (2) PRET - Post Acute Care Receiver (PACR) version respectively. The instruments are similar but they reflect differences in the situations and contexts of acute care referral senders and post acute care referral recipients.

Key informant interviews
In this study, the purpose of the key informant interviews, was to develop the items for the questionnaire as has been done in other studies (Coleman, Mahoney, & Parry, 2005; Myers & Oetzel, 2003). The theoretical positioning of this research, the literature review, and the classic communication model provided the dimensions of the survey. The purpose of the key informant interviews was therefore to inform the overarching question, what makes the referral process effective and efficient? As shown in the interview guide, to support this overarching question, there are sub-questions related to the way communication occurs, the type of information that is exchanged or required, rules, policies, and the relationship between the organizations and participants. The interview guide is shown in Figure 9.
To conduct the interviews, ethics approval was obtained from the University of Toronto Health Services Ethics Review Board I (Appendix 2). Each participant was asked to review a consent form for this purpose. Upon receipt of consent, each interview was conducted, transcribed and analyzed. Interviews continued until saturation was reached. Saturation is the term used in qualitative research to denote the point at which the most recent interviews reveal no new themes from the previous interviews (Jackson, 2002).

**Qualitative Analysis**

Each transcript analysis involved dividing the transcription document into a column containing the transcribed text with an adjacent column for reflective notes (Creswell, 2009). The notes were then entered into a table which served as a summary of the field notes. Using the table, coding categories were developed and patterns and themes were noted. Metaphors, analogies and concepts were developed (Creswell, 1998). The results were then written up without any discussion of survey items and in the tradition of a qualitative analysis in order to enable discussion and consolidation of the findings with the committee (Jackson, 2002). For this purpose the literature review, model, and initial description of the variables were used as bracketing which would allow the researcher to articulate the existing biases and approach the key informant interviews in a more objective manner (Jackson, 2002).

**Figure 9** Interview Guide for both the acute care and post acute care key informants

- What is your role in the referral process?
- How many years have you been involved in the referral processes?
- What types of patients do you typically see? What about stroke and hip fracture patients?
- Do you have different referral processes for each of these populations?
- Do you have many different referral partners for these patients?
- Do you know the individuals who are your referral partners well?
- Are there formal rules and processes that govern your interactions?
- What constitutes referral process effectiveness?
- What constitutes referral process efficiency?
- How do you exchange referral information? Please describe the process.
- What is important in how you exchange information?
- What makes the information you exchange useful from your perspective?
- What is important in how you communicate with your partners?
- If you were to improve the referral process, what would you do?
The final phase of this analysis involved a comparison of the themes and subthemes against what was learned from the literature review, for the purpose of developing potential survey questions. The themes and sub-themes were then re-grouped under the dimensions of the variables. To do this I began by looking at how the themes that I had identified matched with the nominal definitions of the variables that I chose for my model. Recognizing that Chronbach alpha would later be used to assess the reliability of scales for these variables, if items emerged that were not related to the nominal definitions of the variables, the item was retained under an “other variables” heading.

Validation of the key informant interview findings occurred in three ways. First, the results were written up formally for committee discussion. This helped to clarify themes. Second, the surveys to which the key informant interviews led, were circulated to key informants who agreed to review and test the survey. They were asked specifically if they felt that the survey questions captured their thoughts on what makes the referral process effective and efficient. Finally, the surveys themselves were subjected to reliability testing for the scales, which although not the primary purpose of the pilot, provided a form of triangulation to the key informant interview findings.

**Acute care key informant sample**

The sample for the key informant interviews with acute care referral senders was a purposefully selected convenience sample from the Association of Discharge Planning Coordinators of Ontario (ADPCO) who all have experience with the process under question. The ADPCO is a voluntary association made up of individuals who are involved in discharge planning, and as a consequence the referral process (Bowles et al, 2003; Clemance & Seakmark, 2003; Edwards et al, 2007; Warren, 1994; Reicheldt & Newcomb, 1980; Peters et al, 1997).

At the time of the research, the ADPCO had 170 members from across Ontario. The executive of the ADPCO was made up of individuals who provide volunteer leadership for their region. Since the executive is geographically based, it was convenient to ask ADPCO executive members if they would partake in the interview process. Individuals were then booked for a phone interview which upon consent was conducted, audio-recorded, and professionally transcribed.
At the end of each interview, each key informant on the executive was asked (1) if they would be willing to review and comment on the questionnaire that was being developed from the interviews and (2) if they would be willing to recommend a colleague, not on the executive, so that a snowball sampling technique emerged.

A total of ten key informant interviews were conducted using a theoretical sampling approach which meant that sampling continued until there was saturation. Saturation, as discussed earlier, is demonstrated when the analysis of interviews which is occurring at the same time as the recruitment of subsequent informants, reveals no new themes (Jackson, 2002).

**Post acute care key informant sample**
The sample for the post acute care referral receiver key informants came from a combination of sampling strategies. To recruit individuals from Long Term Care Homes, the Ontario Long Term Care Association posted a notice of this research on their internal website and also encouraged members of their research committee to recommend individuals for the interviews.

To recruit individuals from inpatient rehabilitation and complex continuing care, the acute care key informants were asked if they would be willing to recommend their referral partner in the post acute care rehabilitation or complex continuing care settings.

These individuals were then invited to partake again on a voluntary basis. In total, 10 post acute care key informants were interviewed. It should be noted that because of the sampling strategy, the recruitment process was staggered between acute and post acute care, however, the transcripts were analyzed and written up separately from each other.

**Item development procedures**
The second activity in phase I of the research was to use the subthemes gathered from the acute care and post acute care interviews to develop items for the survey questionnaire. The questionnaire contained 6 proposed scales for the variables in the model as well as a number of questions that could be used for context and analysis purposes.
Several strategies were then used to ensure that the questionnaire, from a validity, usability, and reliability standpoint is of sufficient quality to permit the intended research. First, to ensure quality in the development of the questionnaire items, recommendations for best practices in survey item development presented in Dillman’s 2007 edition of *Mail and Internet Surveys the Tailored Design Method* were summarized and used as a framework to develop and consider the wording and structure of the questionnaire.

Dillman’s work uses a theoretically based approach to survey development with a view to maximizing clarity and response rate from a questionnaire. According to Dillman, cognition, motivation and multiple attempts are key to maximizing the response rate (2007). The survey is considered a social exchange consisting of rewards, costs and trust. To the extent possible, Dillman’s principles were applied to the questionnaire development.

For example, the final version of the questionnaire was available in sub-versions so that the language could be tailored to those answering from various perspectives (for example, from a hip fracture care perspective versus a stroke care perspective). The scale items remained the same. Similarly, for the post acute care group, I tailored the survey for those answering from a long term care home perspective versus those answering from either a hip fracture or stroke rehabilitation or complex continuing care perspective. This again did not affect any of the scale items, but did introduce changes in the reference to the population and in the addition of an administrative question to the long term care survey.

However, once the pilot questionnaire items were drafted, committee members reviewed the questionnaire and provided feedback. The questionnaire was revised, presented once again to two of the committee members, two experts in the referral process, and to two individuals who are not at all involved in the referral process, research, or health services. This ensured that the survey language would be appropriate to multiple audiences.
An expert in survey development methods, available to students at the University of Toronto, was engaged in the review process also made recommendations for formatting and wording, and provided advice on the preparation required for reliability testing. The completed survey questionnaire was pre-pilot tested by three individuals from the respondent community.

Once the survey was developed, I conducted a pilot test on the acute care survey with forty people to test the reliability of the scales. The post acute care survey was based on the acute care version and was not subjected to a pilot test. I will discuss both the methods and the results of the pilot test, later in the chapter. However, in the next section, I’d like to turn to the themes and sub-themes of the key informant interviews with acute care referral senders and how these resulted in the development of proposed items for the scales in the questionnaire.

3 Acute care survey item development

Effectiveness

Since the nominal definition of effectiveness was the extent to which goals were achieved, I began the interviews with a question about what key informants believed to be the goals of the referral process. Consistent with the literature, key informants described goals that were patient care related (Coffey, 2006; Coleman, 2005; Van de Ven & Walker, 1984) and goals that were more corporate in nature (Provan, 1984; Van de Ven & Walker, 1984; Foster & Tilse, 2003). The themes included obtaining care, exploring options, managing patient flow or wait lists, and maintaining relationships with the patient and family. I discuss each of these in turn.

Obtaining care and exploring options

In terms of patient care, the goals of the referral process were to either seek direct access to care for the patient by making the referral or to use the referral process in order to rule options in or out. A comment from referral Sender (S) 5 captures both the ideas of a) obtaining care and b) exploring options:

“…Still if the person has their faculties they have a right to choose…and so I'm looking for suggestions to support that even though we don't know it's in their best interest, it's what the patient's goal is. So how can we service that to the best of our ability…? (S5)
Ensuring patient flow and managing wait lists
With respect to the organization-level the referral senders alluded to the goal of ensuring patient flow issues were being addressed, since as one patient is successfully referred and subsequently discharged from an acute care bed, an opportunity presents to admit the next patient. This is exemplified by the following:
"…When I did the job, I managed the bed utilization and the discharge planning functions. So from beginning to end I worked for the hospital I worked for my clients. The patients too, but I balanced the needs for the hospital against that”. (S2)

“…It’s getting harder and harder though…beds being so full, so occupied…it’s a big change of thinking…So it is tough for people and it’s tough to be an advocate for them and yet almost like an enforcer for the organization. It’s a difficult role”. (S1)

Related to the goal of patient flow, as described above, a number of informants discussed the referral process for enabling the goal of wait list management and resource utilization.

“It's effective if when I send an application I get a response from the facility saying that yes, we accept the patient rather than telling me two weeks down the road the patient has not been accepted whereas I've been waiting for two weeks without word thinking that the patient may be accepted….“(S6)

“If you could go on a website and see where your patient was on the waiting list that would be fabulous. Then you could report current, you know, you could do that concurrently, because patients want to know too and it would save the calling, calling, leaving messages” (S5)

In these last two quotes, we see the juxtaposition of perspectives on effectiveness with the nominal definition of time and efficiency as part of the goals of the process. This suggests that people may perceive these concepts as related.

Responding to patient and family demands
Another goal of the referral process was the pressure and need to respond to patient and family demands that a referral be made, even if the referrer did not necessarily believe in its appropriateness. This is illustrated as follows:
“So if the family ask for referral, we say "You know what? We can certainly refer you but here are the criteria that you have to meet for them to even consider you….so again, the family feels that the person has been assessed by the experts” (S1)

“I would make the referral and with the referral I would say "the patient and family would like a referral and believe that this is really…." (S6)

The effectiveness items in the questionnaire included the extent to which the referral process enabled the provider to a) obtain care needed for the patient; b) explore options for the patient when uncertain; c) facilitate patient flow when there is a high need for beds; d) optimize the use of resources and manage wait lists; and e) respond to patient and family demands.

<table>
<thead>
<tr>
<th>EFFECTIVENESS</th>
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<tbody>
<tr>
<td>EFFECT-CARE</td>
<td>How often does the referral process (RP) allow you to obtain the care needed for the patient</td>
</tr>
<tr>
<td>EFFECT-OPTIONS</td>
<td>How often does the RP allow you to explore options for the patient when uncertain</td>
</tr>
<tr>
<td>EFFECT-FLOW</td>
<td>How often does the RP allow you to facilitate patient flow when demand for beds is high</td>
</tr>
<tr>
<td>EFFECT-RESOURCES</td>
<td>How often does the RP allow you to optimize the use of resources</td>
</tr>
<tr>
<td>EFFECT-PATIENT</td>
<td>How often does the RP allow you to respond to patient and family demands</td>
</tr>
</tbody>
</table>

**Efficiency**

The second dependent variable of interest in this study was efficiency. The nominal definition for efficiency in this research was the amount of resource needed to achieve the goals. As such, from the analysis of sub-themes in the key informant interviews, I extracted two groupings of resources that were relevant to the goals of the referral process.

**Time spent in the referral process**

The first grouping was the amount of time that would have to be invested in the process by the senders. This idea was also referenced in the literature (For example, Bowles et al, 2003; Foster & Tilse, 2003; Mastouri et al, 2009; Dai et al, 2009). One of the papers, (Luker & Chalmers, 1989) broke the process down into steps which included those
related to “working up” the patient, “working up” the partner organization, and engaging in the process itself. Many of these steps were discussed by the referral senders in the context of the other variables, such as the information, the communication channel, and the relationship. The reader will be able to read these comments throughout the sections that follow on these variables. However, for each of these, common resource was time spent by the referrer. For example:

“Sometimes it’s just not - you just don’t have the time...to sit down and discuss a case, you know, that in depth”. (S8)

As such, I focussed on time spent as the basis of four items which were intended to capture what the referrer was spending time on in the referral process, like assessing the patient’s needs and the program’s offerings, gathering patient information, filling paperwork and following up.

<table>
<thead>
<tr>
<th>EFFICIENCY TIME SPENT</th>
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<tbody>
<tr>
<td>EFFICIENCY-CONSULT</td>
<td>Estimate the average time (AT) you spend...consulting... about the patient or program</td>
</tr>
<tr>
<td>EFFICIENCY-GATHER</td>
<td>Estimate the AT you spend...gathering information on the patient for the referral</td>
</tr>
<tr>
<td>EFFICIENCY-PROVIDING</td>
<td>Estimate the AT you spend....filling in paperwork and forms once the information is gathered</td>
</tr>
<tr>
<td>EFFICIENCY-FOLLOWUP</td>
<td>Estimate the AT you spend...consulting with the referral partner about the patient or program</td>
</tr>
</tbody>
</table>

**Time required from initiation to final response**

The second set of sub-themes in the efficiency discussions related to the time needed to receive a response to the referral. This is expressed in the following quotes:

“Yeah, I feel I am the one who is doing the pushing for the referral and it would be nice if who we're referring to treated us as a bit more like a customer ...it seems one-sided the push, because obviously, they're so busy on their side...it's a two way communication”. (S5)

"The reality of the situation was that there was only ‘X’ number of beds and you knew that, you know, you could do the application, but then consistently on a weekly basis you were asked to provide updates because there was so much limited beds. You know everybody was kind of fighting for the space. So it was I guess timeliness due more to resource than process (S3).
This was supported by several papers (Anderson & Helms, 1994; Brown, 1997; Simpson & Stallard, 2004 etc). As such, I proposed a second set of items, that asked how long it took to get (1) a response from the receiver about whether the referral was received; (2) when it was reviewed; (3) when it was declined; or (4) when it is accepted.

<table>
<thead>
<tr>
<th>TURNAROUND TIME</th>
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<tbody>
<tr>
<td>TIME(turnaround)-RECEIVED</td>
<td>How quickly do you receive confirmation that the referral has been sent</td>
</tr>
<tr>
<td>TIME(turnaround)-REVIEWED</td>
<td>How quickly do you receive confirmation that the referral has been reviewed</td>
</tr>
<tr>
<td>TIME(turnaround)-DECLINED</td>
<td>How quickly do you receive confirmation that the referral has been declined</td>
</tr>
<tr>
<td>TIME(turnaround)-ACCEPTED</td>
<td>How quickly do you receive confirmation that the referral has been accepted</td>
</tr>
</tbody>
</table>

Relational Coordination

The mediating variable (see page 26-27, 55) in the proposed model is relational coordination as defined by Gittell (2001, 2010). The definition of relational coordination has already been operationalized through a relational coordination scale that was developed by Gittell. The scale has seven items, four of which are related to communication (timely, frequent, accurate, and problem solving capacity) and three of which are related to relationships (shared goals, shared knowledge, and mutual respect). Given that this variable was already operationalized, what I was interested in knowing from the key informants, was less about what the items would be, and more about whether these items appeared to have relevance in the referral process. The importance of relational coordination, as foreshadowed by the literature and the conceptualization of the referral process in Chapter 3-5, was particularly clear as it pertains to managing recurring relationships, addressing uncertainty and vulnerability, dealing with scarcity and within a complex system, and managing practical issues. I will discuss these here:

Recurring relationships

Across the interviews, referral senders consistently indicated that fostering a good relationship with the referral receiver was important for both the patient they were trying to refer and for future referrals. Referral senders saw the relationship with the receiver as
a recurring relationship, in which the actions of the day would influence the response they would receive in the future.

“Like if you've had a bad relationship with them or if you send them patients that are too sick when they get there, then certainly they may look at that, I mean...I can't say that they do but they may look at that and say....well you know...(quoting) “we've gotten five bad patients from you and therefore we're not taking your patient”. I mean, they may ostracize us that way. However, I am not sure if that is actually being done that way per se but it certainly can happen”. (S6)

The dynamics of the interorganizational relationship in general or in terms of social capital have also been discussed in previous works by (Amburgey, 1986; Provan, 1984; Paulson, 1974; Van de Ven & Walker, 1984; Oliver, 1991, Oliver, 1992, Gulati & Jackson, 2008) which suggest that the relationship is path-dependent and dynamic over time.

**Addressing vulnerability and uncertainty in a system of perceived scarcity**

Protecting the relationship was considered especially important to the senders because they saw themselves in a *vulnerable situation*. They needed the receiver to take the patient in order to address patient flow problems and complete their duty of care;

“You want to keep your relationship with your referral...especially for us. We're the little guys right? We can't afford to tick off the big guys. We just want to be careful on how we manage it”. (S2)

Key informants also emphasized the personal and practical importance of feeling trusted, behaving in a trustworthy fashion, dealing fairly with the referral partner, being realistic about the system and being an advocate for the client. These were very consistent with the ideas behind relational coordination. For example, having a relationship also allowed the sender and receiver to *discuss issues of uncertainty*. By doing so, any potential error on the part of the sender, in terms of the appropriateness of a patient or the information that was provided, is *not perceived as an attempt to mislead* or “dump the patient” as was discussed by several authors (Edwards et al, 2007; Warren, 1994; Dartington, 1974 etc.)

The relationship allows the sender to *convey good intentions* to the receiver.

“I'm saying that an extra phone call is worth the effort as well...it is worthwhile for us to call that department and give them the head ups in case it hasn't been communicated on their ends....So that we're not looked at as trying to dump somebody. (S2)
The key informants also discussed the relationship in terms of *dealing with the scarcity of resources in the system* and needing an empathetic and helpful partner to deal with some of the shortfalls.

