Evaluation Report

TeleSpeech as a Delivery Tool for Speech Language Pathology Services for Children in the Northwest Territories

Department of Health and Social Services

September 2016

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Executive Summary

Evaluation Purpose and Design

The Department of Health and Social Services (HSS) undertook an evaluation between April 2015 and October 2015 to examine the effectiveness of TeleSpeech as a component of the delivery model for SLP services for children in small communities[1]. The evaluation was also intended to provide recommendations to improve the effectiveness of TeleSpeech services for children in the NWT. TeleSpeech is the delivery of Speech Language Pathology (SLP) services to clients in another community through TeleHealth Units, a tele-videoconferencing technology.

In order to satisfy the evaluation purpose, the following questions were explored:

Q1: Is there a need for SLP services in small communities?

Q2: Is TeleSpeech an acceptable tool to assist in delivering SLP services in small communities?

Q3: Do NWT residents have improved access to SLP services as a result of the use of TeleSpeech?

Q4: Are clients achieving positive outcomes utilizing TeleSpeech?

Q5: What factors have facilitated / hindered TeleSpeech?

Q6: Is the TeleSpeech model more cost effective than the alternatives?

Both quantitative and qualitative data were collected to build a better understanding of the evaluation questions. Data sources for this evaluation included:

- Document Review
- Literature Review
- TeleHealth Session Data
- Financial Resource Data
- Human Resource Data
- Parent Interviews
- Stakeholder Questionnaires

[1] Within this evaluation, communities without a Speech Language Pathologists are defined as small communities. Therefore, Inuvik, Hay River, Fort Smith and Yellowknife were excluded.

Recommendations

The following recommendations emerged from the key findings across the evaluation questions.

1. Establish a set of indicators to be consistently collected and reported to the Department by all Rehabilitation Teams.
2. Identify and implement the collection of client outcome measures by all Rehabilitation teams.
3. Explore the possibility of adding fields and clarifying coding in the VC Scheduler.
4. Develop territorial policies and procedures to guide data entry into VC Scheduler to achieve data integrity.
5. Determine the feasibility of adopting the benchmarks once they are established by Speech-Language and Audiology Canada.
6. The Northwest Territories Health and Social Services Authority to set clear and consistent standards of services with the Rehabilitation teams in order to determine the number of SLP services days based on clinical need data and population based approach.
7. Where appropriate for the client, continue to supplement in-person visits with TeleSpeech Sessions.
8. Develop guidelines to ensure TeleSpeech is being offered equitably to children and/or caregivers that could benefit from these services.
9. Develop guidelines for room location suitability of the TeleHealth Unit.
10. Develop a checklist of materials and supplies at the community level to support TeleSpeech sessions.
11. Where current locations do not meet the minimum requirements in the guidelines, examine the feasibility of relocating the TeleHealth Unit to a more suitable location.
12. Collect data to monitor technical difficulties.
13. Determine solutions to improve the functionality of TeleHealth equipment supported by HSS and schools.
14. Develop and implement an ongoing training program for TeleHealth users.
15. Increase videoconference capabilities in schools that use the TeleHealth Units for eLearning to reduce scheduling conflicts.

16. Align the scheduling systems between the school and health system to reduce scheduling conflicts.
17. Rehabilitation teams identify and implement strategies to reduce the impact of SLP vacancies on service delivery.
18. HSS to identify strategies and resources to coach caregivers on how to support their children in between SLP sessions and during TeleSpeech Sessions.
19. HSS to collaborate with ECE to develop messaging on how to promote language development for children to all residents of the NWT.
20. HSS and ECE work collaboratively to define their respective roles and responsibilities in the delivery of TeleSpeech, such as delivering training, scheduling appointments, attending appointment, supporting children in between appointments.
21. Determine appropriate person(s) to provide training for community organizations (e.g.: health centres, and preschool and school programs) on how to better support children with rehabilitation needs without compromising clinical services.
22. Determine appropriate person(s) to provide specific training for community staff that attend TeleSpeech appointments with preschool and school aged children to enhance their skills in supporting TeleSpeech sessions without compromising clinical services.
23. Determine why certain communities have received little to no TeleSpeech Sessions over the past 4 years.
24. Determine why certain communities do not receive community visits from the SLPs.
25. Conduct a case complexity and caseload study to determine strategies on how to more effectively manage caseloads, better distribute resources between Rehabilitation Teams, and how to deliver more SLP sessions.
26. Explore research partnerships to build clinical evidence of the effectiveness of TeleSpeech relative to in-person treatment.

Conclusion

The evaluation findings point to a need for SLP services in the NWT, particularly in the smaller communities outside the regional centre. However, the delivery of SLP services to small communities are infrequent and does not necessarily meet rehabilitation needs of NWT residents.

