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Role of Telehealth in Seating Clinics; A Case-study of learners' perspectives

by

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Abstract:

The purpose of this qualitative case study was to understand learners' perspectives about the role of telehealth in providing services, facilitating mutual learning and encouraging team building for highly tactile processes such as seating clinics. Interviews were conducted with the staff members at the Alberta Children's Hospital and Medicine Hat Regional Hospital who were involved in planning and implementing this telehealth initiative. Outreach seating sessions were also observed to facilitate the analysis of these interviews. The study showed that the implementation of telehealth in seating clinics might be different from other less tactile telehealth applications. Planning of service provision and telelearning requires involvement of staff and should be introduced in a step-wise manner. Results suggested that learning could be a sensitive issue in such cases. This study contributes to our knowledge about the role of telehealth in seating clinics by providing insiders' views on the benefits and issues related to the introduction of telehealth.

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Dedication:

This work is dedicated to those less fortunate people of Pakistan, whose love has provided me the courage to gain more knowledge and apply it for the betterment of the entire community.

TABLE OF CONTENTS

		Page
Approval Page		ii
Abstract		iii
Acknowledgements		iv
Dedication		v
Table of Contents		vi
List of Tables		ix
List of Figures		x
List of Abbreviations		xi
CHAPTER ONE: CONSIDERING THE RESEARCH PROBLEM		**1**
1.1	Introduction	1
1.2	Understanding the concept of learning	2
1.3	Gaps in knowledge	3
1.4	Purpose of this research	4
1.5	Research questions	4
1.6	Significance of this study	5
CHAPTER TWO: LITERATURE REVIEW		**6**
2.1	Role of telehealth in tactile processes	6
2.2	Role of telehealth for special needs children	7
2.3	Role of telehealth in building relationships	8
2.4	Role of telehealth in staff learning for tactile processes	8
2.5	Planning of telehealth services and involvement of staff	10
2.6	Importance of staff's perspectives	10
CHAPTER THREE: RESEARCH DESIGN AND METHODS		**12**
3.1	Study design	12
	3.1.1 Study design and rationale	13
	3.1.2 Description of the case	13
	3.1.2.1 Study setting	15
	3.1.2.2 Telehealth initiative	15
	3.1.2.3 Sample/Population	16
3.2	Methods	16
	3.2.1 Data Collection	16
	3.2.1.1 Entry/Access to research setting	17
	3.2.1.2 Key informant interviews	17
	3.2.1.3 Grouping of participants	18
	3.2.1.4 Observing seating sessions	19
	3.2.2 Context/Theory	20
	3.2.3 Data analysis	21
	3.2.4 Methods of verification	22
	3.2.5 Ethics	22
	3.2.6 Operational definitions	22

CHAPTER FOUR: RESULTS 25
4.1 Category I - Context 27
4.1.1 Setting of seating clinics 28
4.1.1.1 Staff's involvement in seating clinics 28
4.1.1.2 Working in multidisciplinary teams 28
4.1.1.3 Staff's involvement in administrative roles 30
4.1.1.4 Involvement in other areas 30
4.1.1.5 Involvement beyond seating clinics 31
4.1.1.6 Role of AADL 32
4.1.2 Special characteristics of seating clinics 34
4.1.2.1 Hands-on nature of seating clinics 34
4.1.2.2 Tactile nature of seating clinics 34
4.1.3 Working of seating clinics in this case 35
4.1.3.1 Reasons for bringing children to Calgary 35
4.1.3.2 Reasons for no clinics in Medicine Hat 36
4.2 Category II - Process 38
4.2.1 Staff's involvement in planning telehealth initiative 39
4.2.1.1 Interaction with planners 39
4.2.1.2 Involvement in planning 39
4.2.2 Staff's involvement in implementing telehealth 43
4.2.2.1 Staff's role in implementation 43
4.2.2.2 Communication between staff 43
4.2.2.3 Staff's comfort with equipment 44
4.2.3 Facilitators for telehealth implementation 46
4.2.4 Barriers to telehealth implementation 48
4.2.4.1 Telehealth vs hands-on/face-to-face 48
4.2.4.2 Relying on others' judgment 49
4.2.4.3 Uncertainty about ownership of care 50
4.2.4.4 Legal and licensing issues 50
4.2.4.5 Problems with equipment and technology 51
4.2.4.6 Lack of willingness of staff to accept change 52
4.2.4.7 Physicians' remuneration 52
4.3 Category III - Outcomes 54
4.3.1 Role of telehealth in seating clinics 55
4.3.1.1 For the staff 55
4.3.1.2 For the clients 56
4.3.1.3 For the service 57
4.3.1.4 Other roles 57
4.3.2 Advantages for using telehealth for seating clinics 59
4.3.2.1 Advantages for the staff 59
4.3.2.2 Advantages for the clients 60
4.3.2.3 Advantages for the service 60
4.3.3 Disadvantages of using telehealth for seating clinics 63
4.3.4 Staff relationships and effect of telehealth 66
4.3.4.1 Staff relationships 66

4.3.4.2 Effect of telehealth on relationships 66
4.3.5 Telelearning in seating clinics 69
4.3.5.1 Learning of staff through telehealth 69
4.3.5.2 Barriers to learning through telehealth 70
4.4 Category IV - Future of telehealth in seating clinics 73
4.4.1 Future role of telehealth in seating clinics 73
4.4.2 Lessons learned for future 74
4.4.2.1 Training staff in telehealth 74
4.4.2.2 Utilization for short distances 74
4.4.2.3 Developing telehealth etiquettes 75
4.5 Category V - Others 77
4.5.1 Introduction of additional change 77
4.5.2 Broader acceptance of technology 78

CHAPTER FIVE: DISCUSSION 80
5.1 Summary of results 80
5.1.1 Characteristics of seating clinics 80
5.1.2 Planning for telehealth initiative 81
5.1.3 Issues in implementing telehealth initiative 82
5.1.4 Role, advantages and disadvantages 82
5.1.5 Role of telehealth in building relationships 83
5.1.6 Learning through telehealth 83
5.1.7 Future role of telehealth 84
5.2 Issues arising from results 84
5.2.1 Context 84
5.2.2 Process 85
5.2.2.1 Issues related to planning 85
5.2.2.2 Issues related to implementation 85
5.2.3 Outcomes 86
5.3 Comparing results with the literature 87
5.4 Recommendations 89
5.5 Contributions 90
5.6 Strengths and limitations 91
5.7 Significance of the study 92
5.8 Future practice 92
5.9 Future research 93

BIBLIOGRAPHY 94

APPENDICES
A Consent form for health professionals 97
B Consent form for parents of the children 100
C Interview protocol 103
D Ethics approvals 105

LIST OF TABLES

Table		Page
1	Themes under the category of 'Context'	27
2	Involvement of different groups in seating clinics	33
3	References regarding special characteristics of seating clinics	37
4	List of themes under the category of 'Process'	38
5	References regarding involvement of staff in the planning of telehealth initiative for seating clinics	42
6	References regarding involvement of staff in the implementation of telehealth initiative for seating clinics	45
7	References regarding the facilitators for telehealth implementation	47
8	References regarding the barriers for telehealth implementation.	53
9	List of themes under the category of 'Outcomes'	54
10	References regarding the role of telehealth in seating clinics	58
11	References regarding the advantages of telehealth in seating clinics	62
12	References regarding the disadvantages of telehealth in seating clinics	65
13	References regarding the relationship of staff	68
14	References regarding the barriers for telelearning in seating clinics	72
15	References regarding the future role of telehealth in seating clinics	76
16	References regarding themes not covered under any categories	79

LIST OF FIGURES

Figure		Page
1	The setting of seating clinics and the involvement of staff at the ACH and the MHRH	14
2	The relationship between the themes identified in the study, according to the categories and sub-categories	26

LIST OF ABBREVIATIONS

AADL	Alberta Aids for Daily Living
ACH	Alberta Children's Hospital
CHADS	Children's Health and Development Services
MHRH	Medicine Hat Regional Hospital
SACYHN	Southern Alberta Child and Youth Health Network
WHO	World Health Organization

CHAPTER ONE: CONSIDERING THE RESEARCH PROBLEM

1.1 Introduction

This study evaluates the role of telehealth as a medium, in providing seating services between the Alberta Children's Hospital (ACH) and the Medicine Hat Regional Hospital (MHRH) from the perspectives of staff members and managers. These two hospitals jointly operate seating clinics in order to provide follow-up care for children who received an initial assessment for seating appliances and who require further seating adjustments (Telehealth Business Plan for SACYHN). Seating services operate under the umbrella of Southern Alberta Child and Youth Health Network (SACYHN). SACYHN is a collaboration among individuals and organizations concerned with the health and well being of all children, youth and families, in the geographical areas covered by health regions 1 through 4 (Telehealth Business Plan for SACYHN, 2001) in the province of Alberta. SACYHN brings together parents, child service ministries, regional health authorities and provincial and local agencies to focus on optimizing the health and well-being of children and youth. It focuses on planning coordinated programs, services and information resources to address the needs of children and families. It also focuses on improving the accessibility of services for children by building the professional capacity of relevant health professionals working throughout Southern Alberta. SACYHN has encouraged staff and professionals working at the ACH in Calgary to support child health professionals in other regions and to work with them in teams to provide better service to clients and to mutually enhance skills and knowledge. One such initiative is to use telehealth as a medium to connect the ACH with various regional hospitals.

SACYHN supports the use of telehealth for service provision and learning, in the areas of genetics, mental health, discharge planning, seating clinics and education. This includes the use of two-way interactive audio and video communications, computers and telemetry. The expected outcomes include enhanced accessibility, efficient use of resources of the ACH and partnering agencies in order to meet identified gaps and to increase professional knowledge of providers in the regions (SACYHN, Outreach Services Framework, 2002). These outcomes are comparable to the perceived benefits of telehealth internationally, such as to deliver health services to remote patients and to facilitate information exchange between specialists, primary health care physicians and clients (Darkins AW, 2000; Wertz RT, 1992; Duffy JR, 1997; Koltsi Z, 2000). A 'Child Telehealth Advisory Committee' has been formed to plan and facilitate the implementation of telehealth initiatives throughout Southern Alberta. The Palliser Health Region has been selected for the initial phase of using telehealth in outreach seating clinics, due to the high patient volume and good receptivity of telehealth clinical application in this area.

Success of telehealth is well established in all the other specialties mentioned above, with the exception of seating clinics. The current research focused on determining the role of telehealth in providing services in tactile processes such as seating clinics, mutual learning of care providers and the process of team building between the health professionals in the MHRH and the ACH for the adjustment of seating devices.

1.2 Understanding the concept of learning

For the purpose of this study, the learners' views were generally defined based on the socio-cultural perspective of learning. This perspective is based on the premise that

adult learning is different from child or adolescent learning. It assumes that an adult learner has an independent self-concept and can direct his/her learning, has developed a large reservoir of experiences, is problem-centered and is interested in the immediate application of knowledge (Cheren M, 2002).

The socio-cultural perspective of learning also supports the idea of partnership building when it comes to training of adults in any field. With regard to healthcare, this contextual background suggests that whatever is learned by the health professionals should eventually benefit the wider population. Given the context of telehealth, questions of accessibility and other issues related to the quality of care have made it important to consider the knowledge and views of the health professionals who may be working and learning quite independently in distant areas. When planning any new interventions in distant areas, it is crucial to involve health professionals from these areas and to give due importance to their perspectives (Spouse J, 2001, Cheren M, 2002). This requires enabling a socio-cultural perspective of learning and building partnerships under conditions that are challenging, particularly because the separation is both organizational and geographic. For the purpose of this study, all the staff and planners involved in the process of using telehealth for seating clinics are considered learners and will be referred to as such in this document.

1.3 Gaps in knowledge

There was very limited literature available on the use of telehealth in providing service, facilitating team-building and enhancing mutual learning for tactile processes such as seating clinics. Even the available articles (Jin C, 2000; Barden W, 2000) did not focus on analyzing an in-depth knowledge of the learners' perspectives, which is

extremely important in making the best use of available technology (Richardson D, 1997; Firby PA, 1991). This case study focused on the learners' perspectives on the use of technology in adjustment of seating devices at the MHRH. Thus, the rationale of this case study was not restricted to the discovery of new elements, but also included the heightening of awareness about the experience, which is crucially important in the process of learning.

1.4 Purpose of this research

The purpose of this case study was to understand the role of telehealth in providing service, transferring information, facilitating mutual learning and team building among health professionals, from the learners' perspectives.

1.5 Research Questions

The main research question of this study was:

1. What is the experience of health professionals working in seating clinics at the Medicine Hat Regional Hospital and the Alberta Children's Hospital in using telehealth to jointly manage the children for the adjustment of seating devices, to share knowledge and to form a working relationship with each other?

The following sub-questions were also investigated:

- How are the telehealth sessions planned and what is the involvement of different health professionals in the planning process?
- What are the facilitators and barriers to the introduction of telehealth in seating clinics?
- What are the advantages and disadvantages of using telehealth in seating clinics, over face-to-face contacts?

1.6 Significance of this study

By explicitly analyzing the role of telehealth in seating clinics from the learners' perspectives, we can enhance our understanding of participants' views within the context of using telehealth in seating clinics. The end product of this study will be a contribution to the understanding of using telehealth in providing services for processes such as seating clinics and changes that can help in planning and providing better care, enhancing staff learning and supporting team building.

CHAPTER TWO: LITERATURE REVIEW

While the literature relating to the use of telehealth in tactile processes was relatively sparse, there was enough literature available in the areas relevant to this case study. This review covered literature in the following areas:

- Role of telehealth in specialties using tactile processes.
- Role of telehealth for special needs children.
- Role of telehealth in building a relationship between healthcare professionals.
- Role of telehealth in staff learning for tactile processes.
- Planning of telehealth services and perceived need among the staff.
- Importance of staff's perspectives in the analysis of a relationship and understanding the role of telehealth in seating clinics

2.1 Role of telehealth in specialties using tactile processes

Use of technology to provide health information and care to distant areas has been in practice for several years. At present, telehealth is one of the most common in-practice forms of technology being used to address accessibility. Telehealth has the potential to improve services to rural communities by providing not only direct telemediated access to clinical specialists for patients, but also the opportunity for the efficient training of rural professionals in the necessary specialty care (Barden W, 2000). It is less clear, however, whether telehealth assessment is equally effective for specialties where tactile interaction between the patient and the healthcare provider is considered to be critical. 'Seating clinics' is one of such specialties where tactile procedures such as measurements and fine adjustments are extremely important. Exchanging and understanding this type of information may challenge the application of telehealth beyond its current capabilities

(Barden W, 2000; Farmer JE, 2001). Nitzkin compared assessments done by health professionals, both conventionally and through telehealth, for various procedures including physical therapy assessments. It was found that reliability varied with the type of examination, providers' experience with telemedicine and their knowledge of system limitations. Clinicians without experience and knowledge of system limitations missed findings of clinical importance. For more 'hands-on' examinations, such as physical therapy assessments and seating clinics, which depend on the skills of the remote assistants, reliability depended a lot on experience (Nitzkin JL, 1997). For this reason, it was important to understand the use of telehealth in these types of processes and also to get an idea about participants' experiences from the sessions.

2.2 Role of telehealth for special needs children

Studies looking at the feedback of clients and providers regarding use of telehealth, mentioned a number of advantages and issues related to its use for special needs children. The advantages of telehealth, identified by patients and staff in providing care to special needs children, included the convenience of reduced travel for the patient and family, saving both time and costs to the parents, and reduced travel time and cost for multidisciplinary teams in prescreening of patients to determine the need for tertiary services (Robinson SS, 2003). Some challenges identified by staff were adequacy of equipment, efficiency of planning, acceptance of technology by clinicians, learning consultation skills, professional issues such as liability and licensure and funding problems such as reimbursement and cost of providing and maintaining the telehealth system (Farmer JE, 2001).

2.3 Role of telehealth in building relationships between healthcare professionals

One of the important purposes of using telehealth for the exchange of information is to build a strong professional relationship among health staff who work in different areas (Farmer JE, 2001; Weaver L. 2000). Studies show that children with special needs expend three to five times the health care costs of normal children over similar life spans. Taking care of such children requires teamwork and coordination between families, physicians, nurses, occupational, physical and speech therapists, teachers, school nurses and community health resources. The treatment of these children requires an integrated, community based health network with close coordination and linkage among the specialists serving them (Robinson SS, 2003). Telehealth provides one such linkage by increasing the frequency of contact between the staff and by adding a visual bonus to their communication.

One study showed the role of telehealth as a medium of communication and networking among various hospitals and between the University faculty members and the regional health authorities (Jennett P, 2000).