“it can be a very negative environment because you don't have beds, you have people waiting.....I mean it can be very dogging and hectic, but just keeping your partnerships...keeping open communication and being as helpful as possible… it's a lot of if based upon having that relationship so you want to keep that relationship as positive as a user friendly because I mean your paths....sometimes like I really need a favour...I have this patient, doesn’t quite meet the criteria but needs your services because of this...what can you do for me? I mean, they'll not so much bend the rules, but make room for that patient, whereas if that open communication and that partnership and that - I mean that friendship isn’t there. It's like they’re not obliged to that patient” (S4)

“I don't want to say we have to beg because it's not true. I mean the system is -- it is what it is” (S2)

**System citizenship**

It is clear from these quotes that the senders were empathetic and understanding to the needs of the referral receivers and to the reality of the system. Demonstrating genuine concern and understanding for the other, is part of social capital (Gulati & Jackson, 2008) and trust building (Battacharya et al, 1998). It is also related to Gittell’s discussion of organizational social capital and citizenship (2007). In the case of the referral process, the dimensionality is increased because of the impact of a stressed system. I therefore call this multi-dimensional concern “*system citizenship*” in which the referrers would put the needs of the system, their referral partners, and the patient on the same level as their own organization’s needs. This mind-set leads to *shared goals and problem solving*. This is in contrast to views in the literature that posit that a more “adversarial” relationship exists between referrers and senders because of their own-organizational pressures which are at odds with the needs of the patient and with each other’s needs (Emerson, 1991; Dartington, 1974). For example, consider this comment on the commitment not to send inappropriate patients and to guarantee a take-back in the event that the patient does not meet the description in the referral once the patient arrives to the receiving organization.

“We try not to do that [send an inappropriate patient] because we know the situation that other hospitals are in....so we will take that patient back and do the best we can do to accommodate...having a good rapport, being open being helpful and being positive (S4)
The issue of trust and trustworthiness was also a strong theme in the discussion. In the referral process, referrers would often have to describe patients to the receivers and a trusting relationship could often obviate the amount of information that would have to be exchanged.

"You've got to have good relationship and through your network you tend to trust the person that's sending the information too, as well, so it strengthens and solidifies the process absolutely. (S3)

**Practical implications**

Across these quotes and the interviews more broadly, we also see a few practical considerations. For example, Sender 2 expressed concern that he or she does not want to have the referral recipient perceive that he or she is trying to “dump” an inappropriate patient or referral on the receiver. The quote alludes to the use of a phone call for addressing the issue; Sender 4 discussed the practical implications of the relationship for the goals he or she is trying to achieve; and Sender 3 talks about this relationship in the context of system which may not have enough resources to go around, so the relationship increases the likelihood of a favourable decision. This is especially true where the referral receiver has no obligation to the patient.

Purposefulness in communication and in the establishment of trusting relationships is consistent with the definition of relational coordination. Gittell’s 7 items for relational coordination were therefore adapted and included as shown below.

<table>
<thead>
<tr>
<th>RELATIONAL COORDINATION</th>
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<tbody>
<tr>
<td>RC-FREQUENTLY</td>
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<td>RC-TIMELY</td>
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<td>RC-ACCURATE</td>
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<td>RC-ERROR</td>
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<td>RC-WORK</td>
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<td>RC-GOALS</td>
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<tr>
<td>RC-UNDERSTANDING</td>
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</table>
Channel Richness

In the last section, we talked about how the sender worked on the relationship with the referral recipient in order to achieve the goals of the referral process. The key informants alluded to phone conversations as a way of maintaining the relationship. However, they are also part of the classic communication model and can be described in terms of the extent to which the channel allows a user to gather information or seek clarification in a given period of time. This is the nominal definition of channel richness which is the next variable in the model (Kwok & Gao, 2005; Daft & Lengel, 1986).

A common theme alluded to by the key informants was the use of multiple media and the need to supplement a standardized referral form with a conversation. This allowed senders to convey sensitive information which, if communicated in writing, could be misinterpreted and or could even lead to legal or human rights complaints. This was especially true in situations were referrers felt obligated to make the referral because the patient and family were demanding it or if there were particulars of the situation that might effect the receiving organization. For example, consider this quote:

“We have a fax form...and then we have our follow up phone information so that you get the anecdotal kinds of information that really on a legal document you may not feel that...but it's part of the family dynamics and how...an expectation are just a way of saying, ‘be careful’ or ‘here's what we've noticed’ ”. (S1)

In many other cases the interviewees describe uncertainty about the extent to which certain pieces of information were relevant, as well as uncertainty in the extent to which the referral that they were making was appropriate. Sometimes the referrer felt obliged to meet patient or family demands, but knew the referral was not appropriate. In both cases, the referrers wanted to make sure that their referral would not appear as an attempt to “dump” a patient; that sensitive information was discussed and not withheld; that appropriate information was provided; and that the description of the patient and the actual patient would match.

To this end, the interviewees often described the preference to use multiple communication channels. This allowed them to balance convenience with sensitive information. Consider this quote as an example of the tension.
“Interviewer: On one hand there is this call for automation and on the other hand people find it easier to do it by phone, how do you think those two pieces work together? Respondent: I think they go hand in hand. I think absolutely you need to, need to have a hard copy whether it's automated or whatever but I think the phone works well too because sometimes when you look at the paper it doesn't tell the whole story and it can't give the full picture and sometimes only words can speak mountains to you as well" (Sender 3)

This is especially pertinent, because the communication channel, as I described in the rationale for the study, is one of the areas of high variability and investment across the province. It can involve electronic technologies such as “e-referral systems”, a third party, or more traditional means such as a phone conversation, an in person meeting, or documentation exchanged by fax or email. What we learn from the key informants for this study, is that the telephone is important in the referral process, even if there are other standardized or electronic options. In some cases the phone was the primary referral channel, however, in many cases the phone was used to seek or offer clarification, to discuss sensitive issues, and to build the relationship. This is consistent with Anderson and Helms findings about how referral information was communicated and what channels appeared to transmit the most and most appropriate information for the referral (Anderson & Helms, 1998).

The key informants also talked about many of these communication channels from a more practical standpoint. Consider the following comments about a third party as the communication channel:

"...we have the stroke resource nurse in the building and we have that link with [receiver name suppressed]….I can't really quantify but I think it's better than it used to be because we have that resource and there is a certain criteria that they're supposed to meet. (S2)

“We have a stroke resource nurse who works out of our facility now. So it's a lot different. Especially with that being available. (S3)

“They have an office here. So it's fabulous to have a community partner within the organization. We are actually interacting with the person. You're dealing with conflicts and challenges together…They want person to person more-so, and maybe that is why that has worked so well, the CCAC being here, and I think that's why we've had successes too with the Stroke Recovery Nurse being in house too. It's made a difference”. (S5)
In other cases, the communication involved a standardized form. The standardized form presented challenges in communicating complex information:

"An application is as good as the person that’s completing it too... it's just when you're looking at an individual...they are so complex that sometimes it's hard to actually capture all of the elements. You know words sometimes make it a little bit easier, and for that receiving facility, that's they so they know, you know, whether they can handle their care needs and you know, position them appropriately wherever it might be in their own organization. (S3)

"Sometimes patients look quite different in person than what they look like on paper, so you know, it might be better or it might be worse….there would still be some questions that would, you know, that would come up about people that aren't always you can’t always write it in. It doesn’t always fit in the box and no matter how many boxes you have, I mean some things just don't …don't fit so...so I think no, I think there's probably always space for phone conversations”. (S8)

In regard to the communication channel and its functionality for enabling the exchange of information within a given time period, we see the need to balance media so that sufficient information is provided, sensitive information is communicated, but so that it is done in an efficient manner.

“I don’t want to keep the nurse on the phone forever because she’s going to say…Argghhh!” (makes exasperated sighing noise)...you know?”. (S5)

We also saw the variety of in person communications with more impersonal communications. As such, for the channel richness questions, we included questions that had previously been proposed by Kwok and Gao (2005). These questions asked the respondent to identify which media are used for each phase of the process; the extent to which the media were convenient; and the extent to which the communication was direct or indirect.

<table>
<thead>
<tr>
<th>COMMUNICATE-DIRECTLY</th>
<th>We communicate directly with the referral partner</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMUNICATE-3rdPARTY</td>
<td>We communicate mostly with a 3rd party until a referral decision has been made</td>
</tr>
<tr>
<td>COMMUNICATE- VISIT</td>
<td>Our referral partner comes to our facility to assess the patient</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>SHARE- CONVENIENTLY</td>
<td>How frequently does the referral process enable you to conduct knowledge sharing conveniently?</td>
</tr>
<tr>
<td>INITIATE- FOLLOW UP-SEND</td>
<td>Check all the communication media that are used phone, email, fax, in person, 3rd party</td>
</tr>
</tbody>
</table>

**Information Usefulness**

One of the themes that was discussed earlier is the attempt on the part of the sender to provide the receiver with the right type of information about the patient. In this regard, there was a concern for balancing disclosure, sensitive information, sufficient information, with not simply overloading the receiver. In the classic communication model information is a critical component. Previous work by Ginsburg allowed us to characterize useful information as information that is accurate, relevant, and practical. However, as can be deduced from the discussion on channel richness and relational coordination, there are different types of information at play. The key informant interviews helped to determine not necessarily the measures of information usefulness, but also what type of information we needed to ask about.

**How to describe the patient and what information to send**

There was therefore a clear need for senders to have guidelines on “what information to send on the patient” The sender perceived this not only as practical but as a safeguard so as not to “upset” the recipient by giving them too much or too little. This could either be achieved through a standardized referral form or through a set of guidelines/check list.

“It's hard sometimes, you know, when you need to take the time to go through somebody's whole chart and find out what, you know, what's most important in terms of what the ...you know, what the…receiving program needs”. (S6)

“So sometimes you're just taking a guess at that and especially as a social worker doing discharge planning, some of the medical ....medical information doesn't always seem, you know, it's hard for me to do it- to decipher what's most important and what's not important”. (S8)

From many of these comments, the notion of “what information to send”, is also accompanied with what type of patient is appropriate for referral. This could also often be provided through guidelines or admission criteria. Given these different types of
information, questions were developed which would allow the respondent to indicate if a source for each type of information was even available. If the answer to each question was yes, the survey then asked the respondent if the information was relevant, practical and accurate. For the scales, only the questions about accuracy, relevance, and practicality of each source of information would be included.

<table>
<thead>
<tr>
<th>INFORMATION USEFULNESS</th>
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<tbody>
<tr>
<td>WHOTOREFER-RELEVANT</td>
<td>written criteria to...determine the appropriateness of a patient for referral how often are they relevant</td>
</tr>
<tr>
<td>WHOTOREFER-USEFUL</td>
<td>written criteria to...determine the appropriateness of a patient for referral how often are they practical</td>
</tr>
<tr>
<td>WHOTOREFER-ACCURATE</td>
<td>written criteria to...determine the appropriateness of a patient for referral how often are they accurate</td>
</tr>
<tr>
<td>WRITGUIDE-RELEVANT</td>
<td>guidelines to...determine what information to include in the referral... how often are they relevant</td>
</tr>
<tr>
<td>WRITGUIDE-PRACTICAL</td>
<td>guidelines to...determine what information to include in the referral... how often are they practical</td>
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<td>The form requests the right amount of information</td>
</tr>
<tr>
<td>STANDFORM-ACCURATE</td>
<td>The form often needs to be supplemented by narratives</td>
</tr>
</tbody>
</table>

Formalization

The last independent variable in the model was formalization. Its nominal definition was from Bodewes (2002) review of the literature on formalization which included: (1) the presence of policies and procedures; (2) the commitment to them; and (3) the extent to which they were enforced. Through the key informant interviews, these three elements were discussed at the level of the process, the inter-organizational relationship, and the relationship with third parties like the Ministry of Health.
For example, there were policies and procedures that pertained directly to how the referral process would work, but there were also policies and procedures that resulted from inter-organizational relationships between the partners that existed in a context broader than that of the referral process. Similarly enforcement of these policies and procedures could occur through the partner, through the organization, or through a third party. Consider the following quote:

“That's that. You know. It's government mandated so they can't really argue. They have to take these patients. Legally we're under some pressure (speaker assumes voice of authority figure) ‘What are you doing with this kind of patient in your building? You know you can't care for them or provide the appropriate intervention’....so there's that pressure you know, legally looming over your head. The pressure to get them out” (Sender 2).

Some examples of the specific issues that may be formalized included the use of a care pathway, the issue of repatriation if a patient was not considered appropriate upon arrival, agreements with other organizations (see quote earlier), and externally imposed arrangements that provided for the assessment of patients either through a third party or through the referral recipients themselves (see earlier quotes re stroke resource nurse).

Consistent with the definition proposed by Bodewes (2002), I therefore included items which would allow the respondent to discuss formalization at the level of the organization, at the level of the process, and in terms of enforcement and commitment.

<table>
<thead>
<tr>
<th>FORMALIZATION</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARE_PATHWAY</td>
<td>My organization and my referral partner’s organization have a shared care pathway</td>
</tr>
<tr>
<td>JOINT_PROGRAM</td>
<td>My organization and the RP run a joint program together</td>
</tr>
<tr>
<td>WRITTEN_AGREEMENT</td>
<td>There is a written agreement between my organization and the RP organization</td>
</tr>
<tr>
<td>ORGENFORCE_POLPROC.</td>
<td>My organization strictly enforces policies and procedures</td>
</tr>
<tr>
<td>PARTNER_ENFORCE</td>
<td>My partner organization strictly enforces policies and procedures</td>
</tr>
<tr>
<td>EXTERNAL_BODYENFORCE</td>
<td>A 3rd party strictly enforces policies and procedures</td>
</tr>
</tbody>
</table>
Items on organizational and professional context

The title of this study is “Exploring the antecedents of effective and efficient referral processes”. Since this has not previously been studied in this manner and given the diversity of potential factors, suggested but not confirmed through the literature, I felt it was important to include a series of items in the survey from the key informant interviews, that could capture other possible professional and contextual effects.

Years of experience and tenure

Most interviewees indicated that they had experience with both hip fracture and stroke patient referrals and felt that while the processes could be very different for each population, that there were similar underpinnings across the referral processes. They made referrals from acute care to each of long term care, rehabilitation, and complex continuing care. They also noted experience with multiple population groups:

“So with the rotation process we are rotated from area to area so that everyone’s kept abreast on the changes in different organizations and also changes in different practices…so you don’t get that stagnant role of just dealing with one type of client” (S4)

Tacit knowledge and experience of the respondent

Consistent with the effect of experience discussed by various authors (Bowles et al, 2003; Emerson, 1991) and since it also came up in the key informant interviews, I included a question that asked how important experience was in knowing what information to send.

Patient complexity

As alluded to in some of the quotes presented and in the literature (Jencks & Bobula, 1988; Dartington, 1979; Wilber et al, 2003; Emerson, 1991), the complexity of the client could also impact the difficulty of the referral process so I included a question about the perceived complexity of the patient group to which he or she referred.

Organizational support
Two questions were included that would allow us to understand whether or not the individual was at an organization that had focussed on the referral process by asking about involvement in various system-wide networks and initiatives which would encompass referral process design activities. For example, it is conceivable that organizations involved in designing the referral process could have different views than organizations who inherited the process. At the suggestion of the ADPCO, I also included questions about whether there were measures or indicators used to measure the effectiveness of discharge planning.

**Geographic context**
Consistent with the quotes about the system ‘being what it is’, I included questions about the geographic and resource context, choice and munificence. This reflects the consideration that the referral process may in and of itself be well designed, but other issues may preclude the outcomes for which the referral is intended.

**Discharge planning model**
Finally, in light of the work of Anderson and Helms (1991-2005) I asked about the discharge planning model in use. While the discharge planning model was not a variable under study, it was felt to be important in understanding and contextualizing how referral are being made and what staffing model is in place as it pertains to referrals.

This concludes the discussion of how the interviews led to the pilot test version of the questionnaire (Appendix 3). Table 4 which follows the next section on the pilot testing, summarizes the items that were actually included in the scales for each variable. The scale testing output is in Appendix 4. The reader will find copies of the actual acute care questionnaires in Appendix 5 which shows the stroke and hip fracture versions of the acute care survey (see page 73 for the discussion of the versions).

### 4 Methods and results of the pilot test

To pilot test the questionnaire in order to determine the reliability of the proposed scales, I had the opportunity to administer the survey at a conference of the Association of Discharge Planning Coordinators of Ontario (ADPCO). I collected data at this
conference, entered the data in SPSS and checked Chronbach alpha scores to determine if there was a likely scale. An acceptable scale was a scale with a Chronbach alpha of at least 0.7 (Clark & Watson, 1995). In this section, I describe both the methods and the results of this pilot.

**Pilot test methods**

The acute care questionnaire was first presented to the University of Toronto Ethics Review Board and received approval for administration of the survey as a pilot at the biannual Discharge Planning Summer Institute (Appendix 3). This meeting is a biannual conference to which many ADPCO members attend. I was permitted to administer my survey during a presentation on my research at the conference.

At the conference, I read the questions to the respondents while they filled in the survey. This was done as part of a presentation of the questionnaire. Respondents were assured that completion of the survey was voluntary. Anonymity of those unwilling to respond could be protected because it would be unclear to the researcher and to fellow participants if non-response was a matter of eligibility or choice. The respondents also had the option of completing the survey during other points of the conference and returning it to a box at the conference desk. Finally, for all respondents, respondents were given an envelope in which they could insert their survey to protect confidentiality of response.

The researcher was aware that conducting the pilot in this way, had theoretical implications for the response and response rates as discussed by Dillman (2007). Dillman contended that people answer a questionnaire differently under different circumstances of administration. However, since the purpose of this pilot was to enable preliminary scale testing, which would have to be repeated with the full dataset and since the survey was being administered in “waves”, this was felt to be adequate, especially given the practical limitations and resources available. The data from these surveys was then entered into SPSS and the items proposed as scales for each variable were subjected to reliability testing.

The reader will also note that in this study, Chronbach alpha was used for reliability testing. Neither exploratory nor confirmatory factor analysis was conducted for two
reasons. First, in exploratory factor analysis, the purpose is to uncover the structure that underscores a large number of items (Munro, 2000). Exploratory factor analysis would have been used if we did not start with a preconceived model and if we did not already have key informant interviews to determine the items in a systematic manner.

Second, confirmatory factor analysis is like Chronbach alpha in the sense that it can be used to confirm that theoretically related items go together. It better accounts for measurement error, but it requires a much larger sample size (Ibid). This was not felt to be justified given that the Chronbach alphas were not low and therefore did not appear to suggest multi-dimensionality. This will be further discussed in the section on reliability testing and pilot results.

The descriptive statistics and results of the reliability analysis from the pilot, are provided in Appendix 4. The reliability analysis on each of the full acute care and post acute care samples are also presented in Appendix 5 and 6 respectively.

**Pilot test results**

Table 4 shows the questionnaire items associated with each variable and the Chronbach alpha scores that were used to confirm the presence of a scale (Appendix 4). While Table 4 shows the final result scale items, in almost all cases these correspond to the items originally proposed. This is with the exception of the efficiency variable where significant adjustments were made.