Overall, the integration of videoconferencing with the rehabilitation service delivery model has strengthened services to rural and remote communities in the NWT. TeleSpeech provides a good supplement to infrequent outreach clinics in remote NWT communities, especially where having full-time therapists would be difficult. Overall, TeleHealth was viewed as an acceptable tool to deliver SLP services in small communities, particularly for school-aged children. However, the effectiveness of the TeleSpeech is complex and impacted by a number of factors.

Despite these challenges, children have experienced positive outcomes through the use of TeleSpeech. Furthermore, TeleSpeech is a cost-effective way of increasing the volume of services for small communities. In order to maximize the effectiveness of TeleSpeech, it will be important to address the recommendations resulting from this evaluation.

Introduction to the TeleSpeech Evaluation Report

This report presents the evaluation findings of TeleSpeech services delivered to children living in small communities[2] in the Northwest Territories (NWT). TeleSpeech is the delivery of Speech Language Pathology (SLP) services to clients in another community through TeleHealth Units, a tele-videoconferencing technology.

The evaluation was undertaken by the Department of Health and Social Services (HSS) between April 2015 and October 2015. The purpose of the evaluation is twofold:

1. Determine effectiveness of TeleSpeech as a component of the delivery model for SLP services for children in small communities; and
2. Provide recommendations to improve the effectiveness of TeleSpeech services for children in the NWT.

The report is structured as follows:

- Section 1: Background– This section provides an overview of the SLP services in the NWT. This section also describes the purpose of the evaluation, limitations and the methodology used to answer the evaluation questions.

2 Within this evaluation, communities without a Speech Language Pathologists are defined as small communities. Therefore, Inuvik, Hay River, Fort Smith and Yellowknife would be excluded.

- Section 2: Evaluation Findings – This section presents the evaluation findings for each evaluation question.
- Section 3: Discussion and Recommendations – This section brings together the analysis from all the evaluation questions, and provides recommendations to improve the effectiveness of TeleSpeech.

Section 1: Background

1.1 Overview of NWT Rehabilitation Services

The Department of Health and Social Services' *Integrated Service Delivery Model (ISDM)* identifies rehabilitation services as a core service for residents of the Northwest Territories (NWT). Rehabilitation services help to improve and maintain the functional independence and quality of life of individuals with impairments, activity limitations and/or participation restrictions which result from illness, injury, chronic conditions, or disability. Rehabilitation services include:

- Physiotherapy (PT) - provides services to individuals to improve and maintain physical function and performance.
- Occupational Therapy (OT) - provides service to individuals with physical, cognitive, sensory, developmental and/or psychosocial impairments to master the skills needed for optimum independence.
- Speech Language Pathology (SLP) – provides services to individuals to overcome and prevent communication problems with language, speech, voice, and fluency, and problems with swallowing.
- Audiology (Audio) - provides services to individuals to evaluate and overcome hearing loss.

Four publically funded Rehabilitation Teams have been established across the NWT; the teams are located in Inuvik (Beaufort Delta Health and Social Services Authority), Hay River (Hay River Health and Social Services Authority), Fort Smith (Fort Smith Health and Social Services Authority) and Yellowknife (Stanton Territorial Health Authority). All of the teams provide PT, OT and SLP services. In addition, the Stanton team in Yellowknife provides Audio services across the NWT, some specialized OT and SLP services, and PT, OT, SLP and Audio services to the Kitikmeot Region of Nunavut through a contractual relationship.

The NWT rehabilitation service delivery model sees each regional rehabilitation team providing rehabilitation services within a designated catchment area (Table 1.1.1). The rehabilitation teams provide services to children and adults in the following settings: acute care (hospital); long term care; supportive living; ambulatory care; homecare, and preschools and schools. Services are provided in these settings in each regional location and also in small communities in each team's catchment area through outreach travel clinics. Individuals seen in small communities through outreach travel clinics receive follow-up and support through various methods including traveling

to the regional location, Telehealth, telephone and e-mail. Where the needs of the individual cannot be met in the NWT, services are accessed out-of-territory.

In 2002, Ile Royale Enterprises Ltd. did a comprehensive review of Rehabilitation Services, recommending that a TeleHealth pilot project be conducted to determine how TeleHealth services would be integrated with travel programming and routine rehabilitation operations. In 2004, the NWT Integrated Service Delivery Model (ISDM) specifically noted the expected outcome for the vision for NWT rehabilitation services was the full integration of travel and TeleHealth into routine operations.