2.4 Role of telehealth in staff learning for tactile processes

Telehealth is used extensively as the medium for exchanging information and knowledge between health professionals working in different locations. The main purpose of this process is to prepare local expertise in the distant areas and to build patients' trust in the local health staff. This helps in increasing accessibility for people living in distant areas without compromising the quality of care (Farmer JE, 2001; Weaver L, 2000). The literature provided a good understanding of the usefulness of telelearning in specialties such as speech therapy, mental health, nursing and some areas

of occupational therapy and physiotherapy (Barden W, 2000; Duffy JR, 1997; Halstead JA, 2000; Kully D, 2000; Porter SR, 1996; Teyhen DS, 2001; Toth-Cohen S, 1995; Wertz RT, 1992). None of these specialties requires the fine tactile skills that are needed for seating clinics, which may require more collaboration between all partners and ensure the interaction and involvement of learners.

Despite the large amount of literature available on distance learning and video conferencing for the education of health professionals, there was very little information on the use of telehealth in teaching diagnostic and assessment skills, especially for tactile processes such as seating clinics (Chang BL, 2001). Some studies compared telelearning with direct teaching and also with self-study techniques. In a study looking at the learners' perspectives about telelearning, it was found that staff perceived telehealth to be useful for service provision and for increasing access to a wider range of services. However, the learners did not think that telehealth could provide learning comparable to that in the classroom, and that learners would benefit from interdisciplinary interaction (Chang BL, 2001).

Communication was also recognized as an important area of learning, when using telehealth, especially when considering its international, multicultural and multilingual uses. Basic training and familiarity with computers and associated communication systems would facilitate acceptance and would help many health care providers gain confidence in the tools of telemedicine (Lacroix A, 2002).

Health professionals using telelearning in various Canadian centers mentioned collaboration and support between the professionals and organizations, increasing availability of telecommunications, information and educational infrastructure,

appropriateness of timing for the use of technology and geographical conditions in Canada as the enablers for telelearning. They also considered insufficient resources and infrastructure for sustainability, lack of funding, lack of change in culture, lack of standardization and defined policies and lack of valid and reliable infrastructure as barriers to telelearning (Jennett P, 1998).

2.5 Planning of telehealth services and perceived need among the staff

A revolution in health care, seen in the last few decades, has resulted in the introduction of new technologies and changing professional roles. Stakeholders, such as health professionals and patients, do not usually consider this change important. Towle studied ways to respond to a demonstrated need when there is no perceived need on the part of clinicians and to enable a partnership between the change agents and the stakeholders. Key strategies identified were continuing education and the involvement of stakeholders in planning (Towle A, 2000).

2.6 Importance of staff's perspectives in the analysis of a relationship and understanding the role of telehealth in seating clinics

Studies showed that a huge investment is required in setting up the whole process of telehealth, which includes the cost of equipment purchase and maintenance, hiring technical staff, training and supporting other staff and increasing awareness among the providers and the users. It is extremely important, therefore to obtain staff's feedback from the areas where such programs are already being piloted, and also the expectations and fears of providers from the areas where they are in the process of implementation. This will help in preventing a huge investment, which is at risk without proper knowledge of users' expectations and fears (Darkins AW, 2000; Weaver L, 2000).

Considering staff's perspectives is also an important component of analyzing any particular relationship from an individual level (Provan, 2001). Outcomes of such an analysis may relate to the individual members of a network in assessing their experiences and restructuring the relationship in a way that could be perceived to be beneficial by all partners.

Staff's perspectives can be crucial in assessing some important measurements which include proper transfer of information, understanding the required changes needed in the equipment, increased job satisfaction, learning new skills and getting opportunities for training and education without having to travel (Wellington, 1999). This study explored whether the learners' perspectives regarding the process of exchanging information, areas of learning and the use of medium, were also taken into consideration. It undertook to understand the learners' experiences in building a useful working relationship between themselves and other health professionals involved in planning and conducting these sessions. The study also attempted to discover how health professionals compared telehealth with direct face-to-face communication and information transfer.

CHAPTER THREE: RESEARCH DESIGN AND METHODS

This study was qualitative in nature and the tradition of 'Case Study' was used. Since very little research has been published to determine the learners' perspective on the subject of telehealth use in seating clinics, it was not possible to find any field-based instrument that has been used for this purpose. Thus a decision was made to adopt a qualitative method to conduct this study rather than a survey. Further details concerning the study design, rationale and methods are outlined in this chapter as follows:

3.1 Study design

Qualitative research design was used for this study. According to Creswell, this design is "an inquiry process of understanding based on distinct methodological traditions of inquiry that explore a social or human problem. The researcher builds a complex holistic picture, analyzes words, reports detailed views of informants and conducts the study in a natural setting" (Creswell JW, 1998).

From the various traditions of qualitative designs, 'case study' was used for this research. According to Yin, a case study can be defined as: "... an empirical enquiry that investigates a contemporary phenomenon within its real life context, when boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used" (Yin, 1994).

A case study is "an explanation of a 'bonded system' or a case (or multiple cases) over time through detailed, in-depth data collection involving multiple sources of information rich in context" (Creswell JW, 1998). Thus, a case study has several important components such as a bonded system or case, multiple sources of data collection and the context of the case to facilitate analysis. The remainder of this section

describes the case, whereas the processes of data collection and the context are discussed in section 3.2 (Methods).

3.1.1 Study design and rationale

Qualitative study-design, and specifically case study methodology was chosen for a number of reasons. First, it provides an opportunity to gather data on a complex behavior, such as provider-provider interaction and provider-management interaction, which might have been difficult to understand by using surveys (Harold BS, 1998). Also, in a case study, special attention is given to the completeness in observation, reconstruction and analysis of the case under study. Case study "incorporates" the views of the "actors" in the case (Zonabend, 1992) and was therefore well suited to the research questions of this study, which focused on learners' perspectives.

There have been arguments regarding the generalization of case study methodology, especially if it is based on a single case. Yin argues that the goal of the study should help in establishing the parameters, such as sample size or number of cases, and then should be applied to all research. In this way, even a single case can be considered acceptable, provided it meets the established objectives. Yin points out that the generalization of the results in a case study should be made to theory rather than to population. He also proposes that using multiple sources of evidence and establishing a chain of evidence could be possible ways to increase the internal validity (Yin, 1994).

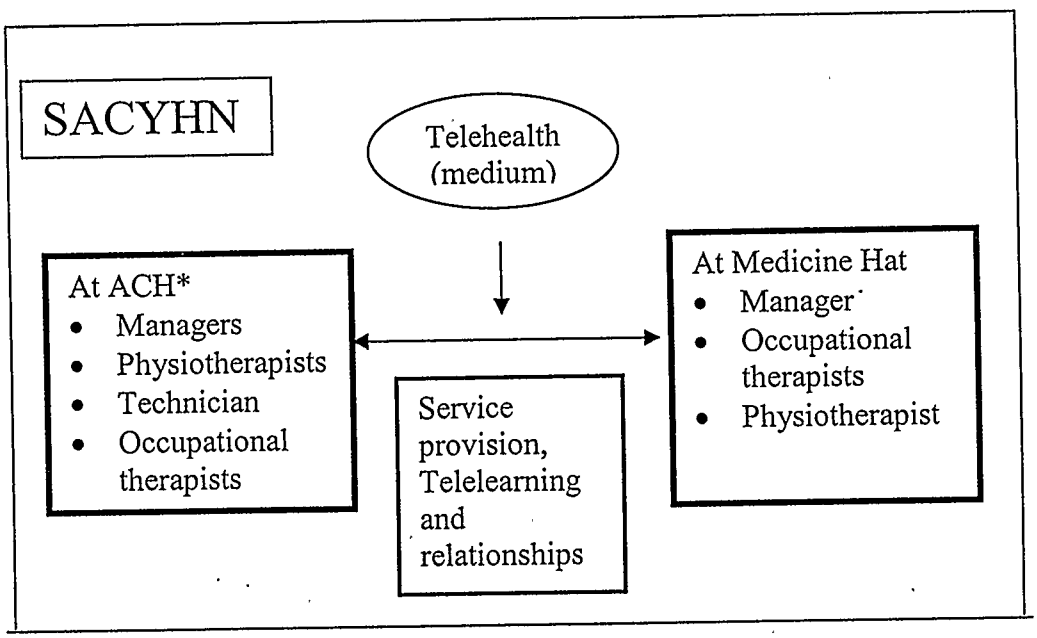
3.1.2 Description of the case

This case study is embedded within SACYHN's initiative to implement telehealth in the four health regions of Southern Alberta. For this purpose, the MHRH was chosen to implement a pilot project. This area has been connected with the ACH through the

telehealth network to facilitate an already existing outreach clinic between the two sites. The process of using telehealth in providing seating services to children between the ACH and the MHRH, was taken as a case. The study focused on the service provision, relationship building and telelearning components of this initiative. Thus the case was bounded within the actual implementation stage of a telehealth initiative in the seating clinics and therefore, focused on the managers and staff members involved in this initial implementation phase. The following diagram describes the setting and the staff involved in this initiative.

FIGURE 1

The setting of seating clinics and involvement of staff in ACH and MHRH



* Involvement of a physician in the seating clinics is also under consideration.

3.1.2.1 Study setting

This study encompasses two primary sites providing seating services to the clients by using telehealth as the connecting technology. The study was conducted at the ACH in Calgary and the MHRH in the Palliser Health Region. The ACH is the only freestanding, exclusively pediatric facility and research center in southern Alberta. There are over 367,000 patients who visit the ACH each year. These children and youth range in age from zero to 18 years of age and they travel from southern Alberta, southeastern British Columbia and southwestern Saskatchewan (Calgary Health Region's Website).

Medicine Hat is the center of the Palliser Health Region and is located approximately 300 kilometers southeast of Calgary. It has one regional hospital to serve the population, along with several other smaller health facilities in less populated areas of the region. There are 28 children in the Palliser Health Region who require regular seating services. A physiotherapist and a seating technician visit MHRH twice a year to provide outreach services to these clients. Moreover, these children also have to travel regularly to the ACH in Calgary for their follow-up seating clinic visits. These children make an average of three visits to the ACH every year for the purpose of seating clinics only, for which their parents have to take a day off from work, bear the expenses of travel and arrange day care for their other children.

3.1.2.2 Introduction of telehealth initiative

With the introduction of telehealth, the staff from the ACH have started conducting clinics with the occupational therapists in Medicine Hat through teleconferencing in addition to the regular services, in order to provide care to the clients

closer to their homes and to facilitate relationship building and information exchange between the staff.

3.1.2.3 Sample/Population

The population for this study consisted of all the staff including physiotherapists, occupational therapists, seating technicians and managers who provided follow-up care at the seating clinics in the four health regions of southern Alberta. For the purpose of this study, all the health professionals involved in the outreach seating clinics in the Palliser Health Region, where the initiative was being implemented on pilot basis, were interviewed. These included individuals in the roles of occupational therapy, physiotherapy and management. Key health professionals and the planners from the ACH who were involved in the planning of the telehealth initiative for seating clinics in Medicine Hat, were also interviewed in order to get their views on involving the learners in the planning and implementation of the telelearning initiative in Medicine Hat.

3.2 Methods

This section describes the process of data collection, context of the study and the process of data analysis.

3.2.1 Data Collection

A total of 12 interviews were conducted; eight were done at the ACH and four at the MHRH, between April 17 and May 27, 2003. This included all the staff members and their managers involved in the outreach seating clinics at these two sites, regardless of their experience with telehealth planning or implementation. A semi-structured guide was used for the interviews (Appendix C). Apart from the interviews, two seating sessions were also observed at the ACH. The first was a direct face-to-face interaction with the

patients involving only the ACH staff, whereas the second involved therapists from the outreach site through telehealth. Notes were made of all seating sessions observed at the ACH and also of observations made during the interviews. These notes were considered to be field notes and they were used in understanding various themes and categories during the analysis. Moreover, one meeting of the 'Child Telehealth Advisory Committee' and one videoconference between the health professionals at the ACH and the MHRH were also attended to observe the additional processes of planning, coordination and communication.

3.2.1.1 Entry/access to the research setting

The proposal was first discussed with the 'Child Telehealth Advisory Committee' of the SACYHN and approval was sought. Subsequently the proposal was also discussed with the concerned authorities in the Palliser Health Region and the Alberta Children's Hospital, for formal approval. Involvement at an early stage of planning of this project ensured good access to the field.

3.2.1.2 Key informant interviews

Managers and staff members including physiotherapists, occupational therapists and seating technicians from the ACH and the MHRH, were interviewed as key informants, to share their knowledge, perception and experience regarding the role of telehealth in seating clinics.

In order to guide the interviews properly and to get an in-depth understanding of learners' perspectives, an interview guide was used (Appendix C), which focused on the following areas:

1. Personal role in seating clinics and involvement in outreach seating services.

2. Opinions about the role of telehealth in seating clinics.
3. Advantages and disadvantages of using telehealth for seating clinics.
4. Staff relationships and role of telehealth in team-building.
5. Staff's involvement in planning and implementing the telehealth initiative.
6. Telelearning in seating clinics.
7. Facilitators and barriers to telehealth implementation.
8. Any other issues/comments as per interviewees' suggestions.

3.2.1.3 Grouping of participants

The interviewees were grouped into four categories according to their primary role with the seating clinics. This grouping was done for the sake of analysis, in order to compare these groups for similarities and differences in their perceptions regarding the introduction of telehealth in seating clinics. There was no plan to group the participants in this particular way before starting the analysis. This grouping emerged naturally during the analysis, based on group members' views on the major issues. The four groups were:

1. Management at ACH: This group consisted of people involved in strategic roles and in planning for the future of telehealth in seating clinics and other outreach areas at the ACH.
2. Staff at the ACH: This group consisted of physiotherapists, seating technicians and occupational therapists involved in providing seating services at the ACH and also looking after day-to-day activities of the department.
3. Management at the MHRH: This group consisted of people involved in strategic roles at the MHRH.

4. Staff at the MHRH: This group consisted of physiotherapists and occupational therapists involved in providing seating services at the MHRH and also looking after day-to-day activities of the department.

3.2.1.4 Observing seating sessions

Two seating sessions were observed at the ACH. The first session was attended before the start of the interview process. This session was a regular seating session at the ACH, involving a physiotherapist, a seating technician and an occupational therapist from the ACH. No outreach staff were involved in this session either directly or through telehealth. The second session was attended after completing all the interviews. This session was organized at the ACH, but the outreach staff from Lethbridge were also involved through telehealth. Since there was no telehealth session planned with the MHRH during the period of data collection, the session with Lethbridge, which was a site similar to Medicine Hat, was observed in order to view the important technical and communications components. These components included the use of cameras for assessment and the communication between the staff at both sites.

The first observation helped in understanding the overall structure and working of seating clinics. It also helped in understanding the team dynamics involved in different procedures. This experience proved very useful during the interviews, where the responses of interviewees could be related to the real life situation.

The second observation again helped in applying all the information that was gathered during the interviews. Since the outreach team was involved during this session, using telehealth, the use of technology in assessing the child's problem and the communication between staff at both sites could be observed. This session helped in

clarifying some confusion regarding the difficulties in using cameras and other telecommunication equipment for assessment and communication with parents and other staff members, before initiating the data-analysis.

3.2.2 Context/Theory

A number of papers describe the need to develop a 'theoretical proposition' for each case study, in order to guide data collection and analysis (Tellis W, 1997; McDonnell A et al, 2000). Case studies link the pieces of information collected about a particular case (the phenomenon) to some pre-determined theoretical proposition or criteria (the context) (Yin, 1994). For an exploratory study such as this, a stated purpose or criteria not only helped in comparing the results, but also provided an opportunity to measure the success.

In order to form the theoretical proposition for this study, a criterion was selected, which could help in framing of the analysis. For this purpose, both the literature and the documents of SACYHN were reviewed to see what is expected from a telehealth initiative with the aims similar to this case. The context was finally acquired from the outreach services framework of SACYHN, which suggested that using telehealth for a portion of care would not only reduce inconvenience for parents and providers in each trip, but would also demonstrate a collaborative working relationship between the staff and institutions of both the regions. It proposed that telehealth would also facilitate knowledge and information sharing, in order to promote mutual learning (SACYHN, Outreach Services Framework, 2002). The literature was also used to focus the study context on gaps in the current knowledge, particularly the lack of understanding of tactile telehealth practice from the learners' perspectives.