As it pertains to the efficiency variable, eight items were originally proposed (see pages 76-79). Four of these items pertained to the time-taken by the sender, for each step of the referral process. The other four items, reflected the turnaround time required for each step of the process. When these eight items were included in a scale, they did not exhibit scalar properties (Chronbach alpha = 0.632).

The proposed explanation is that these two sets of items did not reflect the same interpretation of the nominal definition of efficiency. In one case, the items were related to time spent by the sender. In the other case, the items were related to overall turnaround times. When the two sets of items are run independently, the Chronbach alphas are 0.784 and 0.863 respectively.
These two groupings are different in that in one case we are talking about time spent by the referrer and in the other cases the overall time for the process considering all factors. As such, an a decision to choose time spent by each party, even though the other four items would also have an acceptable Chronbach alpha. This decision was made because in the latter case, the time spent would be subject to factors beyond the control of the sender, receiver or process (for example, the patient’s condition etc). The implications of this decision will carry through the thesis and so I will come back to this issue in the discussion chapter.

Table 4 Presentation of items and the Chronbach alpha scores using pilot (n=40)*

<table>
<thead>
<tr>
<th>PERCEIVED EFFECTIVENESS (0.731)</th>
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<tbody>
<tr>
<td>EFFECT-CARE</td>
<td>How often does the referral process allow you to obtain the care needed for the patient</td>
</tr>
<tr>
<td>EFFECT-OPTIONS</td>
<td>How often does the referral process allow you to explore options for the patient when uncertain</td>
</tr>
<tr>
<td>EFFECT-FLOW</td>
<td>How often does the referral process allow you to facilitate patient flow when demand for beds is high</td>
</tr>
<tr>
<td>EFFECT-RESOURCES</td>
<td>How often does the referral process allow you to optimize the use of resources</td>
</tr>
<tr>
<td>EFFECT-PATIENT</td>
<td>How often does the referral process allow you to respond to patient and family demands</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EFFICIENCY (0.784)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EFFICIENT-CONSULT</td>
<td>Est. the average... time you spend on...consulting with the referral partner about the patient or program</td>
</tr>
<tr>
<td>EFFICIENT-GATHER</td>
<td>Est. the average... time you spend on...gathering information on the patient for the referral</td>
</tr>
<tr>
<td>EFFICIENT-REVIEW</td>
<td>Est. the average... time you spend on...filling in paperwork and forms once the information is gathered</td>
</tr>
<tr>
<td>EFFICIENT-PROVIDING</td>
<td>Est. the average... time you spend on...consulting with the referral partner about the patient or program</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RELATIONAL COORDINATION (0.788)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>RC-FREQUENTLY</td>
<td>I communicate frequently with my partner about referrals</td>
</tr>
<tr>
<td>RC-TIMELY</td>
<td>My partner communicates with me in a timely manner about each referral</td>
</tr>
<tr>
<td>RC-ACCURATE</td>
<td>My partner communicates with me accurately about each referral</td>
</tr>
<tr>
<td>RC-ERROR</td>
<td>When an error has been in the referral process, my referral partner and I discuss it</td>
</tr>
<tr>
<td>RC-WORK</td>
<td>I feel that my referral partner respect the work that I do</td>
</tr>
<tr>
<td>RC-GOALS</td>
<td>I feel that my referral partner shared my goals when it comes to the referral process</td>
</tr>
<tr>
<td>RC-UNDERSTANDING</td>
<td>I feel that my referral partner understands my role and responsibility in the referral process</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INFORMATION USEFULNESS (0.895)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>WHOTOREFERR-</td>
<td>If there are written criteria to...determine the appropriateness of a patient for referral how often</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>RELEVANT</td>
<td>If there are written criteria to...determine the appropriateness of a patient for referral how often are they practical</td>
</tr>
<tr>
<td>WHOTOREFERENCE-USEFUL</td>
<td>If there are written criteria to...determine the appropriateness of a patient for referral how often are they practical</td>
</tr>
<tr>
<td>WHOTOREFERENCE-ACCURATE</td>
<td>If there are written criteria to...determine the appropriateness of a patient for referral how often are they accurate</td>
</tr>
<tr>
<td>WRITGUIDE-RELEVANT</td>
<td>If there are guidelines to...determine what information to include in the referral... how often are they relevant</td>
</tr>
<tr>
<td>WRITGUIDE-PRACTICAL</td>
<td>If there are guidelines to...determine what information to include in the referral... how often are they practical</td>
</tr>
<tr>
<td>WRITGUIDE-ACCURATE</td>
<td>If there are guidelines to...determine what information to include in the referral... how often are they accurate</td>
</tr>
<tr>
<td>INFORMATION USEFULNESS (continued)</td>
<td></td>
</tr>
<tr>
<td>STANDFORM-RELEVANT</td>
<td>The form allows me to give relevant information to my referral partner</td>
</tr>
<tr>
<td>STANDFORM-PRACTICAL</td>
<td>The form requests the right amount of information</td>
</tr>
<tr>
<td>STANDFORM-ACCURATE</td>
<td>The form often needs to be supplemented by narratives</td>
</tr>
<tr>
<td>CHANNEL RICHNESS (0.698)</td>
<td></td>
</tr>
<tr>
<td>SHARE CONVENIENTLY</td>
<td>How frequently does the referral process enable you to conduct knowledge sharing conveniently?</td>
</tr>
<tr>
<td>INITIATE – MEDIA</td>
<td>For this phase, check off all the...media that are used phone, email, fax, in person, 3rd party</td>
</tr>
<tr>
<td>FOLLOWUP – MEDIA</td>
<td>For this phase, check off all the communication media that are used....</td>
</tr>
<tr>
<td>SEND-MEDIA</td>
<td>For this phase, check off all the communication media that are used...</td>
</tr>
<tr>
<td>FORMALIZATION (0.689)</td>
<td></td>
</tr>
<tr>
<td>WRITTEN AGREEMENT</td>
<td>There is a written agreement between my organization and the referral partner</td>
</tr>
<tr>
<td>JOINT PROGRAM</td>
<td>My organization and the referral partner run a joint program together</td>
</tr>
<tr>
<td>CARE PATHWAY</td>
<td>My organization and my referral partner’s organization have a shared care pathway</td>
</tr>
<tr>
<td>ORGANIZATION ENFORCE</td>
<td>My organization strictly enforces policies and procedures</td>
</tr>
<tr>
<td>PARTNER ENFORCE</td>
<td>My partner organization strictly enforces policies and procedures</td>
</tr>
<tr>
<td>EXTERNAL BODY ENFORCE</td>
<td>A 3rd party strictly enforces policies and procedures</td>
</tr>
<tr>
<td>COMMITMENT</td>
<td>How would you rate the commitment of sr. leadership at your organization to the referral process</td>
</tr>
</tbody>
</table>

*Items have been truncated please see Appendix 5 for full items. Only the final scale items are shown.
5 Post acute care survey item development

The development of items for the post acute care survey was similar yet different in its development process from the acute care survey. Using the same nominal definitions for each of the variables as in the acute care survey development, I asked a similar set of questions to the post acute care referral receivers. I used the same methods. However, for the post acute care survey, I had the benefit of the acute care version and deliberately built upon it. In the following sections I discuss the development of the questionnaire items. In this section, (R) denotes a key informant in a rehabilitation or complex continuing care setting and (L) denotes a key informant in a long term care home.

Perceived Effectiveness

As previously noted, the nominal definition of perceived effectiveness was the same as for the acute care senders – the extent to which the goals were achieved. However, the goals for the post acute care referral receivers were very different. For the referral recipients, the goals of the referral process were to assess the suitability of a patient for their programs and to then to make a decision about the patient referral so that the organization maintained a steady flow of patients suitable to its mission, mandate and resources. The goals were both patient-centered and organization-centered.

Patient-centered goals

To assess the appropriateness of patients, referral receivers spoke to the importance of the social, functional, medical and personal fit of the patient with the setting. This is consistent with the literature (example, Anderson & Helms; 1991; Hoffman et al, 2003). In the case of long term care home patients, this took on another dimension because the move is permanent and the setting becomes home for the individual.

“We need to make sure that these people fit where they're coming or they are not going to be happy. They're just not going to feel um, like they belong”. 2R

“...And that way we're able to picture this person….to determine how they would fit in with our population and within the limitations of what a nursing home can provide”. 1L
**Corporate goals**

In the context of the individual patient’s needs, the referral recipient would use the referral to determine if the patient’s needs could be met within the means and mandate of the organization. Referrals are the means by which the corporation will receive its clients, however it must be careful to take clients that will not compromise the resources, mission, legitimacy, safety or ability to keep other patients moving through the system. Consider the following quotes as examples:

“There's only up to a certain level can you can you manage their care effectively and after that you know when then you start to see the back and forth between acute and long term care right, because we say ok, we've reached the level that we can safely manage them”. 5R

“Sometimes though they'll say, yes', they're ready because they've [met] all the points in the acute care…but they may not have met the point for us to receive it in the rehab”. 4R

Specifically then, the goals of the referral process for the receivers were to (1) assess the patients; (2) make decisions; (3) fill beds with appropriate patients; (4) meet patient and family needs; and (5) maintain legitimacy and resource utilization for the organization. Therefore, similar to the corresponding questions in the acute care survey, I developed items that asked about the extent to which the referral process allowed the receiver to achieve these goals.

<table>
<thead>
<tr>
<th>EFFECTIVENESS</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>EFFECT</strong></td>
<td>How often do you feel that the referral process allows you to fill beds</td>
</tr>
<tr>
<td><strong>FILL_BED</strong></td>
<td>How often do you feel that the referral process allows you to manage wait lists</td>
</tr>
<tr>
<td><strong>WAIT_LIST</strong></td>
<td>How often do you feel that the referral process allows you to assess appropriateness</td>
</tr>
<tr>
<td><strong>APPROPRIATENESS</strong></td>
<td>How often do you feel that the referral process allows you to manage risks</td>
</tr>
<tr>
<td><strong>RISK</strong></td>
<td>How often do you feel that the referral process allows you to work with the referring partner</td>
</tr>
<tr>
<td><strong>EFFECT_PARTNER_RELATIONS</strong></td>
<td>How often do you feel that the referral process allows you to maintain relationships with the patient/family</td>
</tr>
</tbody>
</table>

However, for post acute care receivers, I recognize that assessing goals is somewhat different than for referral senders, because for the receivers, they can only do so retrospectively. For example, only after the experience can they assess how effective the
process really was. At the end of this chapter, I will discuss a number of methodological and timing issues related to this that required inclusion of various context-related questions, which I will describe as well.

Efficiency

Having decided that the operationalization of efficiency would be limited to the time needed by each party separately rather than the total time needed between both parties, I asked the referral receivers what made the process efficient and provided them with a working definition of efficiency. The responses to this question included the time implications of a standardized form, of a having and maintaining a good relationship with the referral sender; and being able to use multiple and appropriate communication channels for the particular situation. Consider the following quotes

“I might, I might not be able to um, to read the application uh...uh immediately....Ah uh because I have uh other work to do. So uh, but I would try to follow the five days response date ....so, when, as soon as I receive it will um, will check down on my...I have my tracking tool myself.” 2R

“If we have a problem we call then if they have a problem they call us and we have a good partnership with them....We add things that we need in order to ask because it's better that way to communicate with them prior to admission. And it helps along...it uh lessens the entire burden it lessens you know the time frame-work and everything and they'll give us information”. 5L

“Consistency would be probably the number one thing that makes it easier on our end to see if the uh placement or admission is appropriate”. 1L

“What I like about the referral form is that I can screen it pretty fast and look at it and say on this is someone that definitely I want to you know this is going to meet our program or this is a person like who...” 4R

This supported the model and hypotheses, proposing that information, the communication channel, and the relationship will form antecedents to efficient referral processes and will be further discussed in the context of the other variables. However in order to maintain consistency with the acute care survey and with the nominal definition of efficiency, I developed questions related to the time spent by the referral
recipient on reviewing the referral. This involves the time needed to (1) gather information; (2) collect additional information; (3) make the decision; and (4) communicate the decision with the partner to facilitate next steps.

<table>
<thead>
<tr>
<th>EFFICIENCY</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIME_RECEIVE</td>
<td>Once the referral process has been initiated (i.e. you know a referral is coming or has arrived) how long does it take to a) gather or receive info...</td>
</tr>
<tr>
<td>TIME_COLLECT</td>
<td>Once the referral process has been initiated how long does it take to b) collect additional information once the decision making process has started</td>
</tr>
<tr>
<td>TIME_DECIDE</td>
<td>Once the referral process has been initiated how long does it take to c) make the decision (include all the meeting time you require)</td>
</tr>
<tr>
<td>TIME_COMMUNICATE</td>
<td>Once the referral process has been initiated how long does it take to d) communicate with the referral partner and facilitate next steps</td>
</tr>
</tbody>
</table>

Information Usefulness

For the information usefulness scale, I once again began with Ginsburg’s antecedents of useful information. Given this, the objective from the key informant interviews was really to understand what information we needed to assess in the referral process from the receiver perspective.

The key informants talked about two types of information. The first was the information describing the patient and contained in the referral. The second was information on how to make an appropriate decision and what information was needed to make this decision.

Information about the patient

Regarding the patient’s description, respondents acknowledged that there would sometimes be information about a patient that would impact the referral but that may not come to the forefront because it is not a regularly expected or needed piece of information. However, the specifics of that particular situation might impact resources, care, etc. and in that case need to be communicated. Examples were given as follows:

“…you know….the application’s stating that the individual was independent that they could ambulate and they come to our centre and lo and behold something must have happened because they're not able to do the thing…” 6L
“And we would make our decision based on are we able to manage, management...if it is if it's a red flag...it's like...aggressive behavior”. 2L

And I would love it if they could give us a whole paragraph or something of what they meant by “unsafe smoker”. 3R

“What...makes it useful is I get a really good picture of how this individual looks”. 4R

However, while key informants discussed insufficient information that would “paint a picture” of the patient, many also understood that for ethical and legal reasons, the referrer may not be able to say certain things that would be helpful for the referral recipient to know. Consider the following:

“I think there's a lot of factors...I think...that you know everyone is very hesitant to label somebody.” 3L

“Some people give it to us and some people won't. You know, confidentiality ethics. ...I guess it just kind of depends who you get.” 4L

Sometimes referrers felt that the information was not the appropriate type or amount to enable a decision for example.

“....Why am I getting this referral? There's only one little box ticked off? and it says self performance, independent. And there's nothing else...no IV, there's no -you know oxygen there no you know, well, why did you...why did I get this referral?....do you know what I mean? 5R

“...What ideally they should be doing is they should be doing all their research prior to even given me this referral. Like I should have a referral, if you're sending someone to complex care rehab hospital and especially if they don't require any extensive services, like I'm talking blood transfusion things like that.....” 1R

While key informants discussed insufficient information, the idea of ensuring the information is sufficiently complete to make a good decision on the patient was a double edged sword because there would often be “too much” information. For example:

“So they complete like a 60-page application gathering as much information as they can from the person and their families”. 5L
“No really, actually, there's a couple of applications that have been….I mean, you know, it's taken me all day to go through it…” 3L

“[Are you] able to take somebody Monday….we'll gosh, I don’t know, I may not be done reading by Monday.” 2L

“….you're getting sometimes 80 pieces of paper on one resident it's um it's a lot to go through to really understand this person and a lot of it may or may not be applicable to what we're looking for.” 4L

In light of this, I included an item that asked referral receivers if there were guidelines available that would help to clarify the appropriateness of the patient for referral and what information they needed to review. I also asked if there was a standardized referral form through which patient information was provided. If so, I asked the respondents to assess these in terms of the accuracy, relevance, and practicality of the information as shown below. Only the items about relevance, accuracy and practicality were included in the reliability testing.

<table>
<thead>
<tr>
<th>INFORMATION USEFULNESS</th>
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<tbody>
<tr>
<td>WHOTOREFER-RELEVANT</td>
<td>If there are written criteria to... how often are they relevant</td>
</tr>
<tr>
<td>WHOTOREFER-USEFUL</td>
<td>If there are written criteria to... how often are they practical</td>
</tr>
<tr>
<td>WHOTOREFER-ACCURATE</td>
<td>If there are written criteria to... how often are they accurate</td>
</tr>
<tr>
<td>WRITGUIDELINE-RELEVANT</td>
<td>If there are guidelines to... how often are they relevant</td>
</tr>
<tr>
<td>WRITGUIDELINE-PRACTICAL</td>
<td>If there are guidelines to... how often are they practical</td>
</tr>
<tr>
<td>WRITGUIDELINE-ACCURATE</td>
<td>If there are guidelines to... how often are they accurate</td>
</tr>
<tr>
<td>STANDFORM-RELEVANT</td>
<td>The form allows me to give relevant information to my referral partner</td>
</tr>
<tr>
<td>STANDFORM-PRACTICAL</td>
<td>The form requests the right amount of information</td>
</tr>
<tr>
<td>STANDFORM-ACCURATE</td>
<td>The form often needs to be supplemented by narratives</td>
</tr>
</tbody>
</table>

Channel Richness

Related to the issue of exchanging sensitive information and the right type of information, key informants talked about the communication channel that was used and the reasons for their choices.
Types of channels
The key informant interviews referenced a diversity of technologies and communication channels that are being used in the referral process. These reflected three different “types” of communication channels.

In the first type, the referreer would usually have called the referral recipient prior to sending the information in order to inform the referral recipient that there was an interest in making the referral; provide some introductory information; and advise that a full information package would follow. Often the information would be presented on a common referral form.

In the second type, which was common for long term care, a discharge planner affiliated with a third party like a CCAC, but co-located in the referring hospital would prepare an application. The third party would then be responsible for communicating that information to the long term care home. The long term care home would review the information and make a decision regarding the acceptability of the patient according to strict guidelines. This same model was used by a small number of rehabilitation and complex continuing care referral recipients in the context of stroke referrals where a 3rd party would play a similar role to the CCAC.

The third type described by the key informants involved an in-person meeting between the referral recipient and the patient who was being referred. The meeting was the vehicle through which the key informant would gather information and engage in the decision making process. The descriptions associated with this model reflected the benefits of being able to see the patient in person and not need to rely on information in a description.