This commitment in the ISDM resulted in a funding increase of approximately $2.26 million over a two-year period (2006-08), inclusive of 23.5 new rehabilitation positions and travel budget enhancements of $126 K. These enhancements were made to address the system capacity to expand outreach travel clinics to small communities and address the long waitlist for rehabilitation services. The ISDM also included the use of 20 new community-based Rehabilitation Aid positions to provide follow-up rehabilitation support for children and the integration of follow-up rehabilitation support for adults within the role of Homecare Workers. The funding for the 20 new positions was not approved by the Financial Management Board Secretariat and these in-community support positions were not established.

Table 1.1.1 outlines the staff composition for each Rehabilitation Team for 2013/2014 relative to the population of the communities they serve (catchment area). Staff composition represents the number of funded positions and does not show the vacancies experienced through the fiscal year. It is important to note that Audiologists provide coverage to all of the NWT and Kitikmeot region for a total population served of 49,486.

Table 1.1.1: NWT Rehabilitation Team Catchment Areas and Composition for 2013/2014

Rehabilitation Team	Catchment Areas	Rehabilitation Team	Catchment Areas
Beaufort-Delta Total – 10 FTE*	Total Pop. Served: 9,276	Stanton Total – 33.4 FTE	Total Pop. Served: 27,062 Total with Nunavut: 32,930
2 PT 1 PT Assistant 2 OT 1 OT Assistant 2 SLP 1 SLP Assistant 1 Supervisor	**Beaufort-Delta HSSA** Inuvik – 3,358 Aklavik – 663 Fort McPherson – 783 Ulukahtok – 438 Paulatuk – 315 Sachs Harbour – 129 Tsiigehtchic – 167 Tuktoyaktuk – 927	7.6 PT 1 PT Assistant 8.3 OT 0.5 OT Assistant 7 SLP 1 Rehabilitation Assistant 1 CDT Coordinator 1 Manager 3 Administrative/ Program Assistants 2 Audiologists 1 Hearing Aide Practitioner	**Deh Cho HSSA** Fort Liard –567 Fort Providence – 792 Fort Simpson – 1,230 Jean Marie River – 80 Nahanni Butte – 93 Trout Lake – 108 Wrigley – 150
	Sahtu HSSA Colville Lake – 169 Deline – 506 Fort Good Hope – 535 Norman Wells – 764 Tulita – 522		**Tlicho CSA**** Behchokǫ̀ – 2,066 Gamètì – 276 Wekweètì – 138 Whatì – 505
			Yellowknife HSSA Yellowknife and Ndilo – 20,479 Dettah – 253 Lutsel K'e – 307
			Kitikmeot Region (Nunavut) Cambridge Bay – 1,666 Gjoa Haven – 1,161 Kugaaruk – 713 Kugluktuk – 1,450 Taloyoak – 878
Hay River Total – 7.5 FTE	Total Pop. Served: 4,230 Total with Fort Resolution: 4,738	Fort Smith Total – 4.5 FTE	Total Pop. Served: 2,542 Total with Fort Resolution: 3,050
2 PT*** 2 OT 1 SLP 1.5 Rehabilitation Assistant 1 Administrative/ Program Assistants	**Hay River HSSA** Hay River – 3,727 Enterprise – 118	1.5 PT 1 OT 1 SLP 0.5 Admin 0.5 Supervisor	**Fort Smith HSSA** Fort Smith – 2,542
	Deh Cho HSSA Hay River Reserve – 320 Kakisa – 65		**Yellowknife HSSA** Fort Resolution – 508 (SLP)
	Yellowknife HSSA Fort Resolution – 508 (OT and PT)		

*FTE = Full time equivalent | ** CSA = Community Services Agency | *** One PT position was designated as a Supervisor for part of the fiscal year.

1.2 Speech Language Pathology Services for NWT Residents

As previously mentioned SLP services help individuals to overcome and prevent communication and swallowing problems. Within the NWT, SLP assessment and intervention services are provided for the following problems:

- Articulation (sounds)
- Language (receptive and expressive)
- Voice pragmatics
- Apraxia (motor programming)
- Dysarthria (motor speech)
- Listening attention
- Swallowing

NWT residents sometimes have to travel out of territory to receive more specialized or intensive SLP services, such as:

- Fluency treatment
- Aural rehabilitation (use of residual hearing)
- Intensive stuttering program
- Intensive resonance (e.g. cleft palate)
- Instrumental swallowing assessment

SLP services are delivered by four regional Rehabilitation Teams to residents of the NWT and Kitikmeot region of Nunavut. These Teams use five mechanisms for the delivery of SLP services:

- Clients receive services in the hospital
- Clients travel to the regional team for services
- Clients receive services in their community during SLP community outreach visits
- Clients receive SLPs services in their community through TeleSpeech
- Clients travel out of territory to access specialized SLP services

Depending on the complexity of the client's problems and the community in which they reside, it may be appropriate for SLP services to be delivered through one or more of these mechanisms.