3.2.3 Data analysis

In order for a case study to elicit valuable insights and conclusions, an analytic strategy needs to be defined. According to Yin, one way to analyze a case study is to rely on the theoretical proposition or context of the study and then relate the evidence, based on the context. Another mode of analysis is the 'pattern-matching,' which compares an empirical pattern obtained from the respondents to the one predicted before the start of the study. Internal validity of the study also enhances if the two patterns coincide with each other (Yin, 1994). Stake recommends 'categorical aggregation' as another means of analysis and presents ideas for 'pattern-matching', according to the categories (Stake, 1995). In the analysis of this study, all these methods of data analysis were blended by first defining the context of this study followed by matching the information gathered from the interviews. Themes identified in the interviews and observations were categorized and the patterns of responses between different groups of respondents were matched.

Data was analyzed in multiple steps. The first step was to transcribe the interviews and identify pertinent themes. Transcription of the interviews was started during ongoing data collection. Ideas gained during transcription guided further interviews and observations. Different themes were identified by reading the interviews repeatedly and a list of all the pertinent themes was made.

In the second step, the codes were split into different conceptually defined categories, such as context, process, outcomes and the future of telehealth. Building of these categories started from the transcription of the first interview and continued until

the end of analysis. Memos were also written for each category, which highlighted the importance, recurrence, issues and linkages between these categories.

In the third step, quotations and categories were sorted into different groups of interviewees and a pattern of comments was developed for each group.

In the fourth step, pattern matching of the comments and categories was done between the groups to identify how the different interviews had matching or differing responses. The qualitative research software NUD*IST (N5 version) was used as a technical aide in coding the interviews, grouping quotations into themes, defining categories and creating linkages between the themes.

3.2.4 Methods of verification

Three methods were used to enhance the validity of this data. The first was to use different methods of data collection, such as interviews and observations. The second method was to have two of the previously coded interviews recoded by another professional health researcher with experience in qualitative data analysis. This process allowed a comparison of both the codings and to ensure that different researchers were extracting the same meaning from the words of the interviewees. Lastly, one of the key managers at SACYHN, who was not directly involved with this research, reviewed an early draft of and the thesis to give suggestions.

3.2.5 Ethics

Although no experimentation was performed on human subjects, proper approval was obtained from the University of Calgary's 'Conjoint Health Research Ethics Board and relevant Ethics Committees of the concerned health regions (Appendix D). Consent was also obtained from the health care providers who agreed to be interviewed

(Appendix A) and the families who agreed for their seating clinic sessions to be observed (Appendix B).

3.2.6 Operational definitions

- Process: This is the process of planning the telehealth initiative in the Palliser Health Region by the 'Child Telehealth Advisory Committee' and other people responsible for seating clinics at the ACH and the Palliser Health Region. It also involves the process of implementing the telelearning initiative for the health professionals working for seating clinics in the Palliser Health Region and the Alberta Children's Hospital.
- Seating clinics: These are the follow-up clinical sessions for children who received an initial assessment for seating appliances and require further seating adjustments (Telehealth Business Plan, SACYHN).
- Southern Alberta: For the purpose of Southern Alberta Child and Youth Health Network, Southern Alberta is a combination of 4 health regions, namely Calgary, Palliser, Chinook and David Thompson Health regions. (Telehealth Business Plan, SACYHN).
- Southern Alberta Child and Youth Health Network (SACYHN): This network has been formed as a result of extensive planning with the aim of achieving common standards of care in all pediatric health sites in Southern Alberta. The objectives are to get improved patient care, better utilization of health facilities and improved education to families and caregivers. (Telehealth Business Plan, SACYHN).

- Special Needs Children: These are the children with a wide range of physical and mental disabilities, including cerebral palsy, spina bifida, hydrocephalus, mental retardation, neuromuscular disorders, seizure disorders, congenital amputations, learning disabilities and mental illnesses (Robinson SS, 2003). Children requiring seating services usually have multiple physical and mental deformities and are usually referred to as 'special needs' children.
- Tactile Processes: These processes involve fine measurements and adjustment of supportive devices. Seating clinics also have such processes such as measurement of length of seating devices, measurement of pressure areas and balancing of weight.
- Telehealth: According to the World Health Organization (WHO), telehealth is the integration of telecommunication systems into the practice of protecting and promoting health (Darkins AW, 2000).
- Telelearning: It is the training and education provided to physicians and other healthcare providers using telehealth as a medium.
- Working Relationship: It involves the building of trust, communication and understanding between the health professionals for mutual decision making for the implementation of the telehealth initiative.

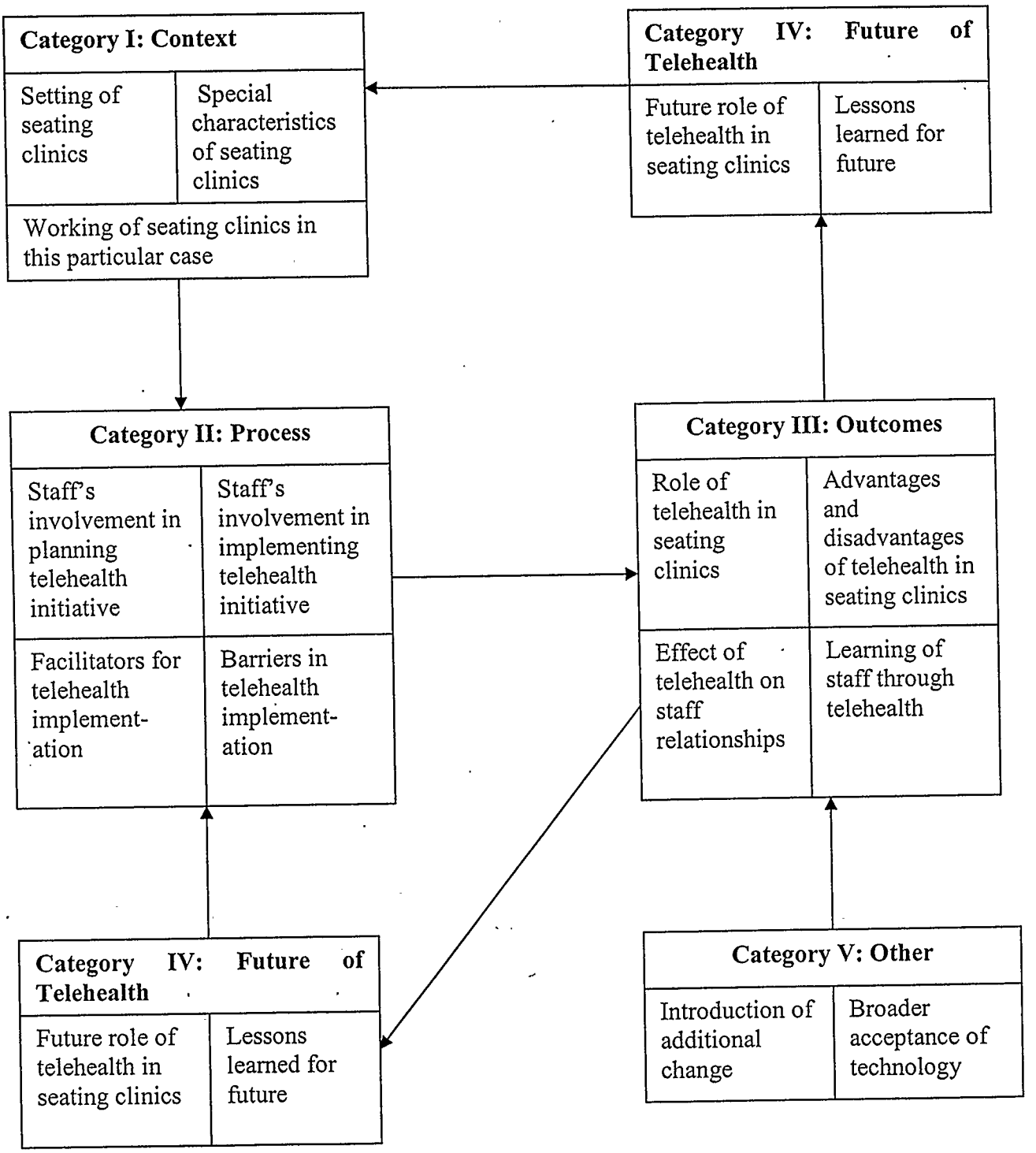
CHAPTER FOUR: RESULTS

All the interviews and observations were held in a congenial atmosphere. Staff members and managers, at both the ACH and the MHRH were very cooperative. Staff members openly discussed all the key issues and they shared their perspectives in detail. The only reluctance observed was in relation to the question regarding their telelearning experience in seating clinics. Staff at the ACH and both staff and management at the MHRH wanted to avoid giving any impression of being engaged in any formal training or learning during the introduction of telehealth in seating clinics. They only reluctantly discussed some informal sharing of knowledge that happened due to the difference in experience between the staff at both sites. The staff at the MHRH talked more about the need to see mutual learning as the correct way to address telelearning objectives. They thought that the knowledge at both sites should be valued equally and that the relationship between both the sites should be balanced.

In order to get an in-depth understanding of the ideas emerging from the data, a list of all the emerging themes was made. The related themes were then grouped into small sub-categories. Responses in each sub-category were then divided into four groups, according to the grouping of the respondents, in order to further analyze the patterns of responses. In the next step, related sub-categories were grouped into the following five main categories: context, process, outcome, future of telehealth in seating clinics, and others.

Together these themes, sub-categories and the main categories delineated findings that were relevant to the study questions. Figure 2 displays the relationships between the categories and the sub-categories that were identified in the interviews:

Figure 2: The relationship between the themes identified in the study, according to the categories and sub-categories



4.1 Category I - Context

This category contains themes related to the setting of seating clinics provided at the ACH and to the outreach areas. It contains the roles of the staff, institutions and regulatory bodies in providing seating services to clients. This category also contains themes related to the characteristics of seating clinics, which make this service special in terms of telehealth use. Table 1 shows the listing of all the themes identified under the category of context.

Table 1: Themes under the category of 'Context'

Sub-Categories	Themes
1.Setting of seating clinics	a. Staff's involvement in seating clinics at MHRH
	b. Working in multi-disciplinary teams
	c. Staff's involvement in administrative role
	d. Staff's involvement in seating clinics in other areas
	e. Staff's involvement beyond seating clinics
	f. Role of AADL
2.Special characteristics of seating clinics	a. 'Hands-on' nature of seating clinics
	b. 'Tactile' nature of seating clinics
3.Working of seating clinics in this particular case	a. Reasons for bringing children to Calgary
	b. Reasons for not having independent seating clinics in Medicine Hat

4.1.1 Setting of seating clinics

Statements of participants regarding the setting of outreach seating clinics between ACH and MHRH can be described under the following themes:

4.1.1.1 Staff's involvement in seating clinics at Medicine Hat

Most of the staff, both from the ACH and the MHRH were involved in seating clinics in their clinical roles. Some staff at the ACH and the MHRH also had coordinating roles. A physiotherapist and seating technician were visiting the MHRH for ten years to provide outreach-seating services.

> *"I'm involved there in the past for about 10 years. We have been going down there twice a year and I'm providing seating services in that area."*

Occupational therapists from the ACH were not involved in the outreach clinics, whereas their counterparts from the MHRH performed minor adjustments in seating devices, educated clients and families and took regular care of the clients. Managers were mostly involved in a supervisory and a strategic planning role.

> *"It involves supervising occupational therapy, physiotherapy and respiratory. So my involvement with seating clinics in past has been virtually nothing because it was coordinated directly by the therapists here and the ACH therapists. The only time I have been involved in coordinating outreach clinics is by telehealth because the clinics have been established historically going on for years and years and the commitment was to get the clinics organized whenever there is a certain number of clients on the list."*

4.1.1.2 Working in multi-disciplinary teams

Traditionally seating teams, both at the ACH and in outreach areas, have been multidisciplinary. These teams included a physiotherapist, a seating technician and an occupational therapist.

> *"On seating, I'm a member of the team. In every team we have a OT, PT and a seating technician. So I'm involved in that."*

For outreach clinics, staff from the different sites work together as part of a team. In outreach clinics with the MHRH, the physiotherapist and technicians came from the ACH, whereas the MHRH provided the occupational therapist.

> *"[I am] not [involved in outreach clinics in my coordinating role]. I [am involved] in a clinical role. One technician also goes there with me, and Medicine Hat provides the OT."*

Recently, with the introduction of telehealth, physiotherapy has also been included from the MHRH as part of the team. Another important development has been the introduction of physiatrist to be part of the seating team at the ACH, and efforts are being made to further define this role.

During the interviews, only the staff who were involved regularly with the outreach clinics from both the ACH and the MHRH, emphasized the importance of and the need to strengthen the roles of multidisciplinary teams. They indicated concern about the potential disturbance of equilibrium among different roles that the introduction of telehealth might incur. Staff not as directly involved in the outreach clinics, did not raise this concern.

> *"I have a comment here [about] why is it not that multidisciplinary in nature as it is in [traditional] seating clinic. I think it should be multidisciplinary both ways in Medicine Hat and here. You know, [a specific role] is the only one involved. Why is that because I think seating is a service but if we start looking at the function, [other roles] have different eyes."*

4.1.1.3 Staff's involvement in administrative roles

The managerial staff at the ACH mainly have a strategic role and are not involved in day-to-day activities. They are involved in overseeing the seating services between the ACH and the outreach site. Staff members coordinate day-to-day seating activities both at the ACH and the MHRH.

During the interviews, the staff members from Medicine Hat generally referred repeatedly to their administrative roles and sometimes emphasized the impact on the ability to participate in clinical activities.

> *"I'm responsible to provide physiotherapy services but my task is more and more administrative. I'm not doing a lot of patient care lately. So there are two other physiotherapists in CHADS [Children's Health and Development Services] program who are there to provide clinical services. My role is more and more administration than being present in seating clinic."*

4.1.1.4 Involvement with seating clinics in other areas

Some of the staff at the ACH were involved in conducting outreach clinics at Lethbridge, until the hospital there started their independent seating clinics. Other staff were involved in other programs such as 'augmented seating program' and fixing seating devices in Calgary schools.

> *"I think just as part of my toolbox when I see kids for augmented communication program, ... if I notice that the kids aren't comfortable in their seating systems or they have some issues, then I will direct that child to seating here to get assessment. So, the outreach is not assigned to seating per se, but that is an advantage because I do belong to seating, and I work as a bridge."*

> *"[I go to several schools to] fix what is broken or replace things. We don't do regular assessments. So schools call us and say we have six children and their seating systems need repair. So go with what we need to go with and fix that. So, we know what we are going to do there before we go."*

4.1.1.5 Staff's involvement beyond seating clinics

Staff at the seating clinics at ACH were also involved in many other programs such as teaching students from the Alberta Seating Education Program and from the University of Alberta. They were also involved in building links with the Augmented Communications Program.

> *"Some children I see only in seating clinics. So, I see them there only. Others I follow here in the augmented communication program. So, I encourage parents to come to seating clinics when I'm working here, so that we have a continuity of care. And some children I see in seating clinics and then I follow them through augmented communication programs because they have other issues using mouse for computer access and what not. We look at specialty controls and adaptation. It sort of bounces back and forth."*

The staff at the MHRH were also involved with the Children's Health and Development Services (CHADS) program and their services were distributed between therapy services and CHADS.

> *"Description of therapy services is slightly different from CHADS. CHADS is a community health project ... Therapy services is not under community health but mental health. Occupational therapy, physiotherapy and all these services are provided into CHADS, which is a different structure. Although the CHADS has speech therapy, developmental therapy and other such programs and is coordinated through community health, the staff and services in occupational therapy and physiotherapy are still provided through mental health... As to organizing the clinic, it is done by OT. In the original seating clinic, physio came from ACH and OT was provided by the CHADS program, so we never really had too much input because [ACH] provided the physio. So we never booked our time off. In this program, CHADS program, all the wheel chair issues are addressed by OT. Now with change to telehealth, we were involved last time in prescreening clinics. There was no physio from ACH, so we were there."*

4.1.1.6 Role of Alberta Aids to Daily Living (AADL)

Interviewees identified the AADL program as the key licensing body to allow the arrangement of seating clinics in any health facility in Alberta. All seating clinics function under an agreement with and proper guidelines from AADL.

> *"It's also the matter of Alberta Aids to Daily Living (AADL), which allows only a certain number of seating services in the province. Unless you have a huge need to have your own seating clinic."*

> *"They are the ones who set the standards for seating clinics. Our funding also gets approved through them. So we have a contract with them. I mean Calgary Health Region has a seating contract with AADL. So we have to abide by their standards."*

A summary of the issues identified under the themes related to the setting of seating clinics is provided in Table 2.