Using different strategies to seek clarification
The different technologies and media used for communication were often used to seek clarification. There were often legibility issues and because of these legibility issues, key informants expressed appreciation for having a contact person and in some cases for automation of the referral.
“They fax us it's not legible, we could hardly read it because of the problem... technical problems with the, you know, copy machine. Otherwise you know it's very straightforward...”. 2R

“Well, you know, sometimes it not legible - some of the complications are not legible and we have... we cannot understand what is written and everything and that’s the time we call...”. 1L

“Oh I love it, I love the fact that it's all typed out, because that's one thing - it's communication and so if it's clearly typed out it's much easier to read. They also have specific that the like FIM score and everything like that automatically you have to fill out that part of it when you're doing it on the computer. Whereas if you're doing it you know, by hand and you fill out a form you can skip a lot. This way it will be everything that we request is on that form”. 4L

“Information may be missing, information may be illegible, the right thing some because the person is writing they application they are not they are not uh easy to read and something the information are cut off and some of the information they are conflicting so I don't have to wit for .... to review so for clarity I can just call.....my contact person and she's able to help me to uh to clarify before I proceed.” 3L

In keeping with the nominal definition of channel richness and with the acute care version of the survey, I again included items about the medium used for each phase of the referral process, i.e. initiating the referral review, the review itself, and the follow up in order to assess the number of different mediums used. I also included the item about convenience of the communication channel. To better contextualize the responses to these questions, I also included a number of context settings questions related to how many people are involved in receiving and reviewing each referral and whether the review was done by one person or multiple people. These will be further discussed at the end of the chapter.

<table>
<thead>
<tr>
<th>CHANNEL RICHNESS</th>
<th>From your perspective, how frequently does the referral process enable you to conduct knowledge sharing conveniently.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHARE CONVENIENTLY</td>
<td>The referral is initiated by: PHONE _EREFERRAL _EMAIL _FAX_FACETOFACE etc.</td>
</tr>
<tr>
<td>INITIATE REFERRAL</td>
<td>The referral is sent by... _PHONE _EREFERRAL _EMAIL _FAX_FACETOFACE etc.</td>
</tr>
<tr>
<td>SEND REFERRAL</td>
<td>The referral is followed... by _PHONE _EREFERRAL _EMAIL _FAX_FACETOFACE etc.</td>
</tr>
<tr>
<td>FOLLOWUP REFERRAL</td>
<td></td>
</tr>
</tbody>
</table>
Formalization

Once again, the nominal definition of formalization was the extent to which the process is governed by rules and processes, the extent to which the organization was committed to them and the extent to which they were enforced.

Facilitating decision making and enforcement of rules

For the referral receivers, reference to formalization occurred frequently in relation to facilitating decision making. For example, one of the common themes about what made decision making easier for the referral receivers was the formalization of criteria. When the criteria were formalized, the risk of making a problematic decision was reduced. The referral recipients were also no longer held accountable for the decision either to the sender or to the organization, since the criteria were predetermined. An example was in the case of long term care, where admission criteria legally imposed made it unnecessary and in some cases impossible to decline a referral unless there were explicit reasons. Consider the following quotes:

“...These are the policies, procedures of all long term care facilities. These...are set down by the Ministry of Health. We don't set our guidelines.” 1L

“So...it's a formal but informal process, but the criteria [is] pretty stable”. 6L

“…Obviously you know, Senior Management was getting in trouble. And saying you know, why are you taking these clients, client doesn't even meet your um, you know, your criteria”. 2R

In terms of enforcement, from these quotes, we see the reference to an external body that has decided something, imposes consequences and as such, removes choice from the matter. This was consistent with the nominal definition of formalization. Given the impact of legislation in the receipt of referrals to long term care, in the context of the Long Term Care Home Act, I included a number of additional questions that would get at what Morrisey et al, (1997) calls the intensity and extensity of the interorganizational commitment.
Relational Coordination

Under the themes of each variable, key informants alluded to the importance of relationships, whether it is in seeking clarification of illegible handwriting, getting a complete picture of the patient or ensuring a steady flow of appropriate clients to the organization.

At the same time, some key informants talked about the formalization in the context of removing risk and choice from the decision making process. Even in these cases, the importance of relational elements were highlighted.

System citizenship

While formalization sometimes removed decision-making requirements, there was some discussion of times where even if the referral recipient could enforce a policy or procedure on the sender, he or she would not. One example was in the “take-back letter policy”, that was discussed by acute care senders. For post acute care recipients, if they received a patient who was not entirely appropriate, even where an agreement existed between the referrer and the recipient, to take the patient back to acute care through the letter, the recipient would often be reluctant to enforce this policy.

Respondents indicated that from a patient and system perspective taking advantage of the policy would not be the right thing to do as it would be expensive and disruptive to the
patient’s care. In the acute care section, I called this “system citizenship” and we see it here again:

“\[\text{We use that as a last resort when we are trying everything else before that but it is difficult for these acute care hospitals to take a patient back once they're here. Then you know, we respect that but in the same sense, if they're holding a bed and blocking a bed for like three months].} \quad 3L

“You know that they have to go back to you and then they get in acute care and they're like okay, now they're ready to go back to long term care….right and they come, this poor individual, becomes a ping pong, back and forth…but it's really just a symptom of the system not being able to deal with that level of person”. \quad 2L

In addition to the concern for the system and the patient, referral recipients wanted to make sure that the referrer was comfortable sending patients to the organization, which impacted the goal of achieving sufficient volumes and case load for the organization.

“You can't burn your bridges and you need to do your best to make sure that those lines of communication remain open that trust and relationship stays…..[otherwise]….Um well, for one you wouldn't get the referrals, from with the program though they'll look after them themselves. So I mean, corporate…. we wouldn't have the referrals to fill the beds, but that could impact the patient … because they're not getting….so it would just taken longer or it would definitely not be seamless and it would be comfortable and I think it could….it could definitely impact on the whole process, the whole transition”. \quad IR

\textbf{Information asymmetry}

Referral recipients talked about the relationship as a mechanism for ensuring that the information is accurate and complete, especially because the referral recipient most often did not meet face to face with the patient until after a decision was made.

“So they are the one cog in the wheel that knows all the parts so to speak and we really rely on them to represent us appropriately to the family to say yes, that home can provide and for our relative or not….We would really have to trust the access to care centre and their uh collection of information that it was accurate that it's successful….that this home….is the right place for the right person”. \quad 1L

“…really need to have that connection to some of these facilities because you need that person to be making accurate assessments and
giving you accurate information, if you're not able to be there face to face and there has to be that trust both ways that you know that...that we’re in there for the patient”. 2R

In the quotes by these receivers, the ideas that “we need to trust that this is the right place for the person” and “we’re in there for the patient”, are similar to the shared goals item in Gittell’s relational coordination scale about sharing goals.

Addressing a vulnerability
The relationship with the sender also obviated the problem of using words to provide a description and the problem of legibility and completeness. It also removed a sense of “vulnerability” that exists when the opportunity to meet the patient is not there.

“If the weather is bad, we might do it completely by phone and fax which….It's kind of nervousness on our part because you never know it if the information you're receiving is accurate”. IR

Dealing with sensitivities
Consistent with the perspectives of acute care referral senders, the receivers also talked about relationships enabling discussion of what would be considered labels or defamatory, without having to choose between putting the information on paper or not giving it at all.

“She feels more free to give me information….but generally I would say trust anybody that I anybody and everybody that I've spoken with at Access to Care….I think it is systemic. That is you know, we're all kind of all in this together and the ultimate goal is for a successful placement and ease of placement as well….so that must be kind of the corporate culture. ….I haven't met anyone yet who wasn't kind of a team player and didn't respond to me or to one of my colleagues when we had questions. 1R

“They don't hide anything, there's more of a trust and so sometimes we do take patient based on what they're saying….You know, like they'll say, well you know what this guy has some dementia. Is he going to be able to carry forward information? They'll say to me: “…well, [Name Suppressed] you know that, they seem really fine…it's just very mild. [respondent discusses his or her answer] “You know what? ok great…I trust that what you're saying is correct”.... because you've got that bond…..But if someone that I've never talked to says, where there
Dealing with problems and errors

Next, the presence of an interpersonal relationship was thought to facilitate understanding and empathy and as a consequence allowed each party to understand when the other provided an unfavorable response. This empathy worked both ways.

“We’re both out for the same thing and what's best for the patient and how can we expedite it as well. So you get a feel for when you have bond but when you don't have that bond, you feel like there's always something wrong. It seems like, oh you know like they seem so cold. No it just helps it …it helps all of us….we keep calmer we're more understanding of each other's let's ay pressures. So if I'm under a lot of pressure one day and they're calling and I say, okay, I've really got to go, I've got to;….they know that if I said that I really am busy. I've not trying to shove them off….and they you don't think…. That the hospital just does not want the patient.”

This discussion shows ample support for using Gittell’s relational coordination scale and as such, the scale questions were re-used in this version of the survey.

<table>
<thead>
<tr>
<th>RELATIONAL COORDINATION</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RC_ FREQUENTLY</td>
<td>I communicate frequently with my referral partner about referrals</td>
</tr>
<tr>
<td>RC_ TIMELY</td>
<td>My referral partner communicates with me in a timely manner about each referral</td>
</tr>
<tr>
<td>RC_ ACCURATE</td>
<td>My referral partner communicates with me accurately about referrals</td>
</tr>
<tr>
<td>RC_ ERROR</td>
<td>When an error has been made in the referral process, my partner and I discuss it.</td>
</tr>
<tr>
<td>RC_ RESPECT</td>
<td>I feel that the referral partners respect the work that I do in the referral process.</td>
</tr>
<tr>
<td>RC_ SHAREDGOALS:</td>
<td>None I feel that my referral partner shares my goals when it comes to the referral process</td>
</tr>
<tr>
<td>RC_ ROLES</td>
<td>I feel that my referral partners understand my role and responsibility in the referral process</td>
</tr>
</tbody>
</table>

Context of the respondent and of the organization

Finally, and as previously mentioned, the questionnaire also included a number of items for context purposes, which are discussed in this section:

Impact of professional training and experience

The impact of professional training as discussed by Anderson and Helms (2001) was also discussed by the referral respondents as it pertained not only to intent, but to the
capacity to make a good referral because of the experience and background of the individual making the referral. For example, when the respondents were asked what contributes to the effectiveness of the referral process, the response included allusions to tacit and un-coded information about the program and receiving organization that could only be learned through experience by the sender:

“Having a very experienced discharge planner...that they know which program and it's experience.....it's just learning the nuances of the specific programs and which ones will be most effective of the individual and when I mean the individual...I mean the patient.....Having knowledge about them is one thing, but having experience to be able to pick up the nuance to know. The programs are not all identified...it's the experienced individual with a good knowledge base...but it's also the experience”. 5R

“So if you're looking for you know uh an update regarding physical status or functional status or the you know home environment whatever it is, that whether it's the OT [occupational therapist]… if you want to know speech and communication- related issues that a speech [language pathologist], has actually given input to the information that you're now reading but if you get it kind of third hand then the individual providing the information probably doesn't know...”. 7L

“...and it's only rehab and if you're OT or PT at [organization name suppressed] has not assess the client yet, I shouldn't even have had referral on my desk. 1R

For these reasons I included an item about the type of professional the referral receiver dealt with and about the complexity of the patient. I also included items about the years of experience of the receiver and about whether the individual had received formal training.

Retrospective accounting
As previously noted, discussing referral process effectiveness is complicated by two factors for the recipients. First, the referral is the beginning of an encounter and once the decision has been made and the patient accepted, the respondent will need to reflect back on the outcomes. This introduces a the time lapse between the time of experiencing the referral and truly understanding and remembering the full sequence and consequence of events (Phillips, 1999). To address this problem, I included a set of questions that could be used for comparator purposes by reframing the effectiveness questions in terms that
would allow for a retrospective analysis of the (a) assessment of patient suitability; (b) the impact of adding the patient to the mix of patients on the floor; (c) the amount of resource; (d) the patient’s need; (e) the level of risk in accepting the patient.

**Distributed perspectives**

Finally, unlike in the preparation of a referral, the acceptance of a referral may be a dispersed responsibility depending on how the process is structured. For example, some people may be involved in corresponding with the external organization and some people may be involved in the decision making. Still other people may be involved in caring for the patient and therefore truly be in the position of assessing the referral’s appropriateness. Knowing this we asked a series of questions to ensure that we knew what role the individual had in the referral process, how many people were involved, and the use of a committee. These were not part of the scale, but are important for context.

### 6 Summary of the post acute care questionnaire

Table 5 shows the items that are proposed from the key informant interviews to form scales in the post acute care version of the PRET. As previously discussed, these items had not only the literature and key informant interviews to inform them, but they also used as a starting point, the acute care version of the questionnaire. For this reason and for reasons related to resources and feasibility, I did not pilot test the post acute care version of the tool. However, I did run the Chronbach alphas for each proposed scale. I will discuss the results of this reliability testing in Chapter 8 as part of the preface to the results of the post acute care hypothesis testing.

<table>
<thead>
<tr>
<th>Table 5</th>
<th>Scale items from the Perceptions of Referral Effectiveness Tool (PRET)-Post Acute Care Receiver version (PACR)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>PERCEIVED EFFECTIVENESS</th>
<th>How often do you feel that the referral process allows you to fill beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFFECT_FILL_BED</td>
<td>How often do you feel that the referral process allows you to fill beds</td>
</tr>
<tr>
<td>EFFECT_WAIT_LIST</td>
<td>How often do you feel that the referral process allows you to manage wait lists</td>
</tr>
<tr>
<td>EFFECT_APPROPRIATENESS</td>
<td>How often do you feel that the referral process allows you to assess appropriateness</td>
</tr>
<tr>
<td>EFFECT_RISK</td>
<td>How often do you feel that the referral process allows you to manage risks</td>
</tr>
<tr>
<td>EFFECT_</td>
<td>How often do you feel that the referral process allows you to work with the</td>
</tr>
<tr>
<td>PARTNER_RELATIONS</td>
<td>referring partner</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>EFFECT_ PATIENT_RELATIONS</td>
<td>How often do you feel that the referral process allows you to maintain relationships with the patient/family</td>
</tr>
</tbody>
</table>

### EFFICIENCY

<table>
<thead>
<tr>
<th>TIME_RECEIVE</th>
<th>Once the referral process has been initiated (i.e. you know a referral is coming or has arrived) how long does it take to a) gather or receive info...</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIME_COLLECT</td>
<td>Once the referral process has been initiated how long does it take to b) collect additional information once the decision making process has started</td>
</tr>
<tr>
<td>TIME_DECIDE</td>
<td>Once the referral process has been initiated how long does it take to make the decision (include all the meeting time you require)</td>
</tr>
<tr>
<td>TIME_COMMUNICATE</td>
<td>Once the referral process has been initiated how long does it take to communicate with the referral partner and facilitate next steps</td>
</tr>
</tbody>
</table>

### INFORMATION USEFULNESS

<table>
<thead>
<tr>
<th>WHOTOACCEPT_RELEVANT</th>
<th>If there are written criteria to help you determine the appropriateness of a patient for referral how often do you find that they are relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHOTOACCEPT_PRACTICAL</td>
<td>If there are written criteria to help you determine the appropriateness of a patient for referral how often do you find that they are practical</td>
</tr>
<tr>
<td>WHOTOACCEPT_ACCURATE</td>
<td>If there are written criteria to help you determine the appropriateness of a patient for referral how often do you find that they are accurate</td>
</tr>
<tr>
<td>Writtenguidelines_RELEVANT</td>
<td>If there are written guidelines to help you determine what information is required in a referral how often are they relevant</td>
</tr>
<tr>
<td>Writtenguidelines_PRACTICAL</td>
<td>If there are written guidelines to help you determine what information is required in a referral how often are they practical</td>
</tr>
<tr>
<td>Writtenguidelines_ACCURATE</td>
<td>If there are written guidelines to help you determine what information is required in a referral how often are they accurate</td>
</tr>
<tr>
<td>WHATTOSEND_TYPE</td>
<td>Please tell us about the usefulness of the standardized referral form... the form provides the right type of information</td>
</tr>
<tr>
<td>WHATTOSEND_AMOUNT</td>
<td>Please tell us about the usefulness... the form provides the right amount of information</td>
</tr>
<tr>
<td>WHATTOSEND_ADDDCALL</td>
<td>Please tell us about the usefulness... the form needs to be supplemented by a phone call</td>
</tr>
</tbody>
</table>

### CHANNEL RICHNESS

<table>
<thead>
<tr>
<th>SHARE_CONVENIENTLY</th>
<th>From your perspective, how frequently does the referral process enable you to conduct knowledge sharing conveniently.</th>
</tr>
</thead>
<tbody>
<tr>
<td>INITIATE_MEDIA</td>
<td>The referral is initiated by... (PHONE _REFERRAL _EMAIL _FAX _FACETOFACE _3RDPARTY)</td>
</tr>
<tr>
<td>SEND_MEDIA</td>
<td>The referral is sent by... “</td>
</tr>
<tr>
<td>FOLLOWUP_MEDIA</td>
<td>The referral is followed up by... “</td>
</tr>
</tbody>
</table>

### RELATIONAL COORDINATION

<table>
<thead>
<tr>
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<td>RC_</td>
<td>SHAREDGOALS</td>
</tr>
<tr>
<td>RC_</td>
<td>ROLES</td>
</tr>
<tr>
<td>FORMALIZATION</td>
<td></td>
</tr>
<tr>
<td>LONG_</td>
<td>TIME</td>
</tr>
<tr>
<td>WRITTEN_</td>
<td>AGREEMENT</td>
</tr>
<tr>
<td>JOINT_</td>
<td>PROGRAM</td>
</tr>
<tr>
<td>CARE_</td>
<td>PATHWAY</td>
</tr>
<tr>
<td>ORG_</td>
<td>ENFORCE</td>
</tr>
<tr>
<td>PARTNER_</td>
<td>ENFORCE</td>
</tr>
<tr>
<td>3RDPARTY_</td>
<td>ENFORCE:</td>
</tr>
</tbody>
</table>
Chapter 8
Phase II - Hypothesis Testing

In this chapter, I present the results of phase II of this exploratory study which used the two survey instruments, Perceptions of Referral Effectiveness Tool (PRET) –Acute Care Sender (ACS) version and the PRET –Post acute care receiver (PACR) version to collect data in order to test the six hypotheses about what makes the referral process effective and efficient from the perspectives of each of referral senders and referral receivers.

A secondary objective for this chapter is to further demonstrate the validity of the instruments developed. This is possible because the correlation analysis that forms part of the analytical procedure for the hypothesis testing provides insight into the validity of the questionnaire. It is explained as follows by Myers and Oetzel, 2007, p. 246:

“The correlation analysis .... provides evidence of validity for the instrument in the sense that the dimensions identified showed essentially the same relationship to the dependent variables of interest. Construct validity exists, according to Bailey (2002), when different indices show the same relationship to other measures as one would expect on the basis of the theory in which they appear”

By discussing the extent to which the questionnaire corresponds to the hypotheses it was designed to test, we are implicitly discussing construct validity. However, this topic will be treated only implicitly in this Chapter and will be discussed explicitly in Chapter 9.