1.3 Overview of TeleSpeech

Rationale for TeleSpeech

Speech and language development is an important part of early childhood development overall. "Difficulties in speech and language development are reported frequently among children. According to American Speech-Language-Hearing Association, the prevalence of language difficulties in preschool-age children was estimated between 2% and 19%. Among school-age children, the prevalence of language impairment ranged from 3.1% to 23.0%. Language impairments at a young age, such as in the first three years of life, have a negative impact on

children's academic life and their adulthood and are related to social, emotional, and behavioral problems. Thus, early identification and thorough and specific assessment and treatment are crucial" (CADTH, 2015).

However, access to speech-language pathology (SLP) services may be limited for many children and their families, particularly those residing in rural and remote areas (CADTH, 2015). The Canadian Association of Speech-Language Pathologists and Audiologists (2006) put forward a position paper on the use of TeleHealth services for the provision of SLP and Audio services, stating that the organization "endorses the use of telepractice in both speech-language pathology and audiology as a means of improving access to services provided by fully qualified professionals" (p. 1).

TeleHealth has emerged as an alternative service delivery option with particular value in remote settings. "TeleHealth is a means of providing healthcare services (diagnosis and/or treatment) remotely using communications technologies. It is different from the conventional in-clinic models and is particularly important for patients in the remote or rural areas, who usually have limited access to the healthcare services due to the distance, costs, shortages of speech-language pathologists, or parents' commitment to work. TeleHealth has been widely used in various areas of medicine, such as heart disease, stroke, diabetes, psychiatric problems, dermatological disorders, and speech-language disorders or impairments. This model may enhance the quality of care by optimizing the timing/intensity/sequencing of interventions and allowing more frequent interactions with patients, thus may be associated with more favorable outcome for them. In addition, a unique benefit of TeleHealth is that the SLP services to be delivered to the patients in their own environment, such as the home, in a local community, school or workplace" (CADTH, 2015).

TeleSpeech in the NWT

The NWT is a vast territory with a small population. According to the 2010 census, 43,759 inhabitants live across more than 1.17 million square kilometers of land, making this one of the most sparsely populated regions in Canada with only 0.04 people per square kilometer. The disperse geography presents high travel demands to the four Rehabilitation Teams providing SLP services within the NWT. As a result, delivering effective and efficient SLP services in the NWT is challenging. Typically, residents requiring SLP services have to travel to the regional center or wait until SLP services are available during community outreach visits. Clients are then assessed and given a home program with little intervention and follow up.

The Department of Health and Social Services (HSS) launched the TeleSpeech Project in November 2008, which focused on installing TeleHealth Units in community health centres and schools across the NWT. Schools were seen as a strategic partner in this project, as school-aged children were identified as an underserved population by SLP services. The TeleSpeech Project and the

deployment of TeleHealth units was a big undertaking. It entailed the collaboration of the Department of Health and Social Services, Department of Education, Culture and Employment; Department of Public Works including the Technology Service Center; eight Health Authorities; and eight Divisional Education Councils/District Education Authorities (DEC/A).

At the close of the Telespeech project in March 2012, 59 TeleHealth Units were installed in 29 communities. A significant number of these units (33) were installed directly within the NWT school system. The remaining TeleHealth Units were installed at health centres and hospitals. TeleSpeech offers the opportunity for consistent delivery of SLP services directly to children in their communities and in their schools.

1.4 Evaluation Purpose

The purpose of the evaluation is to examine the effectiveness of TeleSpeech as a component of the delivery model for SLP services for children in small communities[3]. In order to satisfy the evaluation purpose, the following questions were explored:

Q1: Is there a need for SLP services in small communities?

Q2: Is TeleSpeech an acceptable tool to assist in delivering SLP services in small communities?

Q3: Do NWT residents have improved access to SLP services as a result of the use of TeleSpeech?

Q4: Are clients achieving positive outcomes utilizing TeleSpeech?

Q5: What factors have facilitated / hindered TeleSpeech?

Q6: Is the TeleSpeech model more cost effective than the alternatives?

This evaluation is in response to the commitment made in the Early Childhood Development (ECD) Action Plan to evaluate TeleSpeech. Even though the ECD Action Plan focuses on children ages 0 to 5, TeleSpeech is intended to increase services for pre-school and school aged children. Therefore, the evaluation was expanded to include children ages 6 to 17, in addition to children ages 0 to 5. The decision to examine these two age groups influenced data sources selected; how the results were analyzed and presented; and the recommendations made to improve the delivery of TeleSpeech services in the NWT.

3 Within this evaluation, communities without a Speech Language Pathologists are defined as small communities. Therefore, Inuvik, Hay River, Fort Smith and Yellowknife would be excluded.