Table 2: Involvement of different groups in seating clinics

Themes	ACH - Mgmt	ACH - Staff	MHRH - Mgmt	MHRH - Staff
Involvement in seating clinics with MHRH	• Strategic and supervisory role • Designing outreach programs	• Coordinating and clinical roles • No involvement of OTs	• Managerial role	• Coordinating and clinical roles • Physiotherapist included after introduction of telehealth
Working in multi-disciplinary teams		• PTs, OTs and technicians • New involvement of 'physiatrist'		• OTs only • New involvement of 'physiotherapist'
Involvement in Aadministrative role	• Strategic and supervisory	• Coordinating	• Supervisory	• Coordinating
Involvement with seating clinics in other areas		• Seating clinics in Lethbridge • Alberta seating program •School programs		
Involvement beyond seating		• Augmented communications program		• CHADS
Role of Alberta Aids to Daily Living (AADL)		• Licensing and regulatory body		

4.1.2 Special characteristics of seating clinics

Some unique characteristics of seating clinics identified mainly by the ACH staff include the 'hands-on' and 'tactile' nature of the process. Staff thought that these two characteristics made it very difficult to have complete assessments done through telehealth or to use technology for regular seating clinics. A summary of issues identified under the themes related to special characteristics of seating clinics, is provided in Table 3, located at the end of this section.

4.1.2.1 Hands-on nature of seating clinics

During the interviews, generally all the staff members referred to seating as a very specialized and 'hands-on' procedure. They felt that it was important for the therapists to feel the pressure points themselves, as it was difficult to get an exact idea if someone else was doing the assessment.

> *"Seating is pretty much a hands-on process. You have to be there and you really have to put your hands on the client."*

> *"It is very difficult to say through telehealth if the child is really [uncomfortable] on seating, if he is providing the right pressure on one [side]. Lots of these things cannot be seen without getting your hands in and feeling pressure, if it is too much or too little. I mean over time you can teach it to someone else if this is the only way to do it, but hands on is the best way to do these things."*

4.1.2.2 Tactile nature of seating clinics

Some respondents talked about the importance of taking correct measurements and identifying the exact pressure points for building or adjusting the seating devices. Only some of the very active members of the outreach seating team referred to telehealth as a 'tactile procedure' and found it challenging to have it conducted via telehealth.

"You have to measure the pressure and the point and sometimes you have to do the pressure mapping if the client is having problems in seating system. You need to know where the pressure point is and where the child is putting more pressure. You have to see the direction of the pelvis and kind of balance it."

4.1.3 Working of seating clinics in this particular case

This category contains themes related to the working of outreach seating clinics between the ACH and the MHRH. A summary of the issues identified under the themes related to working of seating clinics in this particular case, is provided in Table 3.

4.1.3.1 Reasons for bringing children to Calgary

The two most important reasons, identified by the staff, for bringing children to Calgary were 1) the need for having custom-built equipment and 2) for children with highly complicated problems. Only some of the key staff members from ACH emphasized a continuous need for bringing high-need children to Calgary, even after complete implementation of telehealth initiative.

"If somebody needs custom seating, certainly at this stage there is no setup for that in Medicine Hat. So they'll have to do it here."

"we have to see who can provide better service and to me its like taking children to a general G.P or to a pediatrician. If it's a general problem, then you'll take the child to a GP, but if it's a complicated problem that you are worried about, then it is better to go to the pediatrician. We can take less complicated children because we do not have that volume and [that] kind of experience. So if I'm not sure that I'm the best person to provide the service, then its like a favor to the child and family that the child should be referred to ACH."

4.1.3.2 Reasons for not having independent seating clinics in Medicine Hat

The managers and staff members at both sites identified low volume, lack of equipment, shortage of experience, not having a technician, and difficulties in obtaining permission from Alberta Aids to Daily Living (AADL) as key barriers to having independent seating clinics in Medicine Hat. They also discussed the differences in the levels of seating services between the two sites and the problems faced by the MHRH because of having only Level-I seating clinics.

> *"I mean in Medicine Hat they do not have a seating technician. They sometimes borrow one who is responsible for adult services... It is also the matter of Alberta Aids to Daily Living (AADL), which allows only a certain number of seating services in the province."*

Differences were found between the opinions of staff members at the ACH and the MHRH. The ACH staff thought that the lack of trained staff and the shortage of resources were the main reasons for not having independent clinics at the MHRH, whereas the MHRH staff blamed the low volume of patients and the lack of dedicated staff. Also, only respondents at the MHRH supported the idea of separate seating clinics at Medicine Hat.

> *"Specifically with seating clinics, whenever we provide services outside of Calgary, we do not have resources like staffing or resources or actual property to provide specialty services. We also do not have a volume to provide these services directly."*

Table 3: References given by different groups regarding special characteristics of seating clinics and its working in this particular case

Themes	ACH - Mgmt	ACH - Staff	MHRH - Mgmt	MHRH - Staff
Special characteristics		• Hands on • Tactile • Difficult to conduct via telehealth		• Hands-on • Different levels of seating services
Reasons for bringing children to Calgary		• For custom-built equipment • For highly complicated problems • Continuing need of bringing children to Calgary even after implementation of telehealth		• For custom-built equipment • For highly complicated problems
Reasons for not having independent seating clinics in Medicine Hat		• Lack of trained staff • Shortage of resources • AADL's regulations		• Lack of resources like staff and facilities • Low volume of clients • Lack of support from vendors

4.2 Category II - Process

This category contains themes related to the planning and implementation of telehealth in seating clinics. It also contains themes referring to the facilitators and barriers to the implementation of telehealth in seating clinics. Table 4 lists the sub-categories and themes described under the category of 'Process'.

Table 4: List of themes under the category of 'Process'

Sub-Categories	Themes
1.Staff's involvement in planning telehealth initiative	a. Interaction with planners
	b. Involvement in planning
2.Staff's role in implementing telehealth initiative	a. Staff's role in implementation
	b. Communication between staff during telehealth sessions
	c. Staff's comfort with equipment
3.Facilitators for telehealth implementation	a. Willingness in outreach areas
	b. Stable staff
	c. Financial viability
	d. Proactive role of ACH
	e. Establishment of 'trust'
	f. Ownership of care
	g. Acceptance of change in staff
4.Barriers in telehealth implementation	a. Telehealth vs hands-on/face-to-face
	b. Relying on others' judgment
	c. Ownership of care
	d. Legal and licensing issues
	e. Problems with the equipment/technology
	f. Lack of willingness of staff to accept change
	g. Physicians' remuneration

4.2.1 Staff's involvement in planning telehealth initiative

This sub-category contains themes related to the interaction of staff members with the planners and their own involvement in the planning process. A summary of the issues discussed under these themes is presented in Table 5, located at the end of this section.

4.2.1.1 Interaction with planners

Most of the staff members identified people in coordinating roles and those responsible for the use of technology as being involved in planning the telehealth initiative between the ACH and the MHRH. No staff members had any interaction with the 'Child Telehealth Advisory Committee' or any other body responsible for planning the telehealth initiative in seating clinics within SACYHN.

> *"It has really been [the coordinating person for outreach services and technology] involved in most of the planning process. [Other manager] was involved initially but the things stopped after that."*

> *"Now we had some contact with [the coordinating person for outreach services and technology]. From Medicine Hat [the coordinating person for technology] is the main person and I think [another individual] has been involved more with the actual technical stuff with the equipment. So if we are getting echo or something, we'll call him and he'll fix it for us."*

4.2.1.2 Involvement in planning

Both staff members and managers pointed out that there has been a very limited involvement of staff in planning this initiative. Staff from the ACH have been more concerned about not being involved in the planning process than staff from the MHRH. Key staff members at the ACH also talked about the lack of understanding of planners regarding the actual purpose of the telehealth implementation. According to some staff members, the planners were thinking of establishing independent seating clinics at the

MHRH through telehealth, which was very different from what staff thought could be possible.

> *"Also I think they misunderstood about the thing that actually we are the seating service and there is no plan for Medicine Hat to have their own service. So this part was not clear or may be that I didn't make it very clear. This wasn't the plan that they will take over. It is just meant to make our plan work better and we will continue doing what we are doing now."*

The managers also identified that relying only on coordinators to communicate plans and decisions to the staff at the ACH and to the MHRH, was not a good decision. They all agreed that the involvement of staff in planning would have made things better and resulted in higher staff satisfaction rates. There was also general agreement that direct communication with staff members, would make the process of change smoother and would lead to better coordination from staff. Both the managers and staff thought that the fast pace of planning could be the reason for not having more direct communication with staff and for not having staff involved in the planning process.

> *"In the beginning there was [staff's involvement in planning] . But not a huge involvement, just to a certain extent."*

> *"I don't see that I have any participation at all except to know that it is happening and it is happening next week. Basically I was involved to that extent. Basically my boss told me through e-mail that this was happening"*

Staff thought that their involvement in planning would increase their job satisfaction and make the services better and smoother. They were also of the view that since the staff members working in a certain area are the best judges of their requirements, their inputs could improve the quality of the work. They also said that if

the staff was involved in the planning process, they could better anticipate the upcoming problems and remain prepared for future issues.

> *"There are certain things that they can't do if the staff is not involved. So certainly the people who are organizing telehealth have to involve staff to understand how service will be provided. Also staff is more satisfied if it is involved because they know that it is not a typical workday and if during the session some problems come up, they can take some time and try to work out those things because they know what kind of issues can come up. So, I think staff has to be involved all the way through. Specially in organizing the sessions, staff's input needs to be taken, like how the technician would do, how the clinicians work and how the other people will work."*

Table 5: References given by different groups regarding involvement of staff in the planning of telehealth initiative for seating clinics

Themes	ACH-Mgt	ACH- Staff	MHRH-Mgt	MHRH-Staff
Interaction with planners	• Key service managers and coordinators from the staff	• Managers responsible for coordination and technology	• Managers responsible for coordination and technology	• Managers responsible for coordination and technology
Staff's involvement in Planning	• Little involvement • Relying too much on coordinators • Lack of direct communication •Fast pace of planning	• Little involvement • Lack of understanding among planners about the purpose • Benefits of staff's involvement •Importance of direct communication	• Little involvement • Benefits of staff's involvement •Fast pace of planning	• Little involvement • Fast pace of planning

4.2.2 Staff's involvement in implementing telehealth initiative

This category contains themes related to the involvement of staff in implementing the telehealth initiative in seating clinics. Table 6 (located at the end of this section) summarizes the issues described under these themes.

4.2.2.1 Staff's role in implementation of telehealth initiative in seating clinics

Managerial staff from the ACH were involved in making connections between the staff and facilities at both sites. They were also involved in arranging resources and logistics for the services, apart from working on improving services.

> *"[I am involved in] bringing all this together. Booking a room, talking to [staff] to do it that way, talking to [manager] about the possibility of doing it. And I think to start the service, it was to listen to how it is being done and how it can be done differently. Knowing what I know about telehealth. So, it was applying that telehealth knowledge to the seating service."*

Only one staff member from the ACH had been involved in conducting assessments through telehealth. There was no plan to involve occupational therapists from the ACH in conducting seating clinics via telehealth. Both the occupational therapists from the MHRH have been involved in telehealth along with a physiotherapist, who was not involved in seating clinics before the introduction of technology.

> *"That's pretty much the same. I was the assessor of the clients using telehealth. So its pretty much the same role."*

4.2.2.2 Communication between staff during telehealth sessions

Most of the staff from the MHRH who were involved in telehealth sessions thought that communication was same as in face-to-face sessions.

> *"I think it went really well. We were communicating just as we were working face to face. The interaction was really good. We could see the child and whatever I wanted to see, they were moving the camera there. They were quite good at it. They could answer my questions and show me whatever I needed to see. So the interaction between the health professionals went exactly as it was face-to-face. Its just that I had to ask them to do [the assessment]"*

During the interviews, the staff at the MHRH and management at the ACH referred to the importance of developing telehealth etiquettes. Key managers at the ACH also emphasized the need for training staff in these etiquettes.

4.2.2.3 Staff's comfort with equipment

Most of the staff interviewed at the ACH did not have experience in using telehealth equipment. The staff who had experience, found the telehealth equipment to be comfortable. Some of the other staff thought that it would be mentally challenging for the staff initially to learn a new way of providing services.

> *"It worked well. I think telehealth worked the way we thought it [would]. We didn't have any problems really with the equipment. A bit of delay was a problem but we managed."*

> *"I think initially my perception is that it could be different because its new and therefore staff will be challenged mentally and staff can see that as [a] lot of work and the benefits are not that apparent."*

Table 6: References given by different groups regarding involvement of staff in the implementation of the telehealth initiative for seating clinics

Themes	ACH - Mgmt	ACH - Staff	MHRH - Mgmt	MHRH - Staff
Staff's role in implementation	• Making connections between staff • Arranging resources and logistics	• Assessment • Roles remaining the same	• Coordinating	• Clinical
Communication between staff during telehealth sessions	• Satisfactory communication • Telehealth etiquettes	• Same as face-to-face		• Good communication • Telehealth etiquettes
Staff's comfort with equipment		• Comfortable • Could be mentally challenging	• Worked well	• Worked well

4.2.3 Facilitators for telehealth implementation

Important facilitators for the implementation of telehealth in seating clinics were the financial viability for outreach facilities, the proactive role of the ACH in implementing telehealth, the need and willingness in the outreach areas, stable staff with good working relationships and the commitment from senior management. During the interviews, managers from both sides described each other's role as a facilitator for telehealth implementation. Table 7 (located at the end of this section) summarizes the issues described under these themes.

> *"Financially I think it is very viable in the region as a whole. It is very cost saving and it also saves families and clients, lots of resources by not having to go to Calgary or wherever they might have to go. I don't think of anything else."*

> *"We share the same manager and she has asked us to explore options for telehealth. So we have kept it on the back of our mind, so if we feel that we can do it, then it has to go in an organized way."*

> *"That's why we were less stressful in our first clinic, because if I do something ridiculous, [ACH staff] will just say [MHRH staff] please do it. I would have been stressed if there were other people. Like when I was moving the camera to bring it closer, [ACH staff] was saying [MHRH staff] you are making me motion sick with this kind of juggle. Since she was laughing, it didn't make me stressful and I said I'll try to keep it steady. If anyone else would have said that you are juggling, I might have felt more incompetent, but with [ACH staff] we have a good working relationship."*

Some other facilitators were described as the mirror images of the barriers, such as: establishing trust; sharing ownership of care; and acceptance of 'change'.

Table 7: References given by different groups regarding the facilitators for the implementation of telehealth in seating clinics

Themes	ACH - Mgmt	ACH - Staff	MHRH - Mgmt	MHRH - Staff
Directly described facilitators	• Stable staff • Willingness in outreach areas • Commitment from senior management	• Stable staff	• Financial viability • Proactive role of ACH • Commitment from senior management	• Stable staff
Indirectly described facilitators (mirror images of identified barriers)	• Importance of trust • Acceptance of 'change' by staff	• Defining ownership of care	• Defining ownership of care	• Importance of trust

4.2.4 Barriers to telehealth implementation

The following are the barriers identified by the staff and managers regarding the implementation of telehealth in seating clinics. Table 8 (located at the end of this section) summarizes the issues described under these themes.

4.2.4.1 Telehealth vs hands-on/face-to-face

Staff rated "hands-on" to be a better way to conduct seating clinics and did not think that telehealth was a good substitute for "hands-on." The staff thought that telehealth should be used as a support for pre-assessments and follow-ups, but not for regular clinics.

> *"I think it can help us. Although I don't think it can replace the hands on. Seating is a very tactile process. Telehealth can help us prepare more for the clients needs. But I would like to see more hands on and taking some help from telehealth."*

Managers at the outreach facility appeared undecided about the potential of telehealth in conducting regular seating clinics. They did not think that telehealth could replace hands-on in the regular practice of seating clinics.

> *"It might happen. But I don't think that anything is a real substitute for face-to-face communication in seating clinics. Also for children, I mean, for some it is very fascinating to talk through the screen but for others and for parents it is always good to explain directly to the parents and holding the child and assessing them directly makes a difference. So, I mean its not a substitute for hands-on"*

Only the senior level managers at the ACH thought that telehealth could replace "hands-on" completely.

> *Ya I hope (telehealth could replace hands-on). Although people always want to do more hands-on, I personally always think that we can see lots of patients through telehealth and in this way we can provide an ongoing care."*

4.2.4.2 Relying on others' judgment

The issue of relying on the judgment and measurements taken by the staff working in the outreach areas was also identified as a difficult shift along with the view that seating is mostly a "hands-on" and "tactile" procedure. It was considered important for the person doing the assessment to be experienced and trained in this highly specialized technique.

> *"We certainly can trust their judgment and then make our clinical decisions on their judgment. It's easier if you have a computer and you see the pressure mapping and base your decision on that. It's hard if you have always, always done hands on to let other people do it. The people in Medicine Hat are quite experienced and there is no problem in experience but sometimes you want to look at different things from other angles and have different solutions."*

It was also considered important that the staff at the ACH should be willing to change their traditional way of providing care and trust the capabilities of the outreach staff, which included both their knowledge and experience.