The Chapter begins with a description of the empirical context and population for both the acute and post acute care portions of the study, followed by a discussion of the methodological and analytical procedures that were used for both the acute care and post acute care surveys. This is followed by the results of the acute care survey hypothesis testing, which itself is prefaced by a brief description of the response rate, and descriptive statistics. Following the acute care hypothesis tests, I discuss the post acute care results in the same manner, with a description of the sample and response rate prefacing the actual hypothesis test results. Since there was no pilot test specific to the post acute care version of the questionnaire, I also include the Chronbach alphas for the scales used in the post acute care survey. The chapter ends with a summary and synthesis of the results from both the acute care and post acute care sides of the study.
1 Methods and analytical procedures

Survey administration and entry
The purpose of the survey was to collect data that would enable the testing of hypotheses and that would allow for the generalizability of the results to an entire population. Selecting the sample for this purpose was complex because of the number of assumptions that had to be made about the size and nature of the population under study and because of practical or feasibility issues related to entry, ethics approval, and confidentiality of the networks’ mailing lists, who were assisting by distributing the surveys to their email lists.

Nature of the population under study
As discussed, across Ontario, there are referral processes that are focussed on different populations and different discharge destinations from acute care. We can think of this heuristically as a matrix with populations in acute care settings along one axis and settings such as rehabilitation, complex continuing care, long term care along the other axis (Figure 10).

Figure 10 Common conceptualization of the referral process by referral source (vertical), referral destination (horizontal), and population group as potential foci

<table>
<thead>
<tr>
<th>Referral source:</th>
<th>Discharge to Rehabilitation</th>
<th>Discharge Complex continuing care (CCC)</th>
<th>Discharge to Long term care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Care:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population 1…</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Population 2…</td>
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</tr>
</tbody>
</table>

Across Ontario, which for the purposes of health service delivery is divided into 14 regions or LHINs, the same population can be referred to the same settings in different ways. For example, the way acute care stroke patients are referred to rehabilitation in LHIN 7 may be very different from the way the same group of patients are referred in LHIN 11. Furthermore, sometimes, the individuals within one population group, may be more similar to patients in different diagnostic groups than to patients within the same diagnostic group. For example, a stroke patient with severe stroke, might have more
needs in common with a patient with a brain injury than a patient with a mild stroke. Finally, when patients are referred to long term care, the individual may have so many co-morbidities that the diagnostic category to which they belong is no longer salient in the referral. For these reasons, the focal point of my study is not on the referral process by population, but on the referral process in terms of its own components, as a classic communication model. Specifically, I am interested in the extent to which perceptions of information usefulness, formalization, relational coordination, and channel richness are related to perceptions of effectiveness and efficiency. A heuristic of this model is shown in Figure 11.

**Figure 11** Revised referral process model with classic communication channel as foci

<table>
<thead>
<tr>
<th>Effectiveness</th>
<th>Information usefulness</th>
<th>Communication channel richness</th>
<th>Formalization</th>
<th>Relational Coordination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Therefore, what matters about the diagnostic groups for this study, is that it provides a point of access to a diversity of referral processes. What I am interested in is the perspectives of professionals involved in different referral processes, even if it is with different populations, regarding the perceived effectiveness and efficiency of the process in which they are involved, particularly those of acute care referral senders and post acute care referral receivers.

However, given the alignment of this research with the missions and mandates of many of Ontario’s health-population or service specific Networks and Associations, I approached these organizations to participate in the study. The organizations included the Association of Discharge Planning Coordinators, the Ontario Stroke Networks, and the Bone and Joint Health Network of Ontario for the acute care portion of the study. For the post acute care portion of the study, we approached the Ontario Long Term Care Home Association, the Ontario Stroke Networks, and the Bone and Joint Network of Ontario.

In addition to missions and mandates which would make them interested in a study on inter-organizational referral relationships, these organizations have as their members, the population
of relevant organizations. They have mailing lists, key contacts, and to varying extents, legitimacy and influence in promoting response rates. This created a unique and potentially synergistic opportunity for the researcher and the networks to collaborate in this research.

Table 6 provides a description of each association as an sampling frame. It should be noted that this entry strategy has both major advantages and disadvantages as it pertains to the survey administration. These will be further discussed in this chapter.

Table 6 Sampling frames for each of the acute care and post acute care study as provided through the Networks and Associations involved in the study.

<table>
<thead>
<tr>
<th>Association of Discharge Planning Coordinators</th>
<th>Sampling frame for:</th>
<th>Membership</th>
<th>Structure for entry</th>
</tr>
</thead>
</table>
|                                                  | • Key informant interviews  
  • Acute care survey pilot | Voluntary association of 170 members at time of study | Mailing list of volunteer email addresses. The pilot surveys went directly to the attendees at a conference and to the list serve. The recipients are the respondents. |
| Ontario Stroke Networks | Sampling frame for: | Network of all acute and rehabilitation/CCC organizations involved in Hip Fracture care | All organizations are divided into regional networks. Each network has a coordinator or a manager. The manager or coordinator sends the survey to the program directors. The program directors send to the respondents. The Ontario Stroke Network oversees all. |
|                                                    | • Sender survey  
  • Receiver survey (Rehab & CCC) | | |
| Ontario Bone & Joint Health Network | Sampling frame for: | Network of all acute and rehabilitation/CCC organizations involved in Hip Fracture care | The Director of the Acute Care and the Rehabilitation programs at each organization are the key contacts. |
|                                                    | • Sender survey  
  • Receiver survey (Rehab & CCC) | | |
| Ontario Long Term Care Association | Sampling frame for: | Network of all acute and rehabilitation/CCC organizations involved in Stroke Care | The Home Administrator is part of the OLTCA mailing list. The Home administrator is asked to forward the survey. |
|                                                    | • Key informant interviews and survey feedback  
  • Receiver survey | | |

Ethics approval was sought and received from the University of Toronto Ethics Review office for entry through each Network (Appendix 5 & 6). Upon agreement of the Network, each Network’s leader, sent out an email introducing the study to the members of the Network and indicating the Network’s participation in the study. A subsequent email correspondence
contained a letter to the Program Director with the survey materials. The survey materials included a cover letter to the respondent and the survey which was formatted as a Word Form. The respondent had the choice of completing the survey by hand or using their computer.

After the initial survey dissemination, at least two survey reminders were sent by the Networks. Feasibility and practical issues precluded the four reminders that are recommended by Dillman (2007).

**Data collection and entry**

In order to adhere to Dillman’s “tailored design methodology” (2007), the surveys for the various networks were slightly different so that the instructions would be as clear as possible. This involved not only changes in reference points i.e. hip fracture or stroke, but it also involved the addition of a question at the front end of the survey, to accommodate differences between the pilot and the population-specific versions of the questionnaire, as well as to accommodate differences between the long term care version and the rehabilitation version of the post acute care version of the survey.

To ensure that this did not cause errors, each Network’s surveys were entered separately and then a common file was created which would enable the added questions to be represented as “missing” in order not to frame shift the scale items. Given the risk of this procedure, a significant data checking strategy was undertaken.

**Data checking**

The data was checked using two procedures, for the acute care data, all data was rechecked by having the research assistant, read all of the responses against the data entered. This revealed a 99.7% rate of accuracy . Given this, for the post acute care data, we checked 100% of a small sample, which also revealed high accuracy rates and then a random sample of the remaining surveys (Jackson, 2002). Corrections were made as necessary.

**Data Analysis**

The data analysis for the acute and post acute care parts of the survey also had the same approach so this section describes how the analysis was conducted for both data sets.
Computing variables

Once the full dataset was available, I re-ran the Chronbach Alphas for the acute care dataset and ran the Chronbach alphas for the post acute care dataset. As expected the scales revealed Chronbach alphas of greater than 0.7 and so I was able to continue. The results are available in Appendices 5 and 6.

Scores for each of the six variables in each of the acute care and post acute care parts of this study were created by either adding or summing the scale items, depending on whether the interpretation of sum or average was more relevant to the analysis. For example, since the efficiency variable was a measure of total time, I summed each of the time items. By contrast, since the usefulness variable is contingent on the availability of the certain type of information, it was felt that an average would be more representative of the intent. Treatment of the variables is shown in Appendix 9.

Once the variables were computed, I checked to see if the data was normally distributed using tests for skewness and kurtosis. This was done because the statistical tests for mediational hypotheses require a normally distributed dataset (Munro, 2002). In both the acute care and post acute care datasets, some of the variables had skewness or kurtosis scores that exceeded the acceptable value of 1.96 (Munro, 2000). In these cases, the data had to be recoded in order to meet the conditions of a normal distribution. The recoding was done following procedures described by Munroe (2000). SPSS output showing the computation of variables and recoding of the variables for both datasets is offered in Appendix 9.

Dealing with missing data

The surveys that were received were for the most part complete where a response is expected. Where there was significant missing data, it most often corresponded to the skip type patterning of the questions where a respondent would be asked to skip questions that sought detail about a particular element that may or my not be present in their referral process. For example, it would not have been reasonable to ask an individual who did not have a policy or procedure to comment on the items related to it. From an analytical standpoint however, the absence of a policy or procedure or source of information would mean that the practical response would actually be the lowest possible score, since most of the questions were posed in the format of “how frequently do you find that....[feature] enables”.

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Procedure for Testing Mediated Hypotheses

The first step in the Baron and Kenny four-step mediational hypothesis test is to demonstrate that the dependent and independent variable have a significant relationship to each other using a regression with the independent variable as predictor and the dependent variable as criterion variable (Kenny, 2009). If this condition is met, there is an effect that could be mediated.

The next step is then to demonstrate that the independent variable is correlated with the mediator. In the regression, the mediator takes the place of the dependent variable. Since these tests are conditional, if this step is met, in step three, we demonstrate that the mediator affects the outcome variable. For this step, the mediator becomes the dependent variable and the independent variable becomes the predictor. It would not be sufficient to look only at the mediator and the dependent variable because a correlation could be due to a potentially causal impact on both the mediator and the outcome variable, by the independent variable. For this reason, in step 3, the independent variable must be controlled.

If step three is satisfied, then the question is whether there is full or partial mediation. If there were to be full mediation, then the relationship between the dependent and independent variable would not occur at all in the absence of the effect of the mediator. The fourth step is therefore to control for the mediator to see if there remains a significant relationship between the dependent and independent variable.

For this purpose, the Sobel Test provides the most conservative estimate. The Sobel Test was calculated using test calculators that are available on the internet (Soper, 2010; Preacher & Hayes, 2010). Bootstrapping is an alternative to the Sobel Test which is considered more efficient because it does not require the same assumptions (Preacher & Hayes, 2010). However since the Sobel Test is most commonly reported, I have used it in this study.

2 Acute care sample and response rate

One hundred and forty four (144) questionnaires were returned. A questionnaire was considered useable if the respondent answered yes to the question which asked about whether the respondent was involved in various elements of the referral process, the questionnaire did not appear to be a duplicate, and did not appear to be missing responses to most of the questions. The final dataset contained 114 questionnaires.
Of the 114 useable questionnaires, 60% of the respondents were nurses by discipline and 36% had a medical, allied health, or other background. The majority of the allied health and other background were social workers, occupational therapists, or physiotherapists. Half of the respondents indicated that they had formal training in the referral process and half indicated that they did not. This did not differ by profession.

The survey asked each respondent to answer all questions in relation to a particular referral process which they chose for the survey. Within these processes there were three characteristics of particular interest: (a) the population of interest which was pre-specified according to the dissemination strategy; (b) the setting to which the respondent would refer which included any of rehabilitation, complex continuing care or long term care; and (c) if the referral partner was the partner to whom they referred “most patients”, “one of many partners to whom they referred patients” or the CCAC if they chose long term care as the referral destination.

Thirty seven percent (37%) chose the rehabilitation partner to which they referred most of their patients, 15% chose to talk about a complex continuing care referral process and 26% chose to discuss a LTC referral process (22% had missing responses). Of the respondents choosing rehabilitation or complex continuing care, most of the respondents chose to speak about the partner to whom they referred most patients, however about one third of the participants chose to discuss one of many referral partners to which they refer patients. About 35% of respondents were discussing stroke patients, 50% were discussing hip fracture patients and the remainder chose other groups like geriatric patients or brain injury patients.

In addition, the survey contained a number of questions outside of the scale items, that provide a description of some common technologies in the referral process. Common technologies include standardized forms, information on who is appropriate and what information to send, care pathways, sending the whole chart and electronic referrals. Table 7 shows the percentage of respondents that indicated that they had the technologies asked as part of their referral process.
Table 7  Percentage of respondents indicating various technologies used in referrals

<table>
<thead>
<tr>
<th>Technology</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standardized referral form</td>
<td>87%</td>
</tr>
<tr>
<td>Guidelines on what information to send</td>
<td>72%</td>
</tr>
<tr>
<td>Guidelines on who to refer</td>
<td>64%</td>
</tr>
<tr>
<td>Care pathway</td>
<td>62%</td>
</tr>
<tr>
<td>Sending the whole chart</td>
<td>11%</td>
</tr>
<tr>
<td>Electronic referral</td>
<td>10%</td>
</tr>
</tbody>
</table>

The survey also contains data that provides an overview of the manner through which the individuals communicate. For example 65% indicated that there was a specific person to whom questions about referrals could be addressed; 50% felt that the only way to know about the referral process was to gain experience and 15% indicated that a 3rd party was involved. Finally, the survey asked about the relationship of the organizations with each other. Forty five percent of respondents (45%) indicated that there was a written agreement between their own organization and the partner organization; 50% indicated they were mandated by an external body to the referral partner; and 50% indicated that there was no other choice of referral partner for the patient. Further details on the statistics in this section are offered in Appendix 10.

Response rates

Determining the response rate in this study is confounded by the fact that the total number of surveys distributed to individuals is unknown. As previously discussed, the distribution of surveys was through various Networks.

The Networks have Directors who represent each organization. The directors were asked to send the surveys to the relevant people at their organization. This lends legitimacy to the process which increases responses rates (Dillman, 2007) if distributed. However, the Directors could also choose whether to distribute the survey at all. If they choose to distribute the survey, they could choose to send it to every relevant person or they could choose to send it only to a few people. The corporate culture of many of these organizations treats staff time to fill surveys as a resource and so Directors may be reluctant to send to all staff if many people are involved, depending on their viewpoints.
This becomes particularly relevant if we consider Anderson and Helms’ work on discharge planning models (1993). Different discharge planning models impact the number of individuals within the organization eligible to respond to the survey. Finally, the individual receiving the survey could choose to respond or not, as per the specifications and instructions to participants in accordance with the ethics review.

Accepting these limitations was felt to be necessary from a feasibility and resource standpoint and resulted in the acceptance of a convenience sample for this research. The limitations are further discussed in Chapter 9.

However, what we can say about the sample is that from the 114 usable surveys received, we can estimate that at least 50% of eligible organizations in the province of Ontario are represented. We can make this determination based on the fact that 70 unique organizations are represented in the respondent data set. This was discernable because each respondent was asked to provide their LHIN and the last four digits of their organization’s telephone number. Based on a list of hospital corporations from the Ontario Hospital Association, there are approximately 200 hospital corporations in Ontario. We can estimate that at least three quarters do interorganizational referrals (150 corporations). This would make a conservative response rate of about 50% of possible organizations.

3 Results of the acute care hypothesis testing

In this section, I provide the results of the acute care hypothesis testing using the Baron and Kenny four step test for mediational hypotheses (Baron and Kenny, 1986). Table 8 shows the correlations between the independent and dependent variables which is the first step of the test. The reader will note that all three independent variables in the model, as well as the mediator, are significantly correlated to perceived effectiveness. However, none of the independent variables are correlated with the primary definition of efficiency.

Since this is the first step in the Baron and Kenny four step test and since the tests are conditional, Hypotheses 1, 3, and 5, relating each independent variable to perceived effectiveness through mediational coordination can be further explored. By contrast, research Hypotheses 2, 4, and 6 relating the same variables to efficiency through
relational coordination must be immediately rejected. Table 9 summarizes the subsequent steps in the Baron and Kenney model for each hypothesis as relevant. In the next paragraphs I will discuss each separately.

**Table 8** Summary of correlations (step 1 of Baron and Kenny test) from the acute care survey variables

<table>
<thead>
<tr>
<th></th>
<th>Y1_Perceived Effectiveness</th>
<th>Y2_Efficiency_Time</th>
<th>XR_Channel Richness</th>
<th>XI_Information Usefulness</th>
<th>XF_Formalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y1_Perceived Effectiveness</td>
<td>Pearson Correlation</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y2_Efficiency_Time</td>
<td>Pearson Correlation</td>
<td>-.026</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.802</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>99</td>
<td>102</td>
<td></td>
<td></td>
</tr>
<tr>
<td>XR_Channel Richness</td>
<td>Pearson Correlation</td>
<td>.331**</td>
<td>.156</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.001</td>
<td>.126</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>104</td>
<td>98</td>
<td>107</td>
<td></td>
</tr>
<tr>
<td>XI_Information Usefulness</td>
<td>Pearson Correlation</td>
<td>.405**</td>
<td>.042</td>
<td>.257**</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.684</td>
<td>.009</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>105</td>
<td>97</td>
<td>102</td>
<td>108</td>
</tr>
<tr>
<td>XF_Formalization</td>
<td>Pearson Correlation</td>
<td>.349**</td>
<td>.071</td>
<td>.210*</td>
<td>.359**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.476</td>
<td>.030</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>110</td>
<td>102</td>
<td>107</td>
<td>108</td>
</tr>
<tr>
<td>M_Relational Coordination</td>
<td>Pearson Correlation</td>
<td>.371**</td>
<td>.000</td>
<td>.234*</td>
<td>.397**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.998</td>
<td>.015</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>110</td>
<td>102</td>
<td>107</td>
<td>108</td>
</tr>
</tbody>
</table>

Hypothesis 1 states that the relationship between Channel Richness (XR) and Perceived Effectiveness (Y1) will be mediated by Relational Coordination (M). In Table 9, we see that the p values in each of the columns is less than 0.05. This means that there is a significant relationship between the channel richness and perceived effectiveness; between channel richness and relational coordination; and between relational coordination and perceived effectiveness when channel richness is kept constant. We also see that the two tailed results of the Sobel Test are significant, however this means that the relationship is significantly different from 0, so there is only partial mediation. We can therefore conclude that H1 can only be partially accepted in that there is a
Table 9

Summary of results from the acute care hypothesis testing using Baron and Kenny’s conditional four step method

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Dependent Variable Name (Symbol)</th>
<th>Independent Variable Name (Symbol)</th>
<th>Summary of results of Baron and Kenny four step test for mediation hypotheses (criterion variable – predictor variable)</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>X-Y1</td>
<td>X-M</td>
</tr>
<tr>
<td>H1: The relationship between Channel Richness (XR) and Perceived Effectiveness (Y1) will be mediated by Relational Coordination. (M)</td>
<td>Perceived Effectiveness (Y1)</td>
<td>Channel Richness (XR)</td>
<td>c=0.458 s_c=0.129 p=0.001 R^2adj=0.10</td>
<td>a=0.076 s_a=0.031 p=0.015 R^2adj=0.05</td>
</tr>
<tr>
<td>H2 The relationship between Channel Richness and Perceived Efficiency will be mediated by M</td>
<td>Perceived Efficiency (Y2)</td>
<td>Channel Richness (XR)</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>H3 The relationship between Information Usefulness and Perceived Effectiveness will be mediated by Relational Coordination</td>
<td>Perceived Effectiveness (Y1)</td>
<td>Information Usefulness (XI)</td>
<td>c=1.93 s_c=0.43 p=0.000 R^2adj=0.16</td>
<td>a=0.44 s_a=0.099 p=0.000 R^2adj=0.15</td>
</tr>
<tr>
<td>H4 The relationship between Usefulness of Information and Perceived Efficiency will be mediated by Relational Coordination.</td>
<td>Perceived Efficiency (Y2)</td>
<td>Information Usefulness (XI)</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>H5 The relationship between formalization and perceived effectiveness of the referral process will be mediated by relational coordination.</td>
<td>Perceived Effectiveness (Y1)</td>
<td>Formalization (XFwritten)</td>
<td>c=1.217 s_c=0.315 p=0.000 R^2adj=0.10</td>
<td>a=0.173 s_a=0.115 p=0.144 R^2adj=0.10</td>
</tr>
<tr>
<td>H6: The relationship between formalization and perceived efficiency of the referral process will be mediated by relational coordination.</td>
<td>Perceived Efficiency (Y2)</td>
<td>Formalization (XFwritten)</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

^16c=unstandardized correlation coefficient for the path between independent variable in question and the dependent variable, a=unstandardized correlation coefficient for the path between the independent variable and the mediating variable, b= unstandardized correlation coefficient between the independent variable in question and the mediating variable, c=unstandardized correlation coefficient for the path between the mediating variable and the dependent variable, controlling for the independent variable in question. In all cases the s= represents the standard error of the unstandardized correlation coefficient. c'=c-ab. Please note that – indicates that the previous condition was not satisfied.
relationship between channel richness and perceived effectiveness, but that this relationship is only partially mediated by relational coordination.