1.5 Evaluation Design

HSS developed and implemented the evaluation with input from the NWT Rehabilitation Advisory Committee (RAC)[4]. This Committee was engaged throughout the planning, implementation and reporting phases of the evaluation to allow subject matter experts to provide feedback and validation of findings. Appendix A details the evaluation framework, which outlines the evaluation questions and indicators.

Mixed Methods Approach

The evaluation followed a mixed methods approach with a convergent parallel design. In this type of design, quantitative and qualitative data are collected at the same time. The data sets are analyzed separately. The data sets are then mixed by merging the results during interpretation. The main reason for using convergent parallel design in this evaluation was that both types of data have equal value for understanding the evaluation questions. Figure 1.5.1 illustrates the convergent parallel design.

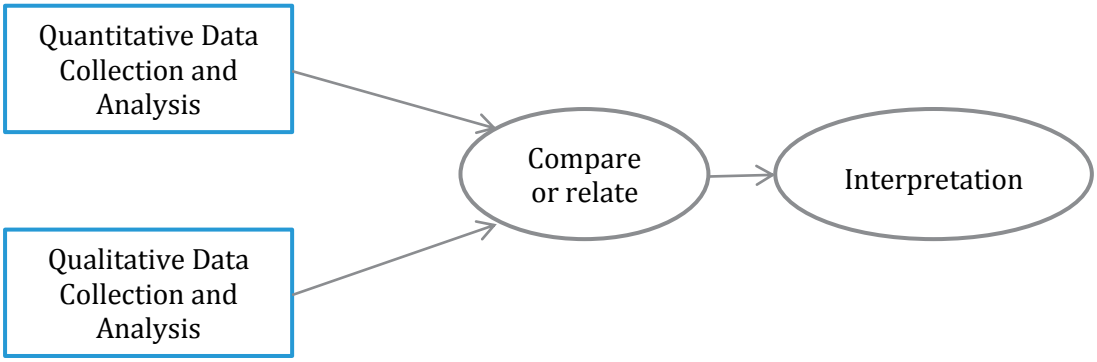


Figure 1.5.1: Sequential Forms of Mixed Methods Data Collection[5]

Data Collection Methods

The evaluation used a triangulation approach, where data are gathered from different sources (Patton, 2008). The triangulation of data is a method used to verify the reliability of findings from different data sources (Patton, 2008). Data collection began in April 2015 and concluded in October 2015. Data sources for this evaluation included:

Rehabilitation Team Administrative Data: Each Rehabilitation Team was asked to provide administrative data based upon data requirements outlined in the evaluation plan.

[4] RAC is composed of representatives from each Rehabilitation Team in the NWT.

[5] Figure is adapted from Creswell & Plano Clark, 2011.

Where possible, the Rehabilitation Teams provided data for the 2008/09 and 2013/14 fiscal years. These fiscal years were chosen as TeleSpeech was launched in 2008 and installation of the TeleHealth Units was completed in all the target communities by 2012. It is important to note that each Rehabilitation Team captures administrative data differently. HSS worked with the Rehabilitation Teams in an attempt to bring uniformity to the data.

Document Review: Document reviews were used in two phases of the evaluation – development and implementation. The following documents were used to inform the development of the evaluation plan: Ministerial briefing notes, Early Childhood Development Framework (2013) and Action Plan (2014), TeleSpeech Project Charter (2008) and the TeleSpeech Project Post Deployment Analysis Report (2011). The following three documents served as data sources for the evaluation as they present recent data on the need for SLP services within the NWT:

- Department of Education, Culture and Employment (ECE) - Review of Minister's Directive of Inclusive Schooling (2014)
- Department of Health and Social Services - One-Time Baseline Assessment of NWT Children Aged 5 Years (2015)
- Department of Education, Culture and Employment (ECE) - Early Development Instrument: NWT Baseline Results for the 2012, 2013 and 2014 School Years (2014)

Literature Review: A literature review was identified as a data source for one of the evaluation questions. To enhance the credibility of the literature review, an external organization conducted the literature review. Due to an existing agreement between HSS and the Canadian Agency for Drugs and Technologies in Health (CADTH), CADTH was requested to complete the literature review. The literature review with critical appraisal was received from CADTH in April 2015 (see Appendix D for the full review). A critical appraisal is a systematic process used to identify the strengths and weaknesses of a research article in order to assess the usefulness and validity of research findings.

TeleHealth Session Data: TeleHealth Sessions are scheduled through an electronic system called VC Scheduler. VC Scheduler data for TeleSpeech was monitored and reported on by the Department to Standing Committee from 2008/09 to 2013/14 and was accessed for this evaluation.