> *"It is just the matter of trust. I have to use your assessment and your measurements to make my judgment. They are also health care professionals. We can't basically do it. You see it a lot. Like a person has an x-ray here and they go to Calgary and has an x-ray there too. You have to trust. I think that will change."*

Some of the managers at the ACH also emphasized the importance of developing descriptors or standards, which could help the outreach staff in communicating the measurements more objectively. This could also help in developing trust between the staff.

> *"For me I think it gets down to trust which is an issue for many people. Some people just don't trust other people and therapists are renowned for that. They would read assessments of other people on paper but they re-do it to ensure what it is. I think the biggest challenge around this is to be able to feel spasticity. I mean spasticity or muscle tone, how it changes. So*

it would be crucial to have better descriptors or ways how we describe what we are feeling."

4.2.4.3 Uncertainty about the ownership of care

Participants at both sites raised the issue of ownership of care. The respondents had totally opposite views about the ownership of care provided through seating clinics. The respondents at the ACH were of the view that since they had the expertise to provide seating care, they were responsible for the services provided at the outreach centers.

"In the end we are the people providing the service and we are the people providing the equipment, but it's done in consultation with the therapists at the other end, the treating therapist."

On the contrary, the respondents from the MHRH thought that since the staff at the outreach center provided continuous care for the child, of which the seating clinic was just one component, it was their responsibility to provide proper seating services to clients.

"There are lots of possibilities and the balance will still rest here because we are involved with these clients regularly. These clients just do not have seating problems. They have multiple problems and they are members of our children's health and development program. So they are getting regular OT, PT and speech therapy whatever. So, on daily basis, we maintain most of the responsibility of the clients."

4.2.4.4 Legal and licensing issues

Staff at the ACH and managers at the MHRH also referred to legal issues in providing care to children in different areas in terms of responsibility of care. They also pointed out the problem of licensing to provide care to children in other provinces.

"Challenges [include] legal issues like who is responsible for the client."

"Another aspect is the general education. Risk in that is that, like in augmented communication clinics, looking at a child in BC and we can't do that without having license in BC. So, we have to see where the child is living."

4.2.4.5 Problems with the equipment and technology

Problems with visualization were identified as the most important barrier in providing proper care to clients through telehealth. Having proper color contrast between the child's clothes and the chair was the mostly frequently identified constraint by both staff and managers. The staff at the MHRH also identified the need for a second staff person in the room to hold the cameras in the right positions to perform assessments and measurements at the same time. The managers identified the need for availability of technical assistance during the sessions to avoid or manage any problems.

> *"Our camera still works through the phone line so at some places it was blur. Although most of it was clear but it is kind of difficult if the child is moving. Then you have to control the movements of the child and it was almost impossible to see when it was a blur."*

During the interviews, all staff and managers commented upon the lack of color contrast during the initial sessions. This was a problem in assessing the clients properly. Only the ACH management referred to the importance of having technical assistance present during the sessions.

> *"We had some feedback about the clients about these technical things like they were wearing black pants on a black cushion on a black chair, then it is difficult to visualize."*

> *"I could see that it was a really tiring day and the day later I talked to Medicine Hat people to see if they were tired, because I was tired and I had just been watching. They were really exhausted. Because you had to concentrate on that screen and every now and then I could see [the staff] leaning and trying to look the image from a different angle, but you could only see what you see. It misses that third dimension and that is what is frustrating using it."*

4.2.4.6 Lack of willingness of staff to accept change

Managers, especially at the ACH, were concerned about their staff not accepting change, and they described it as a key barrier to telehealth implementation.

> *"But I think that there is all kind of applications that the people are not willing to do beyond what they would normally do. That's the hard part"*

The managers at the ACH thought that it was important for the staff to see a direct benefit of any proposed change to their traditional way of providing a service, before they would agree to make any amendments. The technology provided a clear benefit to the outreach centers and was, therefore, accepted more easily in those areas, compared to the primary sites.

> *"I guess it is about change. I mean here, I find it a sensitive issue. I think that what has not been embraced because we have done our evaluation of outreach framework and in various regions and what we found that in this region, nobody has really embraced the concept of outreach. The other region has embraced this concept really because they see the gain right away. This site doesn't see the gain. They see that you are being asked in a very busy world to work differently. Thank you very much; they just don't want to do. They just want to do it the way they have been doing for years. So I'm finding that change is harder here than it is there and I'm finding that there is reluctance here in using the technology as a way to do the business differently. That's my sense."*

4.2.4.7 Physicians' remuneration

The management at the ACH also referred to 'physicians' remuneration' for their time allotted to telehealth, as an important issue for the future.

> *"The other ... is remuneration for the physicians. If [a physician] sits on any of these sessions, the amount of money that [he/she] can bill for these sessions is pretty low [compared to] what [he/she] can make if [he/she] sees the child face-to-face. So that's being worked on at the provincial level, but at this point it is a disincentive. But the leadership here and I mean the medical leadership is very committed to providing outreach service and feels that we need to work very hard, acknowledge those disincentives and work in-house what we can do around that."*

Table 8: References given by different groups regarding the barriers in telehealth implementation in seating clinics

Themes	ACH - Mgmt	ACH - Staff	MHRH - Mgmt	MHRH - Staff
Telehealth vs Hands-on/Face-to-face	• Telehealth can replace hands-on completely	• Telehealth not a substitute, but a support to hands-on	• 'Hands-on' to remain dominant	• Telehealth not a substitute for hands-on
Relying on others' judgment	• Importance of 'trust' • Development of procedures	• Importance of experience • Technology not helpful in relying on others' judgment		• Importance of 'trust'
Uncertainties over the ownership of care		• ACH as the primary care provider	• Balancing the roles of ACH and MHRH • MHRH staff to maintain responsibility	
Legal and licensing issues		• Licensing issues	• Legal/liability issue	
Problems with the equipment and technology	• Importance of technological assistance • Lack of third dimension in vision	• Importance of color contrast • Blurred vision due to phone lines	•Importance of color contrast	• Importance of color contrast • Importance of having at least 2 staff to use equipment properly
Lack of willingness in staff to accept change	• Not willing to do more • Not accepting the concept of outreach • Reluctance in using technology			
Physicians' remuneration	• Issue for the future			

4.3 Category III -Outcomes

This category contains themes related to the impact of using technology to provide seating services to clients in outreach areas. This category refers to the roles, advantages and disadvantages of telehealth for staff, clients and services. This category also contains themes related to telelearning and team-building. Table 9 shows the listing of all the themes identified under the category of "Outcomes."

Table 9: List of themes under the category of 'Outcomes'

Sub-Categories	Themes
1. Role of telehealth in seating clinics	a. Role for the staff
	b. Role for the clients
	c. Role for the service
	d. Other roles
2. Advantages of using telehealth for seating clinics	a. Advantages for the staff
	b. Advantages for the clients
	c. Advantages for the service
3. Disadvantages of using telehealth for seating clinics	a. Disadvantages related to the technology
	b. Disadvantages for the staff
	c. Disadvantages for the clients
4. Staff relationships and effect of telehealth	a. Existing relationships
	b. Effect of telehealth
5. Telelearning in seating clinics	a. Learning of staff through telehealth
	b. Barriers to learning

4.3.1 Role of telehealth in seating clinics

I asked the question regarding role of telehealth in seating clinics, separately from the question related to the advantages of technology. The following roles of telehealth in seating clinics were described by the interviewees, which have been distributed to the categories of staff, clients and service. Table 10 (located at the end of this section) summarizes the list of issues described under these themes.

4.3.1.1 For the staff

Staff reported that with the introduction of telehealth, they could assess the clients before traveling to the outreach centers and could therefore be better prepared to deal with any problems. Through this process of 'prescreening', staff got a better idea of what needed to be done and could take the right tools with them. It also helped in making the staff at the ACH and the MHRH more organized in their work and in saving time on the assessment.

> *"It was an opportunity to assess the children before we went to Medicine Hat. So in order for us to be better prepared when we get to Medicine Hat, we have the right tools and materials to make some changes in the seating systems."*

> *"I mean the support and other things needed for the wheelchair or the seating system like the chest butterfly, and we haven't realized that one child has, if we go there and we find that their's is worn-out or is broken or we haven't taken with us the right size, we might have to come back and send those pieces there and then they can get someone to fix. By [using] telehealth we know it from here and we take any broken pieces from here."*

> *"We also book shorter sessions in telehealth if the child does not need much work. We used to book 45 minutes to 1 hour but we booked half an hour for these sessions."*

4.3.1.2 For the clients

Using telehealth could reduce traveling time and discomfort for the clients by avoiding trips to Calgary for minor problems. The staff at the MHRH could connect with the staff at the ACH through telehealth and fix the child's problem if possible. In this way the clients could have more frequent consultations with staff at the ACH. Another big advantage for the clients was to be seen in their home environment, which makes them more comfortable.

> *"They will [only] have to come to Medicine Hat and most of them live close to the regional hospital. It's quite an easy trip and they don't have to prepare too much for that. So overall it helps."*

> *"So with telehealth actually, we can look at those children beforehand and do proper scheduling and bring proper equipment and preventing some families to travel to Calgary or some families to come to Medicine Hat when they actually need to go to Calgary."*

> *"I see telehealth to be one of the most important things to save a trip or travel time for these clients. We have 2-3 children who cannot travel to ACH because they are very fragile children and they are maintained at home most of the time. So the parents would only go to Calgary if it was very significant or they have to follow for other problems because transportation is such an issue for them. So far the child for whom we saved a trip belonged to a foster home. They have 2 high-need children in that foster home and it is a problem for the foster parents to drive a child all the way to Calgary because they have to look after other high need children and it is very distracting for other kids. So I think saving a trip doesn't sound a big deal but it is a major convenience. So because there were measurements taken before hand, they were able to do it through telehealth videoconference and it saved a trip to Calgary. For two other children, they didn't need much."*

> *"if something is quick fix, like if cushion is not fixed the right way, I can see that through telehealth and I can ask them to fix it and can say no that they are fine and they don't need to travel and they have a quick fix. Sometimes children come with problems, which seem huge but actually they are not. If I see that the back is upside down, I can ask people there to get a quick fix. It saves a visit for such things that have a quick fix."*

"We just go there once every 6-9 months, so there is a potential for more timely service, may be every 3 months."

4.3.1.3 For the service

Through prescreening and better preparation, ACH staff could make their visits to the MHRH shorter and this would save costs to both the Palliser and the Calgary Health Regions. Telehealth could also help in building relationships between the ACH and the MHRH, as well as with other centers.

Only staff members talked about 'cost-saving to health regions' and building relations with other community teams as a role of telehealth. Also, only the managers, both at the ACH and the MHRH, talked about the role of telehealth in building relationship with other hospitals and enhancing coordinated care.

"But sometimes you know if people are coming from ACH, its how their system works that they work seven and three quarters of hours a day and if they work any extra, it goes into their overtime, which means double pay. So, we try to work it out that way that therapists work 7.75 hours a day. We start Tuesday afternoon so that they can drive from Calgary. We work whole day Wednesday and then half day on Thursday, so that they can reach there before the end of the day. So if we can use telehealth to take-out [a] few children from the list especially on a busy day, it works out so that we do not have to go into overtime. If we need we can do that but then it will be very expensive for the system."

4.3.1.4 Other roles

Some staff at the ACH also thought that perhaps there is no role for telehealth in seating clinics and it has been implemented only because management was trying to find some application for the technology.

"I mean, to be quite honest, some of my impression has been that [the] telehealth system was in place and they were looking for ways of using it."

Table 10: References given by different groups regarding the role of telehealth in seating clinics

Themes	ACH - Mgmt	ACH - Staff	MHRH - Mgmt	MHRH - Staff
Role for staff	• Better prepared	• Better prepared • Pre-assessment • Saves trip • Saves time	• Better prepared	• Better prepared • Pre-assessment • Saves trip • Saves time
Role for clients		• Saves travel for special needs children • Less discomfort • Care close to home	• Saves travel for special needs children • Less discomfort • Easier for foster parents	• Saves travel for special needs children • Less discomfort
Role for service	• Staff more organized • Increasing relationship between hospitals	• Cost saving • Linking community teams	• Better scheduling • Increasing relationship between hospitals	• Better scheduling • Cost saving • Linking community teams
Other roles		• Questioning telehealth's role		• Admin. support

4.3.2 Advantages of using telehealth for seating clinics

Asking this question separately from 'roles of telehealth', provided evidence of which roles of telehealth the staff also perceived as advantages. As with roles, the advantages of telehealth were divided into the categories of staff, clients and service. Table 11 summarizes the list of issues described under these themes.

4.3.2.1 Advantages for the staff

Better preparation of staff before visiting the outreach clinic was repeatedly identified as an advantage of using telehealth. Other advantages identified in the interviews were time saving for the staff, visualizing the problem to give a second opinion rather than discussing over phone, getting an immediate second opinion, learning and involvement of other staff such as physiotherapists from the MHRH in seating clinics.

> *"When we went to Medicine Hat this time, we had the right equipment and we didn't have to take tons of equipment with us. And it also saved time for Medicine Hat people because if we send some stuff from here, they have to arrange someone to fix those things. So, we could do that ourselves. Also it was time saving for us since we could eliminate kids that we didn't need to see on our visit."*

> *"In this way it also saves time for us that we don't have to tell people there that we can't see you today."*

During the interviews, only the staff at the ACH referred to 'visualization' as an advantage of using telehealth, rather than discussing a client's condition over the telephone or via fax. Other advantages were identified by all groups.

> *"The visual thing helps a lot and I'm always more comfortable with that. Especially when people at the other end do not use the same terminologies that you are using. Seeing it is a huge advantage. Getting a written list or a phone call from Medicine Hat doesn't give you a very clear picture."*

4.3.2.2 Advantages for the clients

The main advantages for the clients were avoiding travel to Calgary by prescreening and fixing minor problems, providing easier access to the service and seeing children in their local environment.

> *"That is the way I'm looking at it. It saves time and travel to the children. When we assess them through telehealth we know which children do we need to book when we go there. It's helpful because we don't have to call all of them to regional hospital and then tell some of them that we can't see you here."*

> *"Advantage would be to be able to see children in their own environment and it's better to see in their home environment because we can't replicate that in the hospital."*

Another identified advantage was the frequent involvement of parents in the care of their children by conducting seating clinics through telehealth.

> *"We took a conscious effort to invite parents. We set the screen in such a way that the therapist on the other end could see the parents as well or actually you can see expressions on their faces as well. They may say that they agree to it but their body language might be saying something else. So we made a conscious effort to include the parents."*

4.3.2.3 Advantages for the service

Key advantages for the service were more involvement, information and autonomy for the outreach staff, smoother running of seating clinics, possibility of linking with community teams, building working relationships with the hospitals, sharing resources and getting quick help, discussing each child with the outreach center before discharge and getting better administrative support.

During the interviews, only staff members at the ACH and the MHRH referred to 'linking with community teams' as an advantage of telehealth. Other advantages were mentioned by all the groups.

"[We could see] other people in neuromotor program and we have a feeling that lots of children who come from different areas to the neuromotor clinic, can also be seen by seating program and seating technician can tell the family about any problems or if the child has outgrown the system. It would be a much better and timely way to deal with their problems."

Table 11: References given by different groups regarding the advantages of telehealth in seating clinics

	ACH - Mgmt	ACH - Staff	MHRH - Mgmt	MHRH - Staff
Advantages for staff		• Better preparation • Time saving • Visualization of patient's problems	• Involvement of more staff	• Better preparation • Involvement of more staff
Advantages for clients	• Saves trip	• Saves trip • Time saving • Serving children in local environment		• Saves trip • Time saving
Advantages for service		• Prescreening • More information for outreach staff • Enhancing Linkages with community teams and hospitals		• Prescreening

4.3.3 Disadvantages of using telehealth for seating clinics

Most of the disadvantages identified were related to anticipated problems with the equipment. The ACH staff also mentioned lack of 'hands-on' while doing the pre-assessments as a disadvantage. Difficulties in communicating with parents and clients, lack of a team-building environment, busier schedules and problems in understanding the measurements properly, especially while dealing with multipli-disabled children, were also identified as key problems. Table 12 (located at the end of this section) summarizes the list of issues described under these themes:

> *"It could save resources for Palliser Health Region. But it was difficult for us because it was a long day and then we had to travel back at lunch time, or after lunch."*

> *"So it was time-saving. But if you add the time with telehealth and the time going there, it probably takes the same time. It probably just saves a night at Palliser."*

Finally, a fear of having an extra trip for the child if the technology was not working properly or if the problem was obvious enough for the child to be taken to Calgary, were also identified as the disadvantages of introducing telehealth in seating clinics.