Figure 12 Results of the mediational hypothesis test for Hypothesis 1

However, this is still only a statistical result. To determine the impact of this relationship on the outcome, we can calculate the effect size (Munro, 2000). In this case, it is the ratio of explained variance over total variance \( \frac{(a)(b)}{c} \). The result is 23% which is considered a medium to high effect size (Munro, 2000).

Hypothesis 2 states that the relationship between Information Usefulness and Perceived Effectiveness will be mediated by relational coordination (M). Similar to the results of Hypothesis 1, Table 9 shows that there is a significant relationship between each of information usefulness and perceived effectiveness; relational coordination and perceived effectiveness and between information usefulness and relational coordination. This means that all three conditions are satisfied for mediation, however the question is now whether there is full or partial mediation. Results of the Sobel test show that when the mediator is controlled, the relationship between information usefulness and perceived effectiveness is reduced, but not completely as the difference is statistically different from 0. This again suggests only partial mediation. In terms of effect size, the calculation again yields 0.23 which is a relatively medium effect size. The output for both coded and non recoded variables is found in Appendix 12.
Hypothesis 3 states that the relationship between Formalization and Perceived Effectiveness will be mediated by relational coordination. In hypothesis 3 we immediately see that the mediator is not correlated with the independent variable suggesting that the formalization variable does not impact perceived effectiveness through relational coordination. However, since we do see a correlation between the formalization and perceived effectiveness variables, suggesting that formalization is an antecedent of perceived effectiveness, but not through relational coordination.

**Figure 13** Results of the mediational hypothesis test for Hypothesis 3

![](image)

In Hypothesis 5, which posits that relational coordination mediates the relationship between formalization and perceived effectiveness, step 1 of the Baron and Kenny test is satisfied through a positive and significant correlation between the dependent and independent variables. However, the second step, which involves testing the significance of the relationship between independent variable and the mediator does not yield a significant relationship (as seen in Table 9). The result is that we must reject research hypothesis five.

**4 Revised model acute care**

In figure 14, I contrast the original model shown at the top of the figure to the model suggested through the hypothesis testing results. The implications and interpretation of the revised model are discussed in Chapter 9.
5 Post acute care sample and response rate

One hundred and seventy one individuals provided useable responses to the post acute care survey. Of the respondents, 63% were nurses. The average number of years of experience of these individuals was 10 years with a range of zero to 38 years. The average tenure at the organization from which they responded to the survey was 7 years with a range from 0 to 30. Finally, the average number of years with which they have worked with the referral partner is close to 6 years.

In terms of the referral processes that they described, sixty percent (60%) indicated that the responsibility for making decisions about referrals was made by one or two people in their organizations and that they were involved in this process. In other cases, multiple
individuals may have been involved in the decision making. Only 30% indicated the admission decision on referrals was made by committee.

There was an equal number of respondents who felt they had no choice in whether to accept referrals or not because of policy requirements and an equal percentage of respondents who felt that there were guidelines on who to accept. About 25% of respondents indicated that there was a decision tool that would help to determine who to accept and less than 10% indicated that there were either algorithms or test scores upon which to make referral acceptance decisions.

Given the high number of respondents who were from long term care homes, it is not surprising that nearly 60% indicated that a 3rd party was involved in the referral process. However, even where this was the case, over 60% also indicated that they were involved in direct communication with the referring facility. Over 70% indicated that there was a specific person with whom they worked on referrals.

As for when a referral should be made, the results were split with 33% indicating that the referral should be made as soon as its thought to be a possibility and 36% saying it should be made when the patient is close to being clinically ready to transition. It is recognized that these two options may not be mutually exclusive. An additional 16% said the referral should be made after the patient is ready to transition. The remainder were non responses.

Forty four percent of respondents were unsure if their organizations were bound by a written agreement to the partner organization but over sixty percent felt that an external body was making requirements on how referrals were to unfold.

Only 30% indicated that a care-pathway helped them to determine referrals and 90% indicated there was little to no other options for the patients they received. Fifty-five (55%) indicated there were policies and procedures in place. Most individuals indicated that their organizations did not monitor the effectiveness of the process or were not sure.

In terms of response rate from this convenience sample, I estimate that 30% of rehabilitation and complex continuing care organizations that accept external referrals provided a response and that approximately 30% of the long term care homes provided a
response. This is based on the estimated 600 homes that belong to the Ontario Long Term Care Home Association and the consideration that of the 200 hospital corporations in Ontario, only half of these may have rehabilitation beds and only half of these, would take inter-organizational referrals.

6 Chronbach alpha for the post acute care surveys

As previously discussed, the post acute care version of the survey built on the acute care version and a pilot test for reliability of the scales was not undertaken. As such, the Chronbach alphas for the post acute care data set were run on the full dataset. The scale items are shown in the Table 10.

**Table 10** Results from the post acute care survey reliability testing

<table>
<thead>
<tr>
<th>PERCEIVED EFFECTIVENESS</th>
<th>(0.811)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFFECT FILL BED</td>
<td>How often do you feel that the referral process allows you to fill beds</td>
</tr>
<tr>
<td>EFFECT WAIT LIST</td>
<td>How often do you feel that the referral process allows you to manage wait lists</td>
</tr>
<tr>
<td>EFFECT APPROPRIATENESS</td>
<td>How often do you feel that the referral process allows you to assess appropriateness</td>
</tr>
<tr>
<td>EFFECT RISK</td>
<td>How often do you feel that the referral process allows you to manage risks</td>
</tr>
<tr>
<td>EFFECT PARTNER_RELATIONS</td>
<td>How often do you feel that the referral process allows you to work with the referring partner</td>
</tr>
<tr>
<td>EFFECT PATIENT_RELATIONS</td>
<td>How often do you feel that the referral process allows you to maintain relationships with the patient/family</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EFFICIENCY</th>
<th>(0.741)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIME RECEIVE</td>
<td>Once the referral process has been initiated (i.e. you know a referral is coming or has arrived) how long does it take to a) gather or receive info...</td>
</tr>
<tr>
<td>TIME COLLECT</td>
<td>Once the referral process has been initiated how long does it take to b) collect additional information once the decision making process has started</td>
</tr>
<tr>
<td>TIME DECIDE</td>
<td>Once the referral process has been initiated how long does it take to make the decision (include all the meeting time you require)</td>
</tr>
<tr>
<td>TIME COMMUNICATE</td>
<td>Once the referral process has been initiated how long does it take to communicate with the referral partner and facilitate next steps</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INFORMATION USEFULNESS</th>
<th>(0.915)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHOTOACCEPT RELEVANT</td>
<td>If there are written criteria to help you determine the appropriateness of a patient for referral how often do you find that they are relevant</td>
</tr>
<tr>
<td>WHOTOACCEPT PRACTICAL</td>
<td>“...they are practical</td>
</tr>
<tr>
<td>WHOTOACCEPT</td>
<td>“...they are accurate</td>
</tr>
<tr>
<td>ACCURATE</td>
<td>WRITTENGUIDELINESRELEVANT</td>
</tr>
<tr>
<td>-----------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>PRACTICAL</td>
<td>&quot;....they are practical&quot;</td>
</tr>
<tr>
<td>ACCURATE</td>
<td>&quot;...they are accurate&quot;</td>
</tr>
<tr>
<td>WHATTOSENDTYPE</td>
<td>Please tell us about the usefulness of the standardized referral form... the form provides... the right type of information</td>
</tr>
<tr>
<td>WHATTOSENDAMOUNT</td>
<td>&quot;...the right amount of information&quot;</td>
</tr>
<tr>
<td>WHATTOSENDADDCALL</td>
<td>&quot;...the form needs to be supplemented by a phone call&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHANNEL RICHNESS (0.684)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHARECONVENIENTLY</td>
</tr>
<tr>
<td>INITIATEMEDIA</td>
</tr>
<tr>
<td>SENDMEDIA</td>
</tr>
<tr>
<td>FOLLOWUP</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RELATIONALCOORDINATION (0.89)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RC_ FREQUENTLY</td>
</tr>
<tr>
<td>RC_ TIMELY</td>
</tr>
<tr>
<td>RC_ ACCURATE</td>
</tr>
<tr>
<td>RC_ ERROR</td>
</tr>
<tr>
<td>RC_ RESPECT</td>
</tr>
<tr>
<td>RC_ SHAREDGOALS</td>
</tr>
<tr>
<td>RC_ ROLES</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FORMALIZATION (0.712)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WRITTEN AGREEMENT</td>
</tr>
<tr>
<td>JOINT PROGRAM</td>
</tr>
<tr>
<td>CARE PATHWAY</td>
</tr>
<tr>
<td>ORG ENFORCE</td>
</tr>
<tr>
<td>PARTNER ENFORCE</td>
</tr>
<tr>
<td>3RDPARTY ENFORCE:</td>
</tr>
</tbody>
</table>
7 Post acute care hypotheses tests

The hypothesis testing procedure for the post acute care hypothesis is exactly the same as the acute care section, so I will be much less detailed in terms of explaining the results. Table 11 shows that correlations only exist between each of perceived effectiveness, channel richness, and relational coordination and between perceived effectiveness, information usefulness and channel richness. This means that all of the hypotheses except Hypothesis 1 and 3 need to be rejected since all others would fail the first condition of the Baron and Kenny four-step test. The two causal models that can be subjected to the remaining steps of the Baron and Kenny test for mediational relationships are hypothesis one and three.

In Hypothesis 1 the model proposed that independent variable channel richness causes perceived effectiveness through relational coordination. When we subject these variables to the next phase of testing we see that the correlation coefficient for the relationship of channel richness on relational coordination is significant (p=0.000). In step three of the Sobel Test which looks at the relationship between the mediator and the dependent variable with the independent variable held constant, we see a significant p value of 0.001. The significant Sobel test indicates that the relationship is not fully mediated and so we can only partially accept research hypothesis 1. The output of this hypothesis test is shown in Appendix 13 and Figure 15. It should be noted that the results are the same irrespective of whether the recoded or non recoded variables are used. For consistency, I have reported non-recoded data, but the results using either recoded or non-recoded data are available in Appendices 13 and 14.

For Hypothesis 3, the results are more difficult to interpret. First, I will note that this is the one variable for which the results for the recoded versus the non recoded variables were different. When the recoded variables are run, we do not get a significant correlation between independent and dependent variables. This would fail step one of the Baron and Kenny four step test for mediation and we would proceed no further.
### Table 11 Correlations between variables for the post acute care referral recipients

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Y1_Perceived Effectiveness</th>
<th>Y2_Efficiency</th>
<th>XR_Channel Richness</th>
<th>XI_Information Usefulness</th>
<th>XF_Formalization</th>
<th>M_Relational Coordination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y1_Perceived Effectiveness</td>
<td>1</td>
<td>.191*</td>
<td>.236**</td>
<td>.360**</td>
<td>.135</td>
<td>.379**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.016</td>
<td>.005</td>
<td>.000</td>
<td>.086</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>165</td>
<td>160</td>
<td>141</td>
<td>138</td>
<td>163</td>
<td>142</td>
</tr>
<tr>
<td>Y2_Efficiency</td>
<td>.191*</td>
<td>1</td>
<td>.007</td>
<td>.216*</td>
<td>-.037</td>
<td>.196*</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.016</td>
<td>.938</td>
<td>.013</td>
<td>.646</td>
<td>.021</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>160</td>
<td>160</td>
<td>139</td>
<td>133</td>
<td>158</td>
<td>140</td>
</tr>
<tr>
<td>XR_Channel Richness</td>
<td>.236**</td>
<td>.007</td>
<td>1</td>
<td>.259**</td>
<td>.164</td>
<td>.212*</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.005</td>
<td>.938</td>
<td>.004</td>
<td>.051</td>
<td>.013</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>141</td>
<td>139</td>
<td>143</td>
<td>122</td>
<td>143</td>
<td>136</td>
</tr>
<tr>
<td>XI_Information Usefulness</td>
<td>.360**</td>
<td>.216*</td>
<td>.259**</td>
<td>1</td>
<td>.117</td>
<td>.238**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.013</td>
<td>.004</td>
<td>.167</td>
<td>.008</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>138</td>
<td>133</td>
<td>122</td>
<td>141</td>
<td>141</td>
<td>122</td>
</tr>
<tr>
<td>XF_Formalization</td>
<td>.135</td>
<td>-.037</td>
<td>.164</td>
<td>.117</td>
<td>1</td>
<td>.244**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.086</td>
<td>.646</td>
<td>.051</td>
<td>.167</td>
<td>.003</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>163</td>
<td>158</td>
<td>143</td>
<td>141</td>
<td>166</td>
<td>145</td>
</tr>
<tr>
<td>M_Relational Coordination</td>
<td>.379*</td>
<td>.196*</td>
<td>.212*</td>
<td>.238**</td>
<td>.244**</td>
<td>1</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.021</td>
<td>.013</td>
<td>.008</td>
<td>.003</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>142</td>
<td>140</td>
<td>136</td>
<td>122</td>
<td>145</td>
<td>145</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).
Table 12 Summary of results from the post acute care hypothesis tests using Baron and Kenny’s four step method

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Dependent Variable (y)</th>
<th>Independent Variable (x)</th>
<th>Summary of results of Baron and Kenney four step process for Med. Hypotheses (Criterion -Predictor)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: The relationship between Channel Richness (XR) and Perceived Effectiveness (Y1) will be mediated by Relational Coordination. (M)</td>
<td>Perceived Effectiveness (Y1)</td>
<td>Channel Richness (XR)</td>
<td>X-Y</td>
</tr>
<tr>
<td>H2: The relationship between Channel Richness and Perceived Efficiency will be mediated by Relational Coordination.</td>
<td>Perceived Efficiency (Y2)</td>
<td>Channel Richness (XR)</td>
<td>--</td>
</tr>
<tr>
<td>H3: The relationship between Information Usefulness and Perceived Effectiveness will be mediated by M</td>
<td>Perceived Effectiveness (Y1)</td>
<td>Information Usefulness (XI)</td>
<td>c = 0.41</td>
</tr>
<tr>
<td>H4: The relationship between Usefulness of Information and Perceived Efficiency will be mediated by Relational Coordination.</td>
<td>Perceived Efficiency (Y2)</td>
<td>Information Usefulness (XI)</td>
<td>--</td>
</tr>
<tr>
<td>H5: The relationship between formalization and perceived effectiveness of the referral process will be mediated by relational coordination.</td>
<td>Perceived Effectiveness (Y1)</td>
<td>Formalization (XF)</td>
<td>--</td>
</tr>
<tr>
<td>H6: The relationship between formalization and perceived efficiency of the referral process will be mediated by M</td>
<td>Perceived Efficiency (Y2)</td>
<td>Formalization (XF)</td>
<td>--</td>
</tr>
</tbody>
</table>

\( c' = \text{unstandardized correlation coefficient for the path between independent variable in question and the dependent variable, } a = \text{unstandardized correlation coefficient for the path between the independent variable and the mediating variable, } b = \text{unstandardized correlation coefficient between the independent variable in question and the mediating variable, } c = \text{unstandardized correlation coefficient for the path between the mediating variable and the dependent variable, controlling for the independent variable in question. In all cases the } s = \text{ represents the standard error of the unstandardized correlation coefficient. } c' = c-ab \)
However, since I have been discussing the non recoded variables, for consistency, I will continue the Baron and Kenny four step test on the non recoded variable information usefulness. As shown in Table 10, we do see a correlation between information usefulness and perceived effectiveness. The reader will see from Table 12 and Figure 16, that each of the next three steps of the Baron and Kenny four step test for mediation may appear to meet the statistical parameters leading to the acceptance of the research hypothesis H3 that the relationship between information usefulness and perceived effectiveness is mediated by relational coordination.

**Figure 15** Results of the mediational hypothesis test for Hypothesis 1

\[ a = 0.268 \quad \text{Relational Coordination} \quad b = 1.829 \]

\[ c' = 1.15 \]

\[ \text{Channel Richness} \quad \text{Perceived Effectiveness} \]

\[ c = 1.645 \]

**Figure 16** Results for the mediational hypothesis test for Hypothesis 3

\[ a = 0.34 \quad \text{Relational Coordination} \quad b = 0.229 \]

\[ c' = 0.33 \]

\[ \text{Information usefulness} \quad \text{Perceived Effectiveness} \]

\[ c = 0.41 \]
8 Revised post acute care model

Given the results, Figure 17 shows the revised model for post acute care receivers.