Financial Resource Data: Budgets and expenditures for each Rehabilitation Team were requested from the Stanton Territorial Health Authority (STHA) and the HSS Finance Division for the 2005/06, 2008/09 and 2013/14 fiscal years. The decision to include the

2005/06 and 2008/09 fiscal years was to demonstrate the resource increase each Team received between 2006 and 2008.

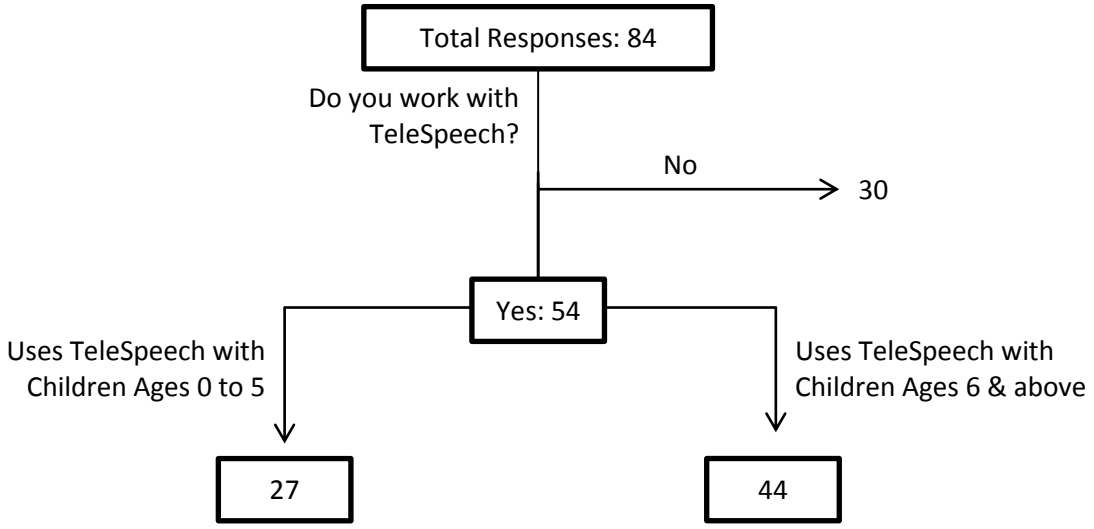
Human Resource Data: The Government of the Northwest Territories and the Hay River Health and Social Services Authority Human Resource Departments provided vacancy data for rehabilitation positions identified within the main estimates for 2013/14.

Parent Interviews: A total of six parents spoke about their experience with TeleSpeech, representing four communities throughout the NWT. Semi-structured interviews were conducted over the phone with parents (see Appendix B for the interview guide). With their permission, phone interviews were recorded and then transcribed. Given the limited number of children ages 0 to 5 using TeleSpeech, it was challenging to find parents to volunteer to participate in the TeleSpeech interviews.

Stakeholder Questionnaires: Programs involved in helping preschool and school aged children to access SLP services were invited to complete a questionnaire. The questionnaire was administered through Survey Monkey and over the phone. Except for a few wording changes, the same questionnaire was administered to all the stakeholder groups (see Appendix C for an example of the questionnaire). Questionnaire responses used in this evaluation report are identified by the stakeholder groups, rather than specific job titles, to ensure that confidentially is maintained. The programs below were invited to complete the questionnaires:

> Aboriginal Head Start is a preschool program for First Nations, Inuit and Métis children between the ages of three and five.
>
> Healthy Family Program is a voluntary home visitation program for families with children ages zero to five.
>
> Health Centres provide a range of programs and services to support child development, such as Kindergarten Screening, Well Child Clinics, and Immunizations. TeleHealth Units are located in health centres in 20 of the small NWT communities.
>
> Schools provide early learning for children in preschool and junior kindergarten and education programing for children in grades kindergarten to grade 12 in an inclusive environment. There are 27 communities with TeleHealth Units in the schools.
>
> SLPs, Rehabilitation Aides and SLPs Managers/ Supervisors are involved in the provision of speech language pathology services to children across the NWT. Current

Figure 1.5.2: TeleSpeech Questionnaire



staff and individuals who recently left these positions were invited to participate in the online questionnaire.

Number of Questionnaire Respondents

Stakeholders were asked to complete the TeleSpeech questionnaire between May 29, 2015 and June 19, 2015. Weekly emails were sent to stakeholders to remind them to complete the questionnaire. The deadline to complete the questionnaire was extended to June 29, 2015 to increase the response rate. Figure 1.5.2 presents the number of respondents received for this evaluation. Of the 84 respondents, 54 individuals worked with TeleSpeech with one or both of the age groups.