> *"If we want to put time into it and then someone else is doing it and then if it doesn't work we have to fix it again, it's not useful. It may save an hour of time, but I don't know."*

> *"So if the connection is not working properly between the team here and the team on-site, things can fall apart. Then the families would see it as a disservice because [for them] to come to hospital there and then have to come in again or they have to come to Calgary rather than coming to Calgary directly. May be this could happen. There are 50-50 chances."*

During the interviews, it was interesting to note that only the staff at the ACH talked about 'lack of hands-on during the assessment' as a disadvantage for telehealth.

Also, only the staff at ACH were concerned about 'lack of team-building potential' of telehealth.

> *"As far as proceeding with that, you have to put your hands to really feel where the bones are and see which part is rubbing and what kind of range there is. Telehealth can show you but it can't tell you if they have adjusted everything properly from one end to another. You can't be very sure. Senses comes into play and you can't use yours because they are doing it at the other end."*

> *"for straight forward things it may be OK, but some children are multipli-disabled and its very difficult to do things on telehealth."*

Table 12: References given by different groups regarding the disadvantages of telehealth in seating clinics

	ACH - Mgmt	ACH - Staff	MHRH - Mgmt	MHRH - Staff
Related to technology		• Problems with vision	• Problems with vision	
For staff	-No hands-on	• No hands-on • No team-building • Difficulties in understanding the assessment		
For clients		• Extra appointment • Communication with clients		• Extra appointment

4.3.4 Staff relationships and effect of telehealth

This subcategory describes themes related to the existing status of relationships between the staff involved in the outreach seating clinics between the ACH and the MHRH and the perceived effects of telehealth on this relationship. Table 13 (located at the end of this section) summarizes the list of issues described under these themes:

4.3.4.1 Staff relationships

Planners and staff from both sides identified good, long-standing working relationships between the staff at the ACH and the MHRH. They identified that the same staff has been working for about ten years and have developed a strong team. It was also mentioned that they had a mutual respect for each other's knowledge and experience.

> *"The relationship with them has been excellent. We have been working with them for a number of years and we have developed a good working relationship with them."*

> *"I thought [staff at ACH and MHRH] worked really well. There seems to be really nice mutual respect. They seemed to understand each other's role and I thought that when you get down to the front line working together for the family, they worked really well."*

4.3.4.2 Effect of telehealth on relationships

During the interviews, it was observed that only the managers at ACH thought that telehealth would strengthen staff relationships and would bring change in attitudes. Also, only the management at the ACH thought that telehealth would bring more autonomy to the outreach staff in patient care.

> *"What I see is that they have a potential to strengthen because in the past only one or a couple of people were actually going there to do the seating clinics but I think there is a potential to get more staff involved at both ends to be involved in the telehealth sessions. So it helps in increasing the trust and building the relationship where you want."*

"I would see that potentially but it would take time to become from more of a paternalistic kind of relationship between therapists [at ACH] and therapists [at MHRH], [where] we decide and tell you what to do. There will be potentially more sort of a congenial or holistic kind of approach where their ideas and our ideas are put together and come up with the best idea. We want Medicine Hat to feel more confident and more valued and [for] them to be viewed as having greater knowledge."

Staff at both the ACH and the MHRH thought that the autonomy and relationship would remain the same. The staff at the MHRH further emphasized that the change in autonomy could only come if telehealth was not restricted to pre-screening.

"From the screening, I don't think that's a big change. We were already doing lots of hands on. It will change if the focus changes from screening, to staff in Calgary is always going to stay in Calgary. It will be a big change. A huge change. Then there will be more autonomy."

Some of the managers also saw the potential for relationships to grow in areas beyond seating clinics.

"So, with the clinical application of telehealth in pediatrics in Medicine Hat, there is a huge opportunity and I think that the relationships are improving tremendously because they can see each other and seeing each other, really changes the dynamics of the relationship. So I think what we are doing with Medicine Hat really is supporting the continuum of care very nicely, where this is the tertiary center and they are the regional center that provides the community based ongoing support. And we are beginning to see the complex children that they are not discharging them, like they have a teleconference tomorrow to discuss a complex child before the child actually goes to Medicine Hat and the whole team that is going to manage the child in the community is going to meet our team, managing that child in his very acute phase. So I think that it has done a tremendous amount in terms of relationship building."

Table 13: References given by different groups regarding the relationship of staff involved in seating clinics

Themes	ACH - Mgmt	ACH - Staff	MHRH - Mgmt	MHRH - Staff
Status of working relationships	• Excellent and long standing relationship	• Good and long standing relationship	• Good relationship with mutual respect	• Good and long standing working relationship
Effect of telehealth on relationships	• Strengthening of relationships	• No effect		• No effect

4.3.5 Telelearning in seating clinics

This category contains themes related to the role of telehealth in promoting learning during seating clinics. This section also discusses the facilitators and barriers to adopting telelearning for seating clinics. Table 14 (located at the end of this section) summarizes the list of issues described under these themes:

4.3.5.1 Learning of staff through telehealth

All staff and managers from both the ACH and the MHRH identified a huge potential for learning because of the difference in experience between staff at both facilities.

> *"Therapists there at ACH provide pediatric seating services on a day-by-day basis, so their experience is surely much more than the staff here"*

But, the managers at the MHRH and staff on both sides pointed out that learning had never been the primary objective of the telehealth initiative in seating clinics.

> *"I think there is [learning], but we are not using it for this purpose at this point. We didn't get a chance to talk about that but there is a potential. Basically it is being used for screening."*

In contrast, managers at the ACH described learning as the primary objective of introducing telehealth in seating clinics. Continuing education was identified as a crucial need for the staff to develop trust in each other's skills and judgment. Managers at the ACH described a need for continuing education through telehealth and also in arranging 'telelearning meetings' with other areas using seating clinics.

> *"I don't know if we are doing that much [of learning] in seating area but I think that there is a potential certainly. In many other areas, different places have been connected through telehealth for teaching sessions and educational programs. In seating, it is a very specialized area, very few therapists are specifically working in that, but we can have seating rounds for different cases and people can have multiple opportunities to provide their ideas."*

"Ya, I think there is a role for [telelearning sessions]. May be not on monthly basis, but on quarterly basis. We can have seating telehealth rounds with each center highlighting their difficult cases and this way learning can go on. It might happen that every center may develop their own favorite way of dealing with seating clients, favorite equipment that they would like to use. So that would be a great opportunity to develop a more practical approach to see how other centers are doing, especially like Vancouver and see what new or innovative things they are doing and then apply here and vice versa or are we doing exactly the same."

Staff were generally very reluctant to talk about the issue of learning and it appeared that they did not want to create the impression that the ACH has the intention to teach staff in the outreach areas. Staff at the MHRH talked more about mutual learning than one-way teaching. According to them it is important to value the experience and knowledge of outreach staff. Only the occupational therapists, both from the ACH and the MHRH talked about 'mutual learning' as an important role of telhealth.

"So we have to see that the resources in the communities are adequate and if there is application as far as providing education. Sometimes, clinicians in communities are well versed and they don't need education, but collaboration."

4.3.5.2 Barriers to learning through telehealth

The most commonly identified barrier to learning through telehealth was the concept in the minds of staff at the ACH and the MHRH, and managers at the MHRH, that learning was not the main objective of implementing the telehealth initiative. They thought that service provision to the clients had been the primary issue and staff development came secondary to service provision. Some of the staff at the ACH described telehealth as not being a good medium for learning, especially because of the problems with visualization. They also thought that telehealth could build the experience needed in the staff working in outreach areas because of lack of "hands-on" and the problems with visualization, such as the absence of three-dimensional view.

"Right now we are using it more for service provision and in future it may have more role in staff development but staff development comes secondary to service provision."

"So whenever we have contact there is some learning going on but its not designed. Like video conferencing is not designed to give us education or experience."

Another identified barrier was the risk of over-generalization of staff's recommendations to other similar patients.

"Another risk ... [is that] sometimes it can be over-prescribed. Seating clinic could prescribe something for one child and it could be used for other children because seating clinic said that. This in general education can be over generalized without realizing that it is a specific advice for that specific child."

Table 14: References given by different groups regarding the prospects and barriers of telelearning in seating clinics

Themes	ACH - Mgmt	ACH - Staff	MHRH - Mgmt	MHRH - Staff
Scope of learning of staff through telehealth	• Difference in experience • Learning as a primary objective • Importance of tele-learning meetings	• Difference in experience	• Difference in experience • Equal status of both sides	• Difference in experience • Importance of mutual learning
Barriers to learning		• Learning not a primary objective • Risk of over generalization	• Learning not a primary objective	• Learning not a primary objective

4.4 Category IV - Future of telehealth in seating clinics

This category contains themes related to the future use of telehealth in seating clinics and lessons learned in order to improve the provision of seating services through telehealth. Table 15 (located at the end of this section) summarizes the list of issues described under these themes:

4.4.1 Future role of telehealth in seating clinics

Most of the statements about the future of telehealth in seating clinics came from managers at the ACH and the MHRH. It was hoped that telehealth would be used for booking individual clients and in dealing with them on a case-to-case basis. The potential of telehealth in linking various sites across southern Alberta to provide seating clinics through telehealth, was also discussed. The respondents also hoped that telehealth would be used for arranging regular seating clinics and conducting complete assessments by using the technology.

During the interviews, only the managers at the ACH and the MHRH, talked about using telehealth for providing consultation to individual clients, as being the future of telehealth.

> *"We started with screening but I can see a child who basically had seating provided in the last clinic and has a 3-4 month follow-up, then they can have an individual client booking rather than a whole day booking that they had for screening. For the client it can be on the case-to-case basis. I see that we can provide more services in future."*

> *"And so the hope is that over time they will not pile them all up and wait but instead they will do one by one, using the expertise here to try to trouble shoot more rapidly. They'll bring the child in a room there, wondering about what to do, so they'll call [staff at ACH], she hooks up and then they can look at the child in seating system and figure out something they can do there more immediately or whether the child has to travel or whether he can wait until [the ACH staff] goes down. That is*

what I'm hoping to happen that they'll get into a habit of doing these things on an as-needed basis and immediately."

4.4.2 Lessons learned for the future

Some of the lessons learned for future programs of using telehealth for seating clinics are as follows:

4.4.2.1 Training staff in telehealth

No training was provided to staff members to conduct seating clinics through telehealth. A shortage of time to plan and implement the telehealth initiative was given as the most important reason by the managers. One manager also blamed lack of experience of planners and staff in telehealth as a reason for overlooking this important step. One of the managers at the ACH was in negotiations with somebody to arrange the training session.

"I think its good to have an opportunity with the staff to sit and discuss because it's a whole different game when you are doing it through telehealth, how do you see, how do you make that change from face-to-face. It probably will be a good opportunity to develop some telehealth etiquettes and basic principles to find out what's the difference between an excellent telehealth session and what is just OK. Might be worth having a dialogue between the centers, across the providers, in order to make it work better."

4.4.2.2 Utilization for short distances

Many staff members, especially those from the ACH, thought that telehealth would be better utilizatized in areas where accessibility was a major barrier in the provision of services to the clients. They said that the telehealth could be of more benefit if the travel time was about 8-10 hours between the primary and the outreach facility. They suggested that a 3-hour distance from Calgary to Medicine Hat did not justify the use of telehealth, particularly when some clients were prepared to travel.

"I don't think it is possible with telehealth, but I don't know because I don't have any experience with telehealth. I can see that if somebody is way up north, then telehealth is a better way to communicate and build relationships."

"So if we are talking of areas on 8-10 hours drive and have 4 children, like places in Northern Alberta have that type of service, then this system would be more valuable. As I said we are just 3 hours away and there is a group of parents who don't mind going to ACH as well especially if its coordinated with other visits as well like neuro-muscular clinics. If it's more distance, then it could benefit more. Here it's like providing a service that we already have."

4.4.2.3 Developing telehealth etiquettes

During the interviews, staff at the MHRH and manager at the ACH referred to the importance of developing a proper way of communication among staff members that would not be intimidating for the clients. This kind of communication was referred to repeatedly as 'telehealth etiquettes'. Key management staff at the ACH also emphasized the need for training staff in these etiquettes.

"I thought the communication during the telehealth session worked very well. I think before we get used to it, there is definitely a telehealth etiquette that we have to learn. In telehealth we can't talk aside so you know its just like you are attending a conference and then there are parents involved. I don't like two people talking in low tone when other(s) can't hear. Sometimes parents get paranoid if they can't listen to whatever is going on. With telehealth we have to avoid these side comments."

Table 15: References given by different groups regarding the future role of telehealth in seating clinics

Themes	ACH - Mgmt	ACH - Staff	MHRH - Mgmt	MHRH - Staff
Future role of telehealth in seating clinics	• Linking different sites providing telehealth • Booking for individuals • Developing habit of telehealth	• Arranging regular seating clinics through telehealth	• Booking for individual clients	• Booking individual clients • Developing seating clinics
Training of staff in telehealth	• Need for training in telehealth etiquettes • Reasons for no training: Lack of experience and time	• No training provided		• No training provided
Utilization of telehealth		• Not as useful for short distances		• Not as useful for short distances
Telehealth etiquettes		• Developing telehealth etiquettes and training	• Developing telehealth etiquettes	

4.5 Category V - Others

This category contains themes, which are not covered by the other categories. Table 16 (located at the end of this section) summarizes the list of issues described under these themes:

4.5.1 Introduction of additional change

There was a general feeling among managers and staff members at the the ACH that any proposed change in the routine working of seating clinics is not easily accepted by all of the staff. One such example was the introduction of a physician in the seating team. Involvement of a physician was new at ACH, although it has been tested for many years in other places like the Glenrose Rehabilitation Hospital. Due to the recent introduction of this additional role, most of the staff members were reluctant to discuss the need and perceived role of the physician in the team. However, a few participants discussed the involvement of the physician in detail, understanding the importance of assessment done by a medical doctor and emphasizing the role as a bridge between the seating clinic and other medical services.

> *"They (at Glenrose Rehabilitation Hospital) have a [physician] there in all the teams and he is the person doing all the assessments. If there was a need to contact orthopod or other medical disciplinary areas, that was done right there. So, it was very well coordinated. Seating staff [were] working with a doctor and then he was coordinating with other doctors. I think it was quite smooth."*

Another participant stressed the need to involve a physician as part of the seating team and also within the planning team.

> *" [The physician] comes into the fold [and] begins to take a more active role, I suspect that how we work with Medicine Hat might change a little bit, we may have more activity with Medicine Hat as [the physician] takes a more active role."*

In the interviews, people having a broader view of making outreach-seating clinics comparable to other areas, or those who had experience working with seating clinics in other areas, supported the changes and the additional roles more easily. People encouraging the staff to support changes in the service structure, favored the involvement of new roles. Some saw the introduction of a new role as a major change in the telehealth initiatives, potentially increasing complexity in defining the place and responsibilities of roles within the telehealth initiatives.

4.5.2 Broader acceptance of technology

Some staff at the ACH referred to the reluctance of government officials to face the media in a telehealth environment. They perceived this attitude as a barrier to the adoption of technology by other staff members, who are already unsure about the usefulness of telehealth in seating clinics.

> *"In fact when the Premier came to Calgary, he had to announce $50 million for the new hospital. But when his people went in and they saw all these telehealth monitors behind him, they refused to have a press conference because they said it looked like a bar. I mean it was money that they were donating and it was such a big deal for us but they were worried of his perception on the people that he is doing a press conference in a bar. How bizarre, this is new technology and you don't even want a picture taken."*

This chapter has presented the major categories, sub-categories and themes that emerged from the data. Chapter 5 focuses on the implications that can be drawn from these findings and also makes several recommendations for future practice and research.

Table 16: Table showing the references given by different groups regarding themes that are not covered under any categories

Themes	ACH - Mgmt	ACH - Staff	MHRH - Mgmt	MHRH-Staff
Introduction of additional change	• Increasing outreach activity • Part of seating team • Capacity building	• Better assessment • Bridge between seating and medical services		
Broader acceptance of technology		• Perceived lack of acceptance of public face of technology	• Support for resources	

CHAPTER FIVE: DISCUSSION

This chapter describes and analyses the messages and inferences that can be drawn from the results obtained from the interviews and the observations. It discusses a number of implications for future practice and research that would be useful to enhance the use and value of telehealth from the learners' perspectives. The chapter begins with a summary of findings described in the previous chapter, followed by a description of issues arising from these findings. It then compares the results with the literature review and also provides recommendations for future improvement in practice and research.

5.1 Summary of results

This case study describes the views of the managers and staff, from both the ACH and the MHRH, regarding the use of telehealth in seating clinics. Although it was only one case and there were no other similar situations for comparison, a number of interviews from each group (management and staff from the ACH and the MHRH) and observation of sessions helped to understand the perceptions of each group regarding the introduction of telehealth in seating clinics. In light of the findings described in the results section, the following messages and inferences are identified and discussed.