**Figure 17** Revised model illustrating the relationships between the variables of interest in the model as a result of the hypothesis tests on the post acute care data

9 Synthesis of perspectives

The hypotheses in this study (H) were proposed to inform the question “what makes the referral process effective and efficient from the perspectives of referral senders and referral receivers?” Here, I synthesize the hypothesis results to inform the question more succinctly.

**What are the antecedents of perceived effectiveness (H1, H3, H5)?**

For senders and receivers the common elements of referral process effectiveness relate to the richness of the communication channel and information usefulness. For both groups, relational coordination partially mediates each of these relationship. Only for referral senders does formalization have a significant impact on perceived effectiveness.

**What are the antecedents of efficient referral processes (H2, H4, H6)?**

None of the variables in the adaptation of the classical communication channel (information usefulness, formalization, relational coordination, and channel richness), are antecedents of efficiency as defined in this study.

Table 13 summarizes the results of the hypotheses in this research for each of the acute care referral sender and the post acute care referral receiver groups.
### Table 13 Summary of hypothesis testing results (see legend below)

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Acute Care*</th>
<th>Post acute care*</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: The relationship between channel richness and perceived effectiveness will be mediated by relational coordination</td>
<td>✔ ✔</td>
<td>✔ ✔</td>
</tr>
<tr>
<td>H2: The relationship between channel richness and efficiency will be mediated by relational coordination</td>
<td>× ×</td>
<td>× ×</td>
</tr>
<tr>
<td>H3: The relationship between information usefulness and perceived effectiveness will be mediated by relational coordination</td>
<td>✔ ✔</td>
<td>✔ ✔</td>
</tr>
<tr>
<td>H4: The relationship between information usefulness and efficiency will be mediated by relational coordination</td>
<td>× ×</td>
<td>× ×</td>
</tr>
<tr>
<td>H5: The relationship between formalization and perceived effectiveness will be mediated by relational coordination</td>
<td>✔ ×</td>
<td>× ×</td>
</tr>
<tr>
<td>H6: The relationship between formalization and efficiency will be mediated by relational coordination</td>
<td>× ×</td>
<td>× ×</td>
</tr>
</tbody>
</table>

*Legend: ✔ ✔ = partial mediation (partially) accept research H; ✔ × = significant relationship between variables but no mediation; × × = no relationship reject research H
Chapter 9
Discussion

The purpose of this study was to inform the question, “What makes the referral process effective and efficient from the perspectives of professionals who send or receive referrals?”. It did so by developing, validating, and administering two survey tools: the Perceptions of Referral Effectiveness Tool (PRET-Acute Care Senders (ACS) and the PRET-Post Acute Care Receivers (PACR), and then testing a series of hypotheses that were based on a classic communication model (Anderson & Helms, 1995). In this chapter, I discuss the implications of the findings both from a theoretical and a practical perspective, offer a series of recommendations based on the study, and discuss the limitations, the opportunity for future research, and the linkage of this research to other areas of study.

1 Referral process effectiveness

This research began with Anderson’s (1991) proposition that the referral process is a classic communication model. This study has confirmed quantitatively that proposed elements of the classic communication model (channel richness, information usefulness, and formalization) are antecedents of referral process effectiveness from the perspective of referral senders. It has also demonstrated that these elements, with the exception of formalization, are antecedents of referral process effectiveness from the perspective of post acute care referral recipients as well. Finally, for channel richness and information usefulness, it has demonstrated that the effect of each of these variables on perceived effectiveness is mediated by relational coordination.

As part of this study therefore, I have demonstrated that while the referral process involves both senders and receivers, and contains elements of a classic communication model, the particular elements that predict perceived effectiveness may not be the same for the acute care referral senders as they are for the post acute care referral receivers. I will also suggest that the mechanism through which channel richness and information usefulness affect perceived effectiveness may have implications for the field that may be somewhat unexpected. I will begin by discussing each of the independent variables in turn.
Channel richness
For both senders and receivers at p=0.05 and at a nearly moderate effect size of 0.23 and 0.24 respectively (Munro, 2000), the relationship between channel richness and perceived effectiveness was partially mediated through relational coordination. This means that in the absence of relational coordination, the predictive value of channel richness on perceived effectiveness is significantly reduced. Why would channel richness affect relational coordination and relational coordination affect perceived effectiveness?

For senders, one possible explanation emerges from the key informant interview statements. Many senders talked about subjectivity in the referral process. The subjective, discretionary or un-codifiable nature of some referral information was also discussed in the literature (Anderson & Helms, 2000; Peak & MacLaren, 2000; Reicheldt & Newcomb, 1980; Foster & Tilse, 2003). For this purpose, a phone call would allow people to discuss sensitive issues that they may not be comfortable putting in writing. At the same time, key informants talked about having automated referrals which have also been discussed in the literature (Mueller et al, 2009; Mastouri et al, 2009). Both the literature and key informants talked about the need to supplement information with a phone call (Anderson & Helms, 1995).

Given this, if channel richness is about using multiple channels conveniently in order to enable a change of understanding, then it is possible that the richer the channel, the more options the sender would have, and the more likely they would perceive the process as effective. The multiple communication channels assist the referral participants in appropriately managing different types of information required in the process and for decision-making, ranging from that which is routine and easily expressed, to that which is more complex, sensitive and subjective (Cummings & Teng, 2003).

In regard to why relational coordination is mediating this relationship, Gittell’s theory of relational coordination combined with what we heard from the key informants appears to provide a cogent explanation for why this might be occurring. By using multiple communication channels, senders are ensuring that they are dealing with sensitive and subjective information, but they may also be building, and possibly experiencing the impact of attempts to foster a context of shared goals, mutual respect and common understanding.
Referral senders appear to be aware that the referral receiver needs to make a decision most often relying on the information they are providing. The success of multiple communication channels (Kwok & Gao, 2005) may be balancing the need to provide straightforward information succinctly with complex and sensitive information clearly and in sufficient detail.

This is consistent with the suggestions of the many authors who have discussed and the importance of relationships in the referral process for increasing the likelihood of referral, its perceived completeness, and overall satisfaction (Dartington, 1979; Emerson, 1991; Foster & Tilse, 2003; Rivard & Morrissey, 2005; Van de Ven & Walker, 1984; Provan, 1984, etc.).

Similarly, receivers also concurred that people are not necessarily easily described, that some information cannot be put in writing for ethical and potentially legal reasons. However, they also acknowledged that there may be a high level of uncertainty about whether the description will match the person, even if the intentions to describe the person accurately were there. Consider that in the context setting questions, over 35% of senders and receivers indicated that a referral should be initiated before the patient is ready to transition (which may or may not be when the patient is in the same clinical situation as when the patient arrives) or even as soon as the referral was thought to be an option. This means that the patient is expected to change between the time the patient is referred and the time the transfer is made. This leads to an element of risk in making a referral decision because by definition, the patient’s condition is going to change by the time the patient is admitted, possibly to the point expected, but not always.18

For the receivers, the communication and trust-related elements of relational coordination would increase the likelihood of goal achievement since a decision would have to be made to accept referrals and these decisions would be facilitated in the context of shared goals, mutual respect, and understanding. Following the same rationale as for the acute care senders, given the uncertainty and risk involved and the need to provide information in different ways depending on the situation, it is not surprising that channel richness predicted perceived effectiveness. If the communication channel is rich, by definition, it is perceived as convenient

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18 It was beyond the scope of the study to compare the effectiveness of referral processes of these cases with cases where the referral was expected only once the patient was ready, but this would be an interesting analysis.

These choices are purposeful and intended to achieve the goals discussed. However this research, because of the mediational effect of relational coordination, suggests that multiple communication channels may not be sufficient to achieve the intended goals of effectiveness. Combined, the finding in this research of a mediated relationship between communication channels and perceived effectiveness and Gittell’s conditions supporting relational coordination, may have important implications for the field, especially in an environment where the automation of referral processes is considered an important quality improvement process (Mastouri et al, 2009; Isaacksz & Casselman, 2009; Sharpe et al, 2006).

**Information usefulness**
For information usefulness, we have demonstrated that its relationship with perceived effectiveness is also partially mediated by relational coordination for both senders and receivers. The partial mediation of relational coordination in the relationship between information usefulness and perceived effectiveness is particularly interesting for both senders and receivers, since one could assume that accurate, relevant and practical information should be enough.

One possible explanation for the importance of something like relational coordination in the referral process, is offered in the papers of Dartington (1979) and Emerson (1991) which propose that the referral process is an adversarial process whereby each party’s organizational objectives are not necessarily those of the other, and may even come at the cost of the other. These opposing objectives may exist within the context of a healthcare system whose categories may not actually meet the patient’s needs, making the ultimate decision more of negotiation, or as Dartington calls it a “brokerage” (1979), than a science or a regulation.

Gittell’s concept of relational coordination (2010), where the communication is occurring in the context of shared goals, joint problem solving and mutual respect, may be allowing the individuals involved to rationalize negotiations in the interest of a system and a patient, instead of solely through accountability to resources. I have termed this “system citizenship” following in the traditions of authors like Gulati (2008) and Gittell (2002) and others who speak to social
capital and organizational citizenship. It adds the dimension of the health system to a concept that is most often spoken to in the context the person, the partner, the patient, organization or society as a whole.

When viewed in light of doing the best for a person within a system that may not be designed in a way that maps directly on to patient needs, it may also be more useful to think about information in the referral process in terms of “knowledge creation” (Nonaka, 1994) between the sender and the receiver. In this conceptualization, knowledge creation is a process and a resource. It is not simply a linear function in which information is inputted to result in an outcome, but one that is ‘enlarged as it is shared’ (Best, Hysong, McGhee, Moore, & Pugh, 2009; Berta, Teare, Gilbart, Ginsburg, Lemieux-Charles, Davis, & Rappolt, 2005).

In this context, the information is exchanged with a view to developing or creating knowledge to determine how best to meet the needs of the patient, both at the patient care level and at the organization-system-resource level. The idea of knowledge creation in this context, may be further supported by the fact that about 50% of acute care respondents indicated that information in the referral process has to be learned through experience. For respondents, 84% indicated they made decisions in the absence of any sort of algorithm and 87% made decision in the absence of a test score. This should not be confused with guidelines on who to accept, which close to 80% of respondents had available.

The level of experience may also reflect socialization through which interactions influence the parties’ knowledge of the referral process, what information to send or discuss, and what information is needed to make a referral decision. Therefore, the suggestion of the partially mediated relationship is that information usefulness on its own may be necessary but not sufficient to optimize the process.

In terms of information in the referral process, this study has described what types of information are useful in the referral process, expanding from the Referral Data Inventory proposed by Anderson and Helms (1991-2005). For senders, this includes what information to send and what type of patient is appropriate for the program. For receivers, this includes what information to review, what kind of patient to accept or decline, and what other factors to consider. This finding supports the proposition made that potential opportunities for referral
process improvement may exist in the development of standardized forms, feedback mechanisms, and education (Anderson & Helms, 1994; Rogoski, 2007).

Finally, as it pertains to information usefulness, this research has also demonstrated that the conceptualization of information usefulness proposed by Ginsburg (2003) in relation to the use of hospital report card data, also appears to apply to the referral process. Given how different these two types of information really are, this finding provides possible support for the generalizability of some of Ginsburg’s findings on what makes hospital report card information useful. It also raises the question about whether the usefulness of other types of healthcare information could also be measured in a similar fashion.

**Relational coordination**

This research has shown that relational coordination is very important in the context of referral process effectiveness as perceived by the users. The fact that relational coordination is a role-based competency and not simply a function of interpersonal ties is especially powerful in that it allows organizations to manipulate the conditions to support it (Gittell, 2010).

The research suggests that the proposed elements in the classic communication channel are antecedents to perceived effectiveness, influence relational coordination (as evidence by step 2 of the Baron and Kenny four step test), but will not replace relational coordination. In addition they will not have their full impact on perceived effectiveness without relational coordination.

This research, given the mediational relationship between channel richness and perceived effectiveness through relational coordination and the mediated relationship between information usefulness and perceived effectiveness, suggests that in spite of the multiple media and the excellent information, if the parties do not feel that they are communicating in a context of shared understanding, goals, and problem solving, the investments in other parts of the referral process may not manifest their benefits. In fact, in some cases, they might even undermine the real potential of relational coordination in the process (Gittell, 2010).

**Formalization**

In this study, formalization only had a significant impact on perceived effectiveness in the acute care dataset. However, when we tested to determine if there was a mediating effect, the
regression did not show a significant impact of formalization on relational coordination (Step 2 in Baron & Kenny’s four step test). The results suggest that while formalization may be correlated with perceived effectiveness, the statistical relationship is not occurring through relational coordination.

Why are we seeing formalization as an antecedent to perceived effectiveness in the absence of relational coordination? First it is important to recognize that the regression analysis showed that formalization accounted for 6% of the variation in perceived effectiveness and it was not statistically significant for receivers.

For senders, formalization of referral processes might help them in making or justifying various decisions that may otherwise be difficult for them to make. The sender may perceive a degree of comfort if there is no choice and can not be “blamed” in the event that the referral is not considered desirable to the referral recipient. It may remove some of the justification that may otherwise be involved on the part of the sender in presenting a case to a receiver who may otherwise wonder why the sender is presenting such a patient. It may also signify clear expectations and support for staff who may be making decisions that are not considered desirable or popular by the other party.

While this type of logic could conceivably apply to the receiver group, I did not find a statistically significant relationship between formalization and perceived effectiveness. If formalization can help to reduce accountability of a decision, make the process clearer and save the recipient from having to be responsible for unpopular choices, why would it not be perceived as contributing to the goals of the referral process for the receivers?

There are multiple possible explanations. First, policies and procedures may not be specific enough to fully encompass or guide the decision making process. Although there is insufficient data in this study to explain the non-relationship, the lack of relationship between formalization and perceived effectiveness, may be an indication that for the receivers, having flexibility is important. This would then be consistent with the proposed notion of system citizenship whereby the referral recipient, may feel a need to negotiate a possibility for the patient and referrer, in light of the limitations of the system.
2 Referral process efficiency

That none of the proposed independent or mediating variables in the classic communication model demonstrated a significant correlation to referral process efficiency, as defined in this study, has both diverse interpretations and important potential implications.

First, it is possible that while demonstrating both reliability and face validity, the survey tool does not have construct validity as it pertains to the efficiency of the referral process. This is in keeping with the proposition that a questionnaire should show correlations between the dimensions it is designed to test as per the quote by Myers and Oetzel (2003) that is presented at the beginning of Chapter 8.

While this is a possible explanation, in this particular study, we did not begin as Myers and Oetzel did, by identifying the ‘dimensions’ of the survey in relation to efficiency. Instead, I used dimensions from the classic communication model used in previous referral process studies (Anderson & Helms, 1995; Anderson 2000) and confirmed through the key informant interviews.

The reader will recall that early in the study, two sets of questions were proposed to operationalize efficiency. One set of questions related to the time spent only by each party in the referral and the other referred to the total time spent in the referral process. The former was chosen because it was felt to better reflect the time spent by each party in the referral process and therefore the definition of efficiency.

However, since no independent variables were correlated with this measure, several questions are raised. First, the “time spent” by the referrer or the receiver as a measure of referral relationship performance, which is frequently cited as the rationale for many referral process improvements, may not be particularly meaningful. When we looked at the amount of time needed in the referral process among the individuals in the sample, the range for the acute care referral process which included the steps identified by Luker and Chalmers (1989) was from 20 to 300 minutes per patient with a mean of about 110 minutes and a median of 95 minutes.
Considering that the referral process results in the discharge of a patient who may have been in hospital for 5 or 6 days, the average of approximately two hours, may or may not be viewed as having a very important impact on the patient length of stay (CIHI, 2009). The time taken to complete the timely transition of the patient is where more resources are involved. Finally, it is possible that the classic communication model, while predictive of effectiveness is simply not suitable for predicting efficiency as defined. In other words, the antecedents of effective referral processes may not be the same as the antecedents of efficiency.

3 Limitations

While the findings from this study are rich, the practical and theoretical applications of this work are also bound by the limitations of the study. These limitations can be described in terms of (1) the empirical setting and (2) the methods.

Empirical setting

When this study was conceived, it was recognized that the empirical setting for the study would be difficult to characterize in terms of the size of the respondent population and a well defined sampling frame. First, information was not publicly available, that would enable me to understand this landscape, a priori. It was for this reason that I used Discharge Abstract Data to determine which populations would be most subject to interorganizational referrals and whether the patterns would be similar across LHINs or geographic areas in Ontario.

Second, there has been little previous work that would enable us to know what discharge planning models are in place across Ontario and, as a consequence, whether it is likely that the responsibility for referrals is dispersed or consolidated in a few roles.

Third, these discharge planning models may be applied within each of the populations of interest or across the populations of interest. This means that the same person might do referrals for multiple populations within one organization or there might be different individuals for different populations. These issues resulted in the researcher having to make a number of estimates and assumptions about the size and nature of the population.
Fourth, there was a very high level of interest and focus in the referral process that was not necessarily present at the time of the proposal, but certainly present at the time of the survey administration. A report from the expert working group on ALC (2006) noted its importance, the LHINs began undertaking focussed activity in the area, and the ‘Patient Flo’ collaborative was conceived (CHQI, 2005). This created a study environment, in which this research had to be executed in a manner that was complimentary, rather than simply taxing on the same group of respondents.

To this end, the Association of Discharge Planning Coordinators, the Ontario Bone and Joint Health Network, the Ontario Stroke Networks, and the Ontario Long Term Care Home Association were extremely helpful in collaborating and disseminating the surveys. At the same time, it may have required a more conservative recruitment approach than traditionally recommended by authors like Dillman (2007), to respect the communications practices of the Networks.

**Methodological issues**

The methodological limitations include the assumptions about the data required to conduct regression analysis. In both the acute care dataset and the post acute care dataset, some of the variables were not normally distributed. In order to meet with the assumptions for regression required in the Baron and Kenny four step test, the data for several variables, had to be recoded. While in most cases, the regression analysis results for coded versus non recoded data were the same, in one case, namely the relationship between information usefulness and perceived effectiveness in the post acute care dataset only, the results were different. This suggests the increased likelihood of a Type I error in which the researcher concludes there is a significant difference or finding, when in fact there is not (Munro, 2000). To address this limitation, the suggestion was made that bootstrapping may have been a better choice, since the test is more robust and does not require the same set of assumptions as in regression (Baron and Kenny, 1986). This may be an opportunity for future study and exploration.

The second methodological issue is related to the survey tool. As previously discussed, this study did not confirm any of the hypotheses regarding predictors of efficiency in the referral process. One of the possible explanations for this is related to the construct validity of the
survey tool as it pertains to efficiency. Further study should explore the measurement of efficiency and its conceptualization in light of what was learned in this research.