Communities that Provided Feedback

This evaluation elicited feedback from the Rehabilitation Teams along with stakeholders in communities where there are no SLPs. At least one questionnaire was filled out in 23 of the 29 targeted communities (79% target community representation). Within this evaluation, target communities are those without a Speech Language Pathologists. Therefore, Inuvik, Hay River, Fort Smith and Yellowknife are excluded from the target communities. The following communities are represented in the evaluation:

- Aklavik
- Behchokǫ̀
- Colville Lake
- Deline
- Fort Liard
- Fort McPherson
- Fort Resolution
- Fort Providence
- Jean Marie River
- Lutsel K'e
- Norman Wells
- Paulatuk
- Tuktoyaktuk
- Tulita
- Ulukhaktok
- Whatì

- Dettah
- Gamètì
- Sachs Harbour
- Tsiigehtchic
- Fort Good Hope
- Hay River Reserve
- Trout Lake

Table 1.5.3 outlines the number of people we talked to for each stakeholder group and the program/community representation from the target communities.

Table 1.5.3: Stakeholders Questionnaires and Representation

Who?	# of People who Participated	# of Programs Represented	Total Programs	Program Representation
SLP Related Staff*	14	4	4	100%
Inclusive Schooling Coordinators	4	4	6	66.7%
Healthy Family Program**	2	2	12	16.7%
Aboriginal Head Start **	4	4	5	80.0%
Who?	# of People who Participated	# of Communities Represented	Total Target Communities	Community Representation
School Staff ***	35	19	28	67.9%
Health Centre Nurses	27	15	18****	83.3%

*SLP Related Staff include SLPs, Rehabilitation Aide & Managers/Supervisors

**Only program staff from communities without SLPs were asked to fill out the questionnaire.

***School staff includes principals, teachers, classroom assistants, program support teachers and inclusive schooling coordinators

****This number represents communities that have permanent nursing staff.

Data Analysis Methods

Quantitative data were analyzed using Microsoft Excel. Statistical significance could not be tested as the number of responses was too low. Therefore, descriptive statistics were used to analyze the data. Qualitative data were analyzed using qualitative analysis software – MAXQDA. The software supported coding, and the identification of patterns and key themes.

Ethical Considerations

The following outlines the ethical considerations underlying the evaluation:

- Confidential information was kept secured and complied with the NWT's *Access to Information and Protection of Privacy Act;*
- Before conducting interviews with clients, the Rehabilitation Teams worked with families to complete consent forms before the Evaluation Specialist contacted them;
- The Evaluation adhered to *the Program Evaluation Standards* and the Canadian Evaluation Society's *Guidelines for Ethical Practice*;

- In compliance with section 34.e of the *Official Languages Act*, parents were offered the interview in French or English.
- The Evaluation Specialist worked with the RAC and Departmental Staff to ensure correct and appropriate interpretation of all evaluation activities.

Limitations and Mitigation Strategies

Most evaluations face constraints that may have implications on the validity and reliability of evaluation findings and conclusions. Table 1.5.4 outlines the limitations in the design and methods for this evaluation. Also noted are the mitigation strategies put in place to ensure that the evaluation findings can be used with confidence to guide program planning and decision-making.

Table 1.5.4: Evaluation Limitations and Mitigation Strategies

Limitation	Impact	Mitigation Strategy
Availability of Rehabilitation staff to participate in focus groups	The findings may not be representative of all the Rehabilitation Team members' views	In smaller Teams (Hay River and Fort Smith), all the staff participated in the focus groups. In the larger Teams (Stanton and Beaufort-Delta), the Managers/Supervisors chose representatives from each discipline. This process allowed for a representative sample of each rehabilitation discipline without completely disrupting service to clients.
Small sample size of families Client perspectives were limited to people who are willing to participate in the evaluation	Sample may not represent the entire spectrum of views within the target population	The timeframe to conduct parent interviews were extended by a couple of months. Parent/client perspectives from multiple communities were sought.
Rehabilitation Teams may not be entering information into their data sets consistently and accurately	Data integrity	Existing quantitative data was supplemented by caregiver interviews, service provider focus groups, and stakeholder questionnaires.
Some data sets cannot be analyzed by age	Quality and quantity of data for children 0-5 is limited	
Inability to get certain stakeholders to complete the questionnaires	Non-respondents are generally different from those who respond, and their exclusion can lead to biased result	The online questionnaire was open for three weeks. During that time, weekly reminders were sent about the completing the survey. At the end of three weeks, the results were examined to determine which stakeholder groups had low representation. Follow-up emails and phone calls were made to encourage participation. Stakeholders were also offered the opportunity

Limitation	Impact	Mitigation Strategy
		to complete the questionnaires over the phone.
Stakeholder questionnaires included questions for two evaluations The length of the questionnaire could have led to respondent fatigue	Respondent fatigue may have led participants to write less for the open ended questions Respondent fatigue may lead to people dropping out midway through the questionnaire	To mitigate respondent fatigue, a high representation of each stakeholder group was targeted. Multiple lines of evidence were used to strengthen any data gaps, including the impact of respondent fatigue.