5.1.1 Characteristics of seating clinics and the role of staff

Most of the staff, both at the ACH and the MHRH, believed that seating was a highly specialized area requiring 'hands-on' assessment because of the tactile nature of the procedure. They also emphasized the importance of a multidisciplinary approach in seating clinics where staff from different sub-specialties had important roles. The staff stressed the importance of maintaining the multidisciplinary nature of seating clinics with the introduction of telehealth. The respondents also referred to the excellent working

relationships among the staff members that have developed over the years that the ACH has been conducting outreach clinics with Medicine Hat. Telehealth was introduced in seating clinics at the ACH, to further develop outreach services. One preassessment clinic was conducted in April 2003 to screen the clients two weeks before the ACH staff visited Medicine Hat.

It is worth mentioning that no training was provided to staff in conducting assessments using telehealth equipment. Also, no training or information was provided regarding the ways to communicate with staff and clients at each site. This led to the issue of telehealth etiquettes, brought up by some staff during the interviews.

5.1.2 Planning of telehealth initiative for seating clinics

It was apparent from the interviews that all staff at the ACH were not actively involved in the planning of telehealth. As a result, there was a clear difference of views regarding the role of telehealth, the importance and need for telelearning, the advantages and disadvantages of telehealth in seating clinics and the issues regarding telehealth implementation. The management thought that the pace of planning was responsible for this gap, but also admitted that they may have relied too heavily on others to convey messages to other staff. The managers realized that they should have explained the objectives of implementing telehealth to staff directly and made the process more interactive. The staff members also thought that involvement in planning of a new initiative would make them more comfortable in adopting the required change in their practices and would also enhance job satisfaction. In contrast there was more interaction between the management and staff at the MHRH and the differences in perspectives and ideas were less prominent and problematic.

5.1.3 Issues in implementing the telehealth initiative in seating clinics

Some important issues that were raised repeatedly during the interviews, as barriers to telehealth implementation included:

1. Hands-on or tactile nature of seating clinic
2. Difficulties in relying on others' judgments
3. Doubts in utilization of telehealth for short distances
4. Issues regarding licensing and liability
5. Lack of willingness of staff to change; and
6. Unsolved matters of physicians' remunerations.

5.1.4 Roles, advantages and disadvantages of delivering seating services through telehealth

The questions of the role and advantages of telehealth in seating clinics were asked separately in the same order. The main purpose was to see if the respondents also perceived any advantages to the specific role of telehealth. Most of the listed roles of telehealth were also mentioned as its advantages, except for referral for high needs children, cost reduction, continuous learning, building relationships between hospitals and linking other services. Some of the benefits of telehealth such as the involvement of other staff and providing more information to staff in outreach areas were described only as advantages. Disadvantages were mostly related to the adjustment of staff and clients to the technology and the difficulty in communicating the measurements to staff at the other site. Most of the disadvantages of telehealth were mentioned only by the ACH staff.

5.1.5 Role of telehealth in building relationships between staff and institutions

The existing strong teamwork between the staff at the ACH and the MHRH was described as a facilitator for telehealth implementation. Long-standing working relationships between the staff at the ACH and the MHRH were predicted by most of the staff to stay unchanged. An exception was that the key planners at the ACH thought that the introduction of telehealth would have a positive impact on this relationship. Interviewees from both sites recognized the need for building relationships on an equal basis and that no partner should try to dominate the relations. They also referred to the fear of a single sub-specialty dominating and affecting the multidisciplinary nature of seating clinics.

5.1.6 Learning through telehealth

There was a difference of opinion between the management and staff at the ACH, regarding the purpose and need for learning through telehealth. The staff at the ACH and both management and staff at the MHRH agreed that there is potential for telelearning for seating clinics, but thought that it is not the primary purpose of this initiative. Some of the staff members at the ACH also referred to the role of Alberta Aids for Daily Living (AADL) in regulating any learning initiatives in seating clinics. The staff at the MHRH also emphasized that any telelearning initiative should be based on the concept of mutual learning and on recognizing each other's knowledge and experience. In contrast, the management at the ACH stressed on telelearning as an important objective of this initiative and emphasized developing ways to implement staff development through telehealth.

5.1.7 Future role of telehealth

Most of the management and other staff at both sites agreed that telehealth should be used in future for the assessment of individual patients, and that special telehealth sessions could be arranged for individual problems. However, some staff from the ACH and the MHRH wanted to restrict the technology to pre-assessments for the time being and to keep using 'hands-on' for complete assessments.

5.2 Issues arising from results:

The purpose of this study was to assess the perspectives of staff and planners who were involved in seating clinics, about the role of telehealth in providing service to clients, encouraging mutual learning and building relationships. Important issues pointed out by the respondents in these areas can be mentioned in terms of the context, process and outcomes of using telehealth in seating clinics, as follows:

5.2.1 Context

The following issues were identified regarding the context of using telehealth in seating clinics, such as the setting of seating service and its characteristics:

- The study identifies that seating is a highly multidisciplinary service. The staff from different sub-specialties work as a team by bringing their individual knowledge and experiences in facilitating collective decisions for special needs children. The participants from all sites and in all roles felt that this important characteristic of seating clinics should be preserved or enhanced when using telehealth.
- The research also refers to a very strong perspective of staff regarding the hands-on nature of seating clinics. This characteristic makes it difficult to base one's

decisions on others' judgment. Therefore, it is important to implement telehealth in a way that builds trust between the staff and gives them more confidence in looking at the patient through others' eyes.

5.2.2 Process

The following issues were identified regarding the process of using telehealth in seating clinics:

5.2.2.1 Issues related to the planning of the telehealth initiative

- The study suggests that keeping in mind the highly tactile and multidisciplinary nature of seating clinics, it is extremely important to involve the staff in any decisions related to the change in the nature of their work. It is also important that the pace of planning should allow ample time to have proper dialogue and interaction with the staff.
- The research also proposes that the staff view their involvement in planning as a facilitator for adopting 'change' in their traditional way of working as they can see the benefits of that particular change. Involvement of staff in planning also enhances their job satisfaction.

5.2.2.2 Issues related to the implementation of the telehealth initiative

- It is important to provide ample time for the staff to implement any change in their traditional practices. Having a step-wise approach to the complete implementation of any new initiative may enhance its acceptance and success.
- The staff viewed their comfort with using any new equipment as an important step towards adopting a new technology. It is therefore important to provide

proper orientation and training to the staff about the equipment operation before using it for patient-care.

5.2.3 Outcomes

The following issues were identified regarding the outcomes of using telehealth in seating clinics:

- The staff members were not very clear or certain about the role and advantages of telehealth in seating clinics, other than improving accessibility. Some of the staff members even thought that there is no role for telehealth in this area at all. It is important to make the process more interactive and make the staff more aware of the broader roles and benefits of using technology. This additional awareness might, in turn, facilitate the process of change in service providers.
- The participants were not clear about the potential benefits of telehealth in building relationships between the staff working at the primary site and those working in remote areas. Clarifying such issues might encourage participation of more staff, especially from the remote areas.
- This study proposes that the learning component of any telehealth initiative should not be taken for granted. It suggests that learning can be a highly sensitive issue in some situations and it is important to use proper terminologies and ensure proper equilibrium to facilitate any learning. These observations relate to the socio-cultural theory of learning by focusing on the knowledge, interests and contributions from the learners.

5.3 Comparing results with the literature

Matching our results with the findings in the literature shows many similarities and differences. Some of the important comparisons are described below:

- The literature suggests that the reliability of telehealth in the assessment of high needs children requiring hands-on processes, is still not well established. In such processes, telehealth examinations depend a great deal on the experience of health professionals and their training in using the equipment (Nitzkin JL, 1997). Similar results were found in our study where the staff members were not convinced of the merits of using telehealth for hands-on processes and wanted to proceed cautiously. Staff also identified lack of training as a barrier to their acceptance of using telehealth.
- The advantages of telehealth identified by the staff and managers were comparable to those found in the literature. Other studies suggested that the staff perceives the following as advantages of telehealth: convenience of reduced travel by the patient and family, savings in both time and costs to the parents, reduced travel time and costs for multidisciplinary teams and prescreening of patients to determine the need for tertiary services (Robinson SS, 2003). Respondents in our study identified all of the above as the advantages of telehealth. Some other advantages emphasized in our study were providing service to clients in their local environment, better preparation of staff in terms of equipment and involvement of more staff from the outreach sites.
- The challenges associated with telehealth implementation, identified by the staff and managers were also comparable to those found in the literature. Some of the

key challenges identified in the literature include: adequacy of equipment, efficiency of planning, acceptance of technology by clinicians, learning of consultation skills, professional issues such as liability and licensure and funding problems such as reimbursement and cost for providing and maintaining telehealth systems (Farmer JE, 2001). Respondents in our study identified all of the above challenges. Some other issues emphasized in our study were relying on the judgment of other staff and problems with vision and communication during telehealth clinical sessions.

- The literature has also emphasized the importance of proper communication between the staff on both sides and with the clients. Some of the studies also suggest the importance of training staff in telehealth communication before using the technology (Lacroix A, 2002). Respondents in our study also identified these issues and stressed the need for teaching 'telehealth etiquettes' to the staff.
- The available literature suggested that telehealth provides an important link between the multidisciplinary staff working together to provide care to special needs children (Robinson SS, 2003). The respondents in our study also agreed to the potential of telehealth for increasing communication between staff members and also with clients. However, the staff did not think that these qualities were very useful in this particular case where relations were already well established between staff and distance was not a major issue.
- Although the literature is very supportive of the use of telehealth for educational purposes in many sub-specialties, its utilization for tactile processes, such as seating clinics, is not well established (Bardin W, 2000; Kully D, 2000; Wertz

RT, 1992). While respondents in our study did not raise any doubts concerning the potential of technology to facilitate telelearning for seating clinics, they did not think that learning was the primary purpose of this initiative.

- Some literature has also emphasized the importance of involving staff members in the process of planning any new initiative that requires change to their traditional way of working (Towle A, 2000). Respondents in our study also emphasized this issue and stressed the need for direct communication between managers and staff to facilitate the process.

5.4 Recommendations

This study shows that although the implementation of telehealth in seating clinics and other similar processes might encounter some of the same issues that impact telehealth generally, there are some aspects that appear to be different from other applications of technology. For example, the planning of service provision and telelearning for such processes might need more time and the involvement of various people, including the staff who are practically involved in providing the 'hands-on' services.

The following recommendations are made for further review and consideration:

1. It is important for planners to make clear to the staff the objectives of introducing telehealth. Planners should involve staff in all stages of planning and should consider their point of view before recommending any changes to the conventional way of conducting seating clinics.
2. Telehealth should be introduced slowly and in step-wise interactive manner. Pre-assessment is a good way to introduce technology in this highly specialized field.

Any further plans should be properly studied and evaluated and staff should be involved in further service or learning initiatives.

3. 'Learning' or 'staff education' cannot be taken for granted. These terms need to be redefined in different situations depending on the sensitivity of issues and staff's perceptions, both of which relate to and impact the learning goals.

4. Training in using telehealth equipment will improve the comfort level of staff with the equipment and will also enhance trust of the staff in outreach areas to conduct patient assessments.

5.5 Contributions

This study provides more understanding about the role of telehealth in seating clinics by:

1. Providing information about the perceptions of providers regarding the role of telehealth in seating clinics, which was not known before. None of the published studies have focused on the qualitative aspect of telehealth use in any of the tactile processes. Being a qualitative study and more specifically a case study, this research provides insiders' views on the benefits of telehealth and issues related to its introduction in procedures requiring more hands-on skills.

2. Providing insiders' views on how telehealth initiatives should be planned and implemented for tactile processes such as seating clinics. It suggests that in the case of tactile processes, heightened importance is attached to more involvement of staff, both at the primary and the distant sites. The study also provides an overall view of how difficult it may be to bring any major change to the regular working habits of the care providers.

3. Providing the views of health professionals regarding the effects of telehealth on the relationship between staff at the primary center and the outreach site. It also sheds some light on the effects of technology on team dynamics of therapists working in multidisciplinary teams to provide seating services.

4. Providing information on the issues to be considered while planning and implementing any telelearning initiative for seating clinics. It demonstrates how important it is to make the basic purpose of any such initiative clear to both the staff and the planners. This study also shows the importance of using correct and acceptable terminology and keeping a balance of power while planning for any sharing of knowledge between the sites using telehealth for seating clinics.

5. Providing knowledge of the importance of training staff in using telehealth equipment and enhancing their comfort levels with the technology before using it in real practice, which also stresses the importance of technological support and training.

5.6 Strengths and limitations

The greatest strength of this study is that it gives in-depth knowledge of the ideas and perceptions of different groups of staff, regarding a specific change in the conventional way of providing seating services in a particular setting. Another strength is that this study provides a picture of telehealth's role at the very initial stages of implementation, which will not only help planners in developing the use of telehealth further in this case but also help in the planning of similar programs in other parts of Southern Alberta.

A weakness in the design of this study could be the lack of similar cases with which to compare the results, seeking potential for more transferable knowledge. Another limitation could be the absence of clients' perspectives in understanding the role of telehealth in seating clinics. Subsequent studies should address these limitations.

5.7 Significance of the study

There is a large amount of literature available regarding the use of telehealth in various services, but there is a clear need for information on the use of telehealth in tactile processes like seating clinics. This study provides information about the role of telehealth in seating clinics in a very practical, real-life situation, using the perspectives of staff involved in providing this highly specialized, hands-on service. It provides initial insights into a number of areas that should be further explored and compared through additional research. The study also helps us look at the overall context of implementing telehealth in seating clinics, from the perspectives of health professionals. It suggests that there is clear agreement between the planners and other staff members on the potential of telehealth, but there is a need for these groups to work together in order to get full advantage of technology in providing service, developing better coordination and encouraging mutual learning.

5.8 Future practice

Recommendations from this study could help in broadening the scope of telehealth in outreach seating clinics in other areas of Southern Alberta and beyond. These suggestions might also help in planning initiatives of mutual learning and building better relations between the staff members working in primary and remote areas.

5.9 Future research

This single case study suggests a number of lessons regarding the process of planning and implementing the use of telehealth in outreach seating clinics, encouraging team building and enhancing mutual learning, from the perspectives of staff members. However, contributions from this study lack the perspectives of clients about the role of telehealth in seating clinics. Future studies could explore this extremely important component in understanding the role of telehealth in provision of seating services to outreach areas. Additional research is required not only to confirm and extend the key messages identified within this particular study but also to enhance the understanding of additional aspects of telehealth and telelearning that remain to be addressed.

BIBLIOGRAPHY

1. Barden W, Howard M. (2000). Effectiveness of telehealth for teaching specialized hands-assessment techniques to physical therapist. Academic Medicine; 75 (Vol: 10): S43-6.

2. Chang BL, Trelease R. (2001). Can telehealth technology be used for the education of health professional? Western Journal of Nursing Research; volume 23(1):107-14.

3. Cheren M. (2002). A concise review of adult learning theories. The Journal of continuing education in health professions; volume 22 (3) :190-91.

4. Creswell JW. (1998). Qualitative Inquiry and Research Design: Choosing among five traditions. Sage Publications; Ch: 2.

5. Darkins AW, Cary MA. (2000). Telemedicine and Telehealth. Springer Publishing Company; Ch: 2 & 3.

6. Duffy JR, Werven GW. (1997). Telemedicine and the diagnosis of speech and language disorders. Mayo Clinic proceedings; 1116-22.

7. Farmer JE, Muhlenbruck L. (2001). Telehealth for children with special healthcare needs: promoting comprehensive systems of care. Clinical Pediatrics; 40 (2): 93-8.

8. Firby PA, Luker KA et al. (1991). Nurses' opinions of the introduction of Computer-assisted learning for use in patient education. Journal of Advanced Nursing; 16 (Vol: 8): 987-95.

9. Harold BS. (1998). A qualitative approach to community and provider needs assessment in a telehealth project. Telemedicine Journal; 4 (Vol: 3): 225-35.

10. Halstead JA, Coudret NA. (2000). Implementing web-based instructions in a School of Nursing: implications for faculty and students. Journal of Professional Nursing; 16 (Vol: 5): 273-81.

11. Jennett P, Person V.L.H, Watson M. (2000). Canadian experience in Telehealth: Equalizing access to quality care. Telemedicine journal and e-health; 6 (Suppl.3):367-371.

12. Jennett P, Nijssen-Jordan C et al. (2000). Telelearning in a partnership between a university faculty and a regional health authority: benefits, challenges and strategies. Journal of telemedicine and telecare; 6 (Suppl.2):S2:32.