Specifically, it is important to ask two questions. The first is whether the survey tool and the decision to approach efficiency as the time spent in different phases (in minutes) by senders and by receivers separately, as opposed to the total time taken from initiation of referral to completion of the process (in days), was really the best decision. While the choice was part of the process of inquiry, in future studies, it will be important to address the issue of total time taken which may be a better measure of operational efficiency.

The second is whether the survey is the best ways to study this alternate approach to efficiency. In this regard, while the surveys do have items with sufficient Chronbach alphas to form a scale, there are likely too many confounders to make the analysis possible or useful. For example, the time taken from referral process initiation to the time a decision is rendered and communicated can be confounded by the fact that there is currently no agreement across the system as to when a referral should be made vis-à-vis the patient’s readiness to transition or how far in advance a referral should be initiated to allow for processing time on both ends. Second, my surveys are designed to be completed by senders and receivers separately. To understand the issue of “total time needed” for the process, there would need to be simultaneous consideration of what is happening within the same process from both acute care and post acute care perspectives. Given the complexities involved and the nature of the surveys designed, it may be useful to take a case study approach which would allow for the elucidation of the confounders involved. This would provide an important springboard for further studying the issue in the future.

**Focus on perspectives**

Finally, while the perspectives of senders and receivers are important because it is these perceptions that drive corrective coordination (Wehmeyer et al, 2001) and referral process innovations and investments, they are still perceptions. It will be important in future research, to use the findings from this study to work towards the establishment of other types of referral process outcome measures and also to study and to incorporate the patient perspective.
4 Practical implications

In spite of the limitations however, this study has several important implications and applications for practice. In addition to the theoretical motivations for pursuing this research, the practical question was about what makes the referral process effective and efficient from the perspectives of referral senders and receivers.

To answer this question in a meaningful way, it may be helpful to call into question two assumptions that are prevalent in the practice landscape. The first assumption is that improving the referral process would increase discharge planning efficiency and result in a decrease in alternate level of care days (Mastouri et al, 2009; Sharp et al, 2005). The second assumption is that by improving information, policies, and procedures in the referral process, we will improve the overall outcomes for both senders and receivers (OACCAC et al, 2006; ALC Expert Working Group, 2006).

What ‘should’ the goals of the referral process be?

The first practical implication of this research is that clinicians, managers and planners who are working in the system to improve the referral process, need to be very aware of what both the acute care referrers and the post acute care recipients or reviewers need from the referral process. The assumption that the goals of the referral process are explicit and known by all parties, may not be entirely true. For example, the less expected goals of the referral process, such as exploring options, managing patient and family relationships, or responding to a surge in demand, would require different referral process considerations than a referral process designed to match supply and demand in a less dynamic manner.

Our current process improvements may be destined to match patient need with services available, but this matching function may not be all that the providers involved are really trying to do. In addition to matching patients with services available, which suggests a static system in favour of technologies, processes, information, and policies, providers may also be trying to gather information, please patients and families, and try out various options to maximize the patient’s opportunity to improve health and function. The latter may imply a learning process,
a flexibility, and a need for integration that may require considerations in addition to the types of process improvements that are being pursued.

Therefore this research suggests that in addition to the goals of the referral process being different for senders and receivers, the elements within the referral process chosen for improvement may not necessarily impact senders and receiver in the same ways.

**Recommendation 1:** In selecting areas of improvement in the referral process, recognize that the impact will not necessarily be symmetrical for both the senders and receivers.

Furthermore, the question of whether or not all of the identified goals of the referral process, should be addressed through a referral process - such as whether it makes sense to use referral processes to manage patient and family relationships or whether it makes sense to use the referral process to explore options are questions that may be worth asking. However, at a minimum, if there are assumptions about the goals, this may be preventing the actualization of referral process improvements.

**Recommendation 2:** Challenge or confirm assumptions about what the goals of the referral process are and what they really should be. Are there alternatives to the referral process for achieving some of the aspired goals?

**Are process improvements sufficiently linked to the desired outcomes?**

In addition to clarity on and assessment of the appropriateness of the goals identified by each of the acute care sender and post acute care receiver groups, individuals seeking to improve the referral process need to be very clear about the structure, process, and outcome relationships otherwise, assumptions about what we are trying to improve and why we are doing so, may not materialize.

One possible example is in the expectation around efficiency in the referral process. In many referral process improvements being made across the province, there may be an assumption that changing the communication channel, rules, policies or procedures of the referral process, will impact the efficiency of discharge planning and result in an improvement of alternate level of care days (OACCAC et al, 2006; Isaacksz & Casselman, 2009; Mastouri et al, 2009 ). This may be true. However, there may also be a need to better understand the relationships between the variables being manipulated and the expected outcomes.
Ontario’s *Electronic-Referral and Resource Matching Solution* has been approved for implementation as one of six recommendations that form apart of the ER/ALC Information strategy in the Toronto Central LHIN (Mastouri et al, 2009; Isaacksz & Casselman, 2009). This solution could therefore be enhanced by considering relational coordination elements upon which it is currently silent. There is also very little discussion on the likely need for conversations that will need to run parallel to the technology given some of the nuances that were conveyed in the key informant interviews regarding sensitive information, need for clarification and difficulties in conveying “codified” or check box type information to describe a person and the complexities of the context that will influence their goals, care, and resource utilization (Isaacksz & Casselman, 2009; Mastouri et al, 2009).

We may need to ask the question - is it the amount of time spent on the referral process by the referrer and by the sender that is the principle reason for undertaking “corrective coordination” or mutual adjustment efforts (Whener, 1998; CHQI, 2008), i.e., referral process improvements, or is it the timeliness of the process?

In the literature and in industry publications, descriptive accounts of the referral process appear to be focussed on “how much time” the process takes one party to complete (Dai et al, 2003; Mastouri et al, 2010; Sharpe et al, 2005; Rogoski, 2007). Ontario’s Council for Health Quality improvement addresses this issue with caution.

> “While there might be a future opportunity to expand the scope of the CCAC role in discharge planning, thereby releasing time for hospital based staff to spend more time on direct patient care, there were implications identified to use through our pilot work in the Flo Collaborative that would result from large scale policy change in this area” (CHQI, 2008)

From this study, information usefulness, formalization, and communication channels do not appear to have an impact on the amount of time spent in the process by either senders or receivers. This doesn’t mean that current and proposed system improvements will be unsuccessful, but that we may need to be very clear on what we think relationship between the structure, process, outcome relationship really is or we may be disappointed in the results. An opportunity for further research would be to look at an alternate definition of efficiency, which
is time to complete the process and determine if this is decreased through the independent variables in this study.

Being very clear on the intent here is important because the antecedents may not be the same. A slight reframing of the problem, coupled with a significant investment in technology or process redesign may not result in the aspired outcomes. Yet the idea that efficiency and effectiveness are related is a commonly held belief in both the field and in the literature. Consider this quote from McAllister (1995, p. 24).

“Efficiency within complex systems of coordination is only possible when interdependent actors work together effectively”.

**Recommendation 3:** Support better understanding of the balance between efficiency and effectiveness in the referral process before choosing investment in referral process improvements

Ironically, relational coordination and channel richness, two of the three antecedents having a significant impact on perceived effectiveness for both senders and receivers, are elements that are least likely to lend themselves to simple or expedient process improvements, because they require flexibility, trust, relationship building, and negotiating complexity, and uncertainty. They are not the types of solutions that can necessarily be easily contracted out or proposed by a vendor.

This is not to suggest that technologies and process improvements will be ineffective. What it may suggest however is that these improvements may work in ways other than that which is being anticipated and that alongside these process improvements is a need to recognize and support the communication and relationships between providers that result in a coordinating function. For example, mediation of the relationship between channel richness and effectiveness, by relational coordination would suggest that investment in technology will not improve the process without concurrent investments in the coordinative relationships that support them (Gittell, 2009; Gittell 2001; Dewett & Jones, 2000).

Therefore, as investments are made in electronic referral processes, this study would suggest that we also need to also invest in mechanisms to support the development of relational coordination between them. This is supported by proposals in papers on trust and

The act of “redesigning the referral processes” itself, can also give referrers and receivers deeper insight into each other’s ‘real reasons’ (Emerson, 1991) which can help to close a possible gap that exists between why senders refer and what receivers need (Emerson, 1991; Dartington, 1979). This again supports the potential of recommendation 3 offered earlier. It is possible that initiatives that result in process improvements through the collaboration of the parties, may be attributable as much to the process of interaction between the parties as to the tool or tactic developed through the project.

The idea that technology is as important as the relationships and human factors surrounding it, is not itself a novel finding (Gottlieb & Olfson, 1987; Giddens, 1979; DeSanctis & Poole, 1994, Cherns, 1976). However, this study sheds light on the mechanism through which the elements of the classic communication model (technology) may impact the success of the referral process through the relational components. We may see a manifestation of this in the new Long Term Care Home Act which came into effect in July of 2010.

In the Long Term Care Home Act, there are very explicit descriptions of which patients should be accepted and under which circumstances. It also discusses the circumstances at the partner organization under which the long term care home must accept a patient (Long Term Home Care Act, 2007 section 155). This will likely have the effect of making referral receivers aware of the motivations of the referral of the sender and possibly have the consequence of inculcating a shared understanding of system problems. Indirectly, being required to act in favour of resolving situations at a partner organization may contribute to relational coordination. It will close the gap between the senders’ needs and the referrers’ needs (Emerson, 1991; Dartington, 1979).

Recommendation 4: Support mechanisms (such as in person meetings, joint initiatives, site visits, committee work) through which providers can nurture the relationships necessary to coordinate and negotiate complex situations or to develop shared goals and problem solving capacity in the day to day referral process.
Impact of a retiring workforce

In this study, through the impact of relational coordination, we learned that relationships are important to the perceived effectiveness of the referral process. The fact that many referral professionals have on average many years of experience also means that they will also likely begin to retire, as a new generation enters the system. It will also be important to monitor how new relationships need to be nurtured between incoming clinicians and if the importance of relational coordination on perceptions of referral process effectiveness changes with a new generation. Gittell would suggest that through relational coordination, we develop competencies of roles not of people, so that as the people change, the coordination is still possible (2010). How this manifests will require careful thought.

**Recommendation 5:** As the workforce retires, consider the opportunity for training and socializing a new generation of referring professionals as it pertains to the referral process and to ensuring that the strategies selected for referrals are appropriately aligned with the preferred communication channels and expectations of incoming clinicians.

5 Future study

As demonstrated and discussed, there is an opportunity to use the findings of this research to stimulate, design and evaluate future improvements in the referral process by sharing the results and recommendations with individuals involved in using or in designing referral process improvements. Integrating considerations related to the need for relational coordination elements in some areas might also help to make existing referral process improvements projects more successful if built, given the mediating relationships we have determined through this research.

There is also an opportunity to use the findings of this study to further elucidate the antecedents of efficient referral processes. By building on what we know not to be the case, we can look for alternatives that may influence referral process efficiency. For example, we know that the definition of efficiency as “time-spent” by each party is not correlated to the classic communication model variables, but what if we used the alternate definition of efficiency in this research (i.e., the total time required by both senders and receivers).

Using the survey instruments, future studies can also be undertaken to test hypotheses that were not within the scope of the research project. For example, what is the relative impact of
each of the factors of the classic communication channel on perceived effectiveness? Given that the scales appear to hold across settings and across population groups, it is likely that the survey tool itself can have multiple applications.

**Using the referral process/classic communication model to understand other situations**

Next, this research examined a classic communication process that happens everyday. What if we took what we learned about this process, and applied it to what we know about other areas? There may be many other processes in healthcare for which the concept of a classic communication model combined with Gittell’s theory of relational coordination might be very helpful.

Consider for example, knowledge to practice efforts of academic healthcare organizations, which have a tripartite mandate of integrating patient care, training and research (ACAHO, 2010). Would the model proposed for the effectiveness and efficiency of the referral process, where elements of the classic communication model, like channel richness, information usefulness, and formalization, mediated by relational coordination, be a useful model to consider in studying the dynamic exchanges that are required between clinicians and researchers or in the diffusion and adaptation of innovation? Communication and interorganizational relationships are important in these situations (Lemieux-Charles & Barnsley, 2004; Berta, et al 2005). Could it also be applied to the relationships between researchers and those who can help them commercialize their products?

Another very powerful example is crisis communications. It may sound like an unlikely proposition, but the referral process has many similarities to crisis communications. In any health-related crisis, like a pandemic or a regional disaster, referral processes may come into play for managing surges in demand. To keep patients flowing out of acute care so that new patients can be admitted, providers will rely on referrals to move people into post acute care settings. If the situation involves an infectious disease, the referral process will also need to enable the referral reviewers to understand, anticipate and address risks of introducing and spreading infections to non infected patients. This becomes especially important when there are unknowns and risks to be managed.
Leveraging understanding of the referral process as communication in crises

In times of crisis, in addition to these “acute considerations”, the referral process is an inter-organizational communication process, which aside from the demand management are also needed in times of crises. Seeger (2002) expressed the relationship as follows:

“Communication processes are viewed as central factors in the stable routine operation of organizations as well as in the unstable chaotic points of crisis”.

In a review of the literature on crisis communications, Seeger (2002) links various elements of a crisis to elements of chaos theory, which can also be extended to the referral process.

For example, consider that even where there is a high degree of trust and communication between the parties, each referral comes with a “risk” or an “element of uncertainty”. Information on the patient may not be perfect and even if it is perfect, something could happen that would make the accepted referral the beginning of a potential risk. Knowing that this risk lurks in the background recreates the conditions of a potential crisis or shock, much as this process is routine. This is known as predictive chaos (Seeger, 2002).

Second, what happens in a crisis depends on initial conditions. In the referral process, each additional referral needs to be considered in the context of the existing situation in both the acute care centre making the referral and the mix of patients that are already present at the receiving institution. This will influence the extent to which a newly referred patient can be accommodated. Third, in times of crisis, shared values, needs, goals, threats and interdependencies may become especially salient. We saw a demonstration of this through the importance of relational coordination. In the new Long Term Care Home Act, we see legislated a joint responsibility.

This suggests that what we learn about inter-organizational referral processes may influence how we study and learn about other forms of communication between organizations.

Considering the evolution and dynamics of recurring relationships

One of the observations of relationships during crises is that the crisis can change the nature of an interorganizational relationship (Leblebici & Salancik, 1982; Van de Ven & Walker, 2004). If we consider that in each referral, there is the potential of an unexpected event, there is a need to consider how the dynamics change over time. The importance of recurring inter-
organizational relationships and their dynamic nature is discussed in many papers on relationships, social capital and trust (for example, Amburgey, 1985; Paulson, 1974; Gales & Blackburn, 1990; Gulati & Jackson, 2008; Gittell, 2010; Thiede, 2005 among others).

Lin (2002) observed that during a crisis, using relationships that fit Granovetter’s concept of “strong ties”, or ties that are governed by intimacy, frequency and commitment, is more efficient than using weak ties, but that at heightened levels of crises, both strong and weak ties must be called upon. This may not be too unrelated to the finding that for both senders and receivers, relational coordination mediates the impact of channel richness on perceived effectiveness.

It is also consistent with papers that discuss referral staff as boundary spanners, who have and who need to maintain recurring relationships (Dollinger, 1984; Kwait et al, 2001). In some discharge planning models, designated boundary spanners or individuals in coordinating roles are required to establish both interpersonal forms of trust and interorganizational approaches for transparency and trust building (McAllister, 1995; Wehmeyer et al, 2001). 19

In threat rigidity theory (Staw et al, 1981) crises are also thought to change information-processing patterns at the individual, small-group, and organizational level and can lead to information overload. This can divert the participants from the real issues to a more simplistic focus on “efficiency-type” considerations instead of getting at the root causes (Sutton, 1990).

It has also been observed however, that crises produce a response that post crises improves the inter-organizational relationship. If the partners are truly interdependent, the crises will cause the referral partners to fix elements of the relationship that did not work; impose rules that will improve coordination. If the relationship worked well, there may be increased levels of affect and effect based trust (McAllister, 1995). These in turn can strengthen the referral relationship.

However, in both cases, the strengthening of the relationships leads to a possible tension. A stronger relationship between two independent organizations will make it more embedded with the partner. Embeddedness will lead to restriction and restriction could lead to conflict. This could reinforce the argument that to maintain positive working relationships over time,

19 An example of inter-organizational trust building, may be the disclosure of admission criteria
organizations need to continuously monitor and maintain relational coordination efforts (Granovetter, 1974; Gittell, 2010).

**International applications for integration, communication and technology**

Finally, although this study was undertaken in Ontario, the topic of interorganizational referrals is of interest nationally and internationally. For example, Canada recently completed a digital strategy consultation that will see the development of important technologies such as those that may be used to facilitate inter-organizational communications such as referrals (Government of Canada, 2010). We would expect that with the Federal Government’s leadership in this area, there may be growing expectations, uptake, funding and availability of such technology. Understanding how to optimize its use is important. Understanding the relationship between various components, relational coordination and outcomes, can help in this regard. The same may apply to understanding and optimizing use of electronic health records.

Internationally, a study by the OECD of 26 countries (Oxley, 2009), has noted the importance of the referral process in coordination of care, specifically as it pertains to chronic disease and an aging population. Oxley (2009) notes that improving information technology and communication infrastructure for processes like the referral process, is necessary to improve coordination of care. However, he also notes that the penetration of information technologies is weak and that significant government efforts will be needed to improve its uptake. The results of this study may assist in these efforts by helping planners and technology developers understand the connection between structure, process and outcomes, for example, by recognizing and planning for the importance of relational coordination.

**6 Conclusion**

In this research I have studied a process that occurs many times and every day in the healthcare system – the referral process. I explored the referral process as a classic communication model and in so doing informed the question “what makes the referral process effective and efficient?”

I also developed two survey tools and tested a series of hypotheses. In lay terms, my study showed that tools, rules, information and technology may be helpful, but in the referral process at least, they won’t replace relationships and may not even work in their absence. In addition,
my study suggests that the way we think about what is “efficient” may not necessarily be “effective” something that is likely evidenced in day-to-day relationships.

Finally, what is perhaps most relevant about this study is its contribution to understanding common communication processes. By learning more about how we communicate, we may have the potential to improve important patient care and system-related outcomes. We may also have the potential to better understand one of the most important competencies in healthcare, and possibly in daily life as well, that of working, interacting, and relating effectively with others.
Bibliography


Webster, J., & Trevino, L. (1995). Rational and social theories as complementary explanations of
communication media choices: two policy-capturing studies. *Academy of Management Journal*. 38(6), 1544-1572