13. Jennett P, Hunter B.J. (1998). Telelearning in health: a Canadian perspective. Telemedicine journal; 4 (Suppl.3):237-47.

14. Jin C, Ishikawa A et al (2000). A telehealth project for supporting an isolated physiotherapist in a rural community in Hokkaido. Journal of Telemedicine and Telecare: 6 (Suppl 2): S35-7.

15. Kolitsi Z, Iakovidis I. (2000). Improving user acceptance of health-care telematics. Journal of Telemedicine and Telecare; 6 (Suppl.2):37-9.

16. Kully D. (2000). Telehealth in Speech Pathology: applications to the treatment of stuttering. Journal of Telemedicine and Telecare; 6 (Suppl.2):39-41.

17. Lacroix A, Lareng L. (2002). International concerted action on collaboration in telemedicine: recommendations of the G-8 Global Healthcare Applications Subproject-4. Telemedicine Journal E-health; 8 (Suppl.2):149-57.

18. McDonnell A, Jones ML. (2000). Practical considerations in Case Study Research: the relationship between methodology and process. Journal of advanced nursing; 32 (2):383-90.

19. Nitzkin JL, Zhu N. (1997). Reliability of telemedicine examination. Telemedicine Journal; 3 (Suppl.2):141-57.

20. Nud'ist (N5) for Qualitative Research. A product of QSR International.

21. Porter SR, Telford A et al. (1996). Computer assisted learning of oral manifestations of HIV Disease. British Dental Journal; 181 (Vol: 5): 173-7.

22. Provan, Keith G and Brinton Milward. 2001. "Do networks really work? A framework for evaluating Public-sector organizational networks". Public Administration Review; 61 (4): 414-424.

23. Richardson D. (1997). Student perception and learning outcomes of computer assisted versus traditional instruction in Physiology. American Journal of Physiology; 273 (6 pt 3): S55-8.

24. Robinson SS, Seale DE. (2003). Use of telemedicine to follow special needs children. Telemedicine Journal and e-health; 9 (Vol: 1): 57-61.

25. Southern Alberta Child and Youth Health Network- Outreach Services Framework. Sept 2002.

26. Spouse J. (2001). Bridging theory and practice in the supervisory relationship: a sociocultural perspective. J Adv Nurs 2001 Feb;33(4):512-22.

27. Stake R. (1995). The art of case research. Thousand Oaks, CA: Sage Publications.

28. Telehealth Business Plan for Southern Alberta Child and Youth Health Network- Sept 14, 2001.

29. Tellis W. (1997, July). Introduction to Case Study (68 paragraphs). The Qualitative Report [on-line serial]; 3 (2): Available: http://www.nova.edu/ssss/QR/QR3-2/tellis1.html.

30. Teyhen DS, Flynn T at al. (2001). Use of Webboards for distance leaning: a Physical Therapy model. Military Medicine; 166 (Vol: 4): 311-3.

31. Toth-Cohen S. (1995). Computer assisted instruction as a learning resourse for applied anatomy and kinesiology in the occupational therapy corriculum. American Journal of Occupational Therapy; 49 (Vol: 8): 821-7.

32. Towle A. (2000). Shifting of culture of continuing medical education: What needs to happen and why is it so difficult? The Journal of continuing education in the health professions; (Vol: 20): 208-18.

33. Weaver L, Spence D. (2000). Application of business case analysis in planning a province-wide telehealth network in Alberta. Journal of Telemedicine and Telecare; 6 (Suppl.1): 87-89.

34. Wellington, Sheila W. 1999. Creating women's networks- A how to guide for women and companies. San Francisco: Jossey Bass Publishers.

35. Wertz RT, Dronkers NF, Bernstein-Ellis E. (1992). Potential of telephonic and television technology for appraising and diagnosing neurogenic communication disorders in remote settings. Aphasiology; 6: 195-202.

36. Yin RK. (1994). Case Study Research. 2nd edition. Sage, London. 1 and 13.

37. Zonabend F. (1992 Spring). The monograph in European ethnology, 40(1), 49-60.

APPENDIX A
CONSENT FORM FOR HEALTH PROFESSIONALS

TITLE: **The role of telehealth in seating clinics; a case study of learners' perspective.**

SPONSOR: Southern Alberta Child and Youth Health Network.

INVESTIGATORS: Shariq Khoja and Dr. Ann Casebeer.

This consent form is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, please ask. Take the time to read this carefully and to understand any accompanying information. You will receive a copy of this form.

BACKGROUND

This study is designed to analyze the benefits of telehealth in mutual learning and team building for Southern Alberta Child and Youth Health Network (SACYHN) from the learners' perspective. Primary aim of SACYHN is to provide coordinated programs, services and information in accordance to the needs of children and families. SACYHN also focuses on achieving common standards of pediatric care throughout Southern Alberta, by taking initiatives that enable health professionals at the Alberta Children's Hospital in Calgary to support their counterparts in other regions to work closely as a team. One such initiative is to use telehealth in the areas of genetics, mental health, discharge planning, seating clinics and education. This study focuses on the mutual learning and team building between the health professionals for the adjustment of seating devices in Palliser Health Region and ACH.

WHAT IS THE PURPOSE OF THE STUDY?

The purpose of this study is to enhance understanding of the perspective of health professionals involved in conducting seating clinics, on the usefulness of telehealth for mutual learning and team building in Palliser Health Region. Learners' perspective on the usefulness of telehealth as a medium for training for the tactile processes, like adjustment of seating devices, will be analyzed. Also, perception of learners about the process including building trust, autonomy and relationship with other staff and clients will be explored.

WHAT WOULD I HAVE TO DO?

In the course of the study, you will be asked to participate in a semi-structured interview, which will be conducted at your work location. This interview will last approximately 25 minutes. Some important issues will be identified during this interview that can be used for a short follow-up conversation. You will be contacted for a follow-up interview after 3-4 initial telehealth sessions in order to get a better understanding of the process-related issues of the telelearning initiative. The follow-up interview will be conducted over the phone and would last approximately 10 minutes. Since one part of the study is to observe the telelearning sessions at the Medicine Hat Regional Hospital, you might be a participant in the session being observed. There will not be any direct participation by you in the research process during those sessions.

WHAT ARE THE RISKS?

There are no apparent risks to any of the participants since this study involves only the interviews and the observations.

WILL I BENEFIT IF I TAKE PART?

If you agree to participate in this study there may or may not be a direct benefit to you. The overall process of planning and conducting telehealth sessions for the seating clinics at the Medicine Hat Regional Hospital may be improved during the study but there is no guarantee that this research will help you. The information we get from this study may help us to provide better understanding of the importance of learners' feedback in the planning and implementation of telehealth initiative for seating clinics and other procedures involving tactile processes.

WILL I BE PAID FOR PARTICIPATING, OR DO I HAVE TO PAY FOR ANYTHING?

You will neither be paid for your participation in the study nor will there be any expenses that you have to bear in order to participate in any of the activities related to this study.

WILL MY RECORDS BE KEPT PRIVATE?

All the tapes and notes from your interview will be kept confidential and only the investigators will have access to those documents. The analyzed data will be shared with the 'Child Telehealth Advisory Committee' and other planners involved in planning the telehealth initiative for SACYHN.

SIGNATURES

Your signature on this form indicates that you have understood to your satisfaction the information regarding your participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the investigators, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time without jeopardizing. If you have further questions concerning matters related to this research, please contact:

Dr.Ann Casebeer (403) 210-9324

If you have any questions concerning your rights as a possible participant in this research, please contact Pat Evans, Associate Director, Internal Awards, Research Services, University of Calgary, at 220-3782.

Participant's Name	Signature and Date
Investigator/Delegate's Name	Signature and Date
Witness' Name	Signature and Date

The University of Calgary Conjoint Health Research Ethics Board has approved this research study.

A signed copy of this consent form has been given to you to keep for your records and reference.

APPENDIX B
CONSENT FORM FOR THE PARENTS OF CHILDREN WHOSE SEATING SESSIONS ARE BEING OBSERVED

TITLE: **The role of telehealth in seating clinics; A case study of learners'perspective.**

SPONSOR: Southern Alberta Child and Youth Health Network.

INVESTIGATORS: Shariq Khoja and Dr. Ann Casebeer.

This consent form is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your child's participation will involve. If you would like more detail about something mentioned here, or information not included here, please ask. Take the time to read this carefully and to understand any accompanying information. You will receive a copy of this form.

BACKGROUND

This study is designed to analyze the benefits of telehealth in mutual learning and team building for Southern Alberta Child and Youth Health Network (SACYHN) from the learners' perspective. Primary aim of SACYHN is to provide coordinated programs, services and information in accordance to the needs of children and families. SACYHN also focuses on achieving common standards of pediatric care throughout Southern Alberta, by taking initiatives that enable health professionals at the Alberta Children's Hospital in Calgary to support their counterparts in other regions to work closely as a team. One such initiative is to use telehealth in the areas of genetics, mental health, discharge planning, seating clinics and education. This study focuses on the mutual learning and team building between the health professionals for the adjustment of seating devices in Palliser Health Region and ACH.

WHAT IS THE PURPOSE OF THE STUDY?

The purpose of this study is to enhance understanding of the perspective of health professionals involved in conducting seating clinics, on the usefulness of telehealth for mutual learning and team building in Palliser Health Region. Learners' perspective on the usefulness of telehealth as a medium for training for the tactile processes, like adjustment of seating devices, will be analyzed. Also, perception of learners about the process including building trust, autonomy and relationship with other staff and clients will be explored.

WHAT WOULD MY CHILD HAVE TO DO?

Your child will not have any direct involvement in the research process. Since one part of the study is to observe the telehealth sessions at the Medicine Hat Regional Hospital, your child might be a participant in the session being observed.

WHAT ARE THE RISKS?

There are no apparent risks to any of the participants since this study involves only the interviews and the observations.

ARE THERE ANY BENEFITS FOR MY CHILD?

If you agree for your child to participate in this study there may or may not be a direct medical benefit to them. The overall process of planning and conducting telehealth sessions for the seating clinics at the Medicine Hat Regional Hospital may be improved during the study but there is no guarantee that this research will help them. The information we get from this study may help us to provide better treatments in the future for patients in seating clinics using telehealth as a medium.

WILL WE BE PAID FOR PARTICIPATING, OR DO WE HAVE TO PAY FOR ANYTHING?

You will neither be compensated for your participation in the study nor will there be any expenses that you have to bear in order to participate in any of the activities related to this study.

WILL MY CHILD'S RECORDS BE KEPT PRIVATE?

Your child's health records will not be used for any research purpose. All the tapes and notes from the observed sessions will be kept confidential and only the investigators will have access to those documents. The analyzed data will be shared in non-identifiable forms, with the 'Child Telehealth Advisory Committee' and other planners involved in planning the telehealth initiative for SACYHN.

SIGNATURES

Your signature on this form indicates that you have understood to your satisfaction the information regarding your child's participation in the research project and agree to their participation as a subject. In no way does this waive your legal rights nor release the investigators, or involved institutions from their legal and professional responsibilities. You are free to withdraw your child from the study at any time without jeopardizing their health care. If you have further questions concerning matters related to this research, please contact:

Dr.Ann Casebeer (403) 210-9324

If you have any questions concerning your child's rights as a possible participant in this research, please contact Pat Evans, Associate Director, Internal Awards, Research Services, University of Calgary, at 220-3782.

Parent/Guardian's Name	Signature and Date
Child's Name	Signature and Date
Investigator/Delegate's Name	Signature and Date
Witness' Name	Signature and Date

The investigator or a member of the research team will, as appropriate, explain to your child the research and his or her involvement. They will seek your child's ongoing cooperation throughout the study.

The University of Calgary Conjoint Health Research Ethics Board has approved this research study.

A signed copy of this consent form has been given to you to keep for your records and reference.

APPENDIX C

INTERVIEW PROTOCOL FOR THE HEALTH PROFESSIONALS WHO ARE INVOLVED IN TRANSFERRING INFORMATION AND MANAGING CHILDREN DURING SEATING CLINICS, USING TELEHEALTH AS A MEDIUM.

1) **Please describe your current position at ACH/Medicine Hat and your involvement with seating clinics:**

Probes:

a) Involvement with seating clinics at ACH/Medicine Hat.

b) Involvement with seating clinic initiative through telehealth.

2) **In your opinion, what are the primary issues or problems that are being addressed through the application of Telehealth in seating clinics.**

Probes:

a) Accessibility and comfort to children.

b) Staff comfort and avoiding travel.

c) System issues like cost-effectiveness or improving linkages.

d) Giving autonomy to local health staff.

3) **What are the advantages/ disadvantages of conducting seating clinics through telehealth?**

Probes:

a) Improvement in existing services at ACH and Medicine Hat.

b) Improvements in knowledge and practice of health care providers at ACH and Medicine Hat.

c) Improvements in the overall health care environment with the introduction of telehealth, at ACH and Medicine Hat.

d) Benefits/ problems to children and other caregivers.

e) Training of staff for the use of telehealth equipment.

4) **How would you describe your relationship with the health professionals involved in planning telehealth sessions for seating clinics?**

Probes:

a) Interaction with 'Child telehealth advisory committee' regarding planning of telehealth initiative.

b) Interaction with other colleagues at the Alberta Children's Hospital regarding planning.

c) Meetings with representatives from their respective hospitals regarding the telelearning sessions.

d) Comparison with face-to-face teaching.

5) **How would you describe your relationship with the health professionals at ACH, who are involved in conducting telehealth sessions for seating clinics?**

Probes:

a) Interaction with health staff at the ACH/Medicine Hat regarding the topics of discussion.

b) Building of trust between the health professionals.

c) Briefing about the procedure done with the patients at ACH/Medicine Hat, prior to the session.

d) Training for the use of equipment.

e) Comparison with face-to-face learning.

6) **How do you describe the interaction between the health professionals during telehealth sessions?**

Probes:

a) Understanding of the knowledge base and skills of the providers.

b) Giving importance to the health professionals working at distant sites.

c) Understanding of the problems and encouraging questions.

d) Feeling of autonomy during the process.

e) Comparison with face-to-face learning.

f) Frustration with technical problems.

APPENDIX D

ETHICS APPROVALS

UNIVERSITY OF CALGARY

FACULTY OF MEDICINE

Office of Medical Bioethics
Heritage Medical Research Building/Rm 93
Telephone: (403) 220-7990
Fax: (403) 283-8524

2003-03-04

Dr. A. Casebeer
Department of Community Health Sciences
University of Calgary
Calgary, Alberta

Dear Dr. Casebeer:

RE: The role of telehealth in educating health care staf for seating clinics; A Case study of learners' perspective
Student: Shariq Khoja Degree: MSc

GRANT ID: 16976

The above-noted thesis proposal and the consent form have been submitted for Committee review and found to be ethically acceptable. Please note that this approval is subject to the following conditions:

(1) a copy of the informed consent form must have been given to each research subject, if required for this study;
(2) a Progress Report must be submitted by 2004-03-04, containing the following information:
    (i) the number of subjects recruited;
    (ii) a description of any protocol modification;
    (iii) any unusual and/or severe complications, adverse events or unanticipated problems involving risks to subjects or others, withdrawal of subjects from the research, or complaints about the research;
    (iv) a summary of any recent literature, finding, or other relevant information, especially information about risks associated with the research;
    (v) a copy of the current informed consent form;
    (vi) the expected date of termination of this project;
(3) a Final Report must be submitted at the termination of the project.

Please note that you have been named as a principal collaborator on this study because students are not permitted to serve as principal investigators. Please accept the Board's best wishes for success in your research.

Yours sincerely,

Christopher J. Doig, MD, MSc, FRCPC
Chair, Conjoint Health Research Ethics Board

cc: Child Health Research Committee Dr. R.S. Sauve (information) Research Services Shariq Khoja

Child Health Research Office
Tel: (403) 229-7241
Fax: (403) 543-9111
E-mail: marilyn.ellergodt@calgaryhealthregion.ca

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calgary health region

Alberta Children's Hospital

13 February 2003

Dr. Ann Casebeer
Department of Community Health Sciences
University of Calgary

Dear Dr. Casebeer:

Re: Protocol #2003-19— CRHA #16976 – The Role of Telehealth in Educating Health Care Staff for Seating Clinics: A Case Study of Learners' Perspective

Thank you for submitting this protocol to the Child Health Scientific Review Committee for review. This proposal has been reviewed and approved for hospital impact only as it is an M.Sc. Thesis Proposal. We provide approval to proceed with the subject protocol to the outcome of the CHREB review and have forwarded it on to the CHREB for expedited review.

Yours truly,

M. Ellergodt

Marilyn Ellergodt
Child Health Research Administrator

ME/js

cc Conjoint Health Research Ethics Board, Faculty of Medicine, U of C