Section 2: Evaluation Findings

Q.1 Is there a need for SLP services in small communities?

The evaluation question is meant to validate the need for SLP services in small communities. Data sources for this section include:

- Department of Education, Culture and Employment (ECE) - Review of Minister's Directive of Inclusive Schooling (2014)
- Department of Health and Social Services - One-Time Baseline Assessment of NWT Children Aged 5 Years (2015)
- Department of Education, Culture and Employment (ECE) - Early Development Instrument: NWT Baseline Results for the 2012, 2013 and 2014 School Years (2014)
- Department of Health and Social Services - Rehabilitation Team Data

Review of Minister's Directive of Inclusive Schooling, 2014

The 2014 *Review of Minister's Directive of Inclusive Schooling* (hereinafter referred to as the *Inclusive Schooling Review*), identified that there is a need for SLP services for school age children across the Northwest Territories. The Review identified that a total of 1000 hours of private SLP contract work was hired by the District Education Councils in 2013 (January to December). These private SLP hours were in addition to the SLP services provided by the Department of Health and Social Services. The respondents in the *Inclusive Schooling Review* (2014) also indicated they want more SLP support in their schools.

The *Inclusive Schooling Review* (2014) included findings from an internal Department of Education, Culture, and Employment 2007 Student Support Needs Assessment (SSNA), which identifies that a large number of students in the NWT require a range of supports, including SLP services, and many faced challenges in accessing these supports. Within the SSNA, teachers were asked to identify students who required the most Time, Energy and Resources (TER) to support, and it was found that many of these students, who require more supports than other students, are not receiving the supports they need, including SLP services (Table 2.1.1). The SSNA also identified that there are non-TER students that have unmet needs, inclusive of SLP services. Table 2.2.1 outlines the percentage of students receiving and requiring SLP services.

Table 2.1.1: TER Students and SLP Needs

	TER Students	Other Students
% Receiving Speech Language Services	7%	2%
% Requires Speech Language Services	**23%**	4%

One-Time Baseline Assessment of NWT Children Aged 5 Years, 2015

A preschool screening of children in the NWT was conducted by Health and Social Services Authorities (HSSAs) between February and August 2014. Screening was completed by nursing staff in all communities using a modified Rourke form that was piloted for the first time in the NWT. The Rourke form includes Nippissing District Developmental Screening tool items to screen for developmental delay.

Approximately 75% of the entire NWT cohort of children born in 2009 was screened (505 assessments). This estimate is based on the 668 children age four in 2013 as per the NWT Bureau of Statistics. Seventy two (14.3%) children were referred to an SLP upon completion of the preschool screening using the Rourke form. Table 2.1.2 presents SLP referrals by community type. The number of referrals and percentage of children referred to SLP services was highest in Small Communities, followed by Yellowknife and Regional Centres.

Table 2.1.2: Speech Referrals made for children born in 2009 (n=505)

Community Size	# of referrals	# of Children Screened	% of children referred
Yellowknife	20	224	8.9%
Regional Centres	9	116	7.8%
Small Communities	**43**	**165**	**26.1%**

The baseline assessment results should be interpreted with caution due to: (a) small sample sizes; and (b) the novelty of the modified Rourke form to nursing staff using it to complete the preschool screen, and (c) under and over reporting of referrals on the form as a result of parents/guardians declining or requesting a referral, respectively.

Early Development Instrument: NWT Baseline Results for the 2012, 2013 and 2014 School Years

The Early Development Instrument (EDI) measures children's developmental health at school entry by asking questions covering five different areas of their early development, also referred to as "domains":

- Physical Health and Wellbeing
- Communication and General Knowledge
- Emotional Maturity
- Social Competence
- Language and Cognitive Development

The NWT has collected EDI data annually since 2012. All NWT Education Authorities participate in the EDI collection. Table 2.1.3 presents the baseline data for children who scored in the vulnerable category based on the Canadian norms for the domains related to speech and language. Children from small communities are more likely to be vulnerable in the domains presented in Table 1.3.1 when compared with Yellowknife and Regional Centers.

Table 2.1.3: NWT Early Development Instrument Baseline Results, 2012-2014

EDI Domains	Yellowknife	Regional Centres	Small Communities	NWT	Canada[6]
Language & Cognitive Development	12.5%	11.5%	**27.4%**	17.3%	8.7%
Communication Skills & General Knowledge	13.0%	15.1%	**29.0%**	18.8%	13.0%

Waitlist for SLP Services

The Canadian Institute for Health Information (CIHI) identify in their report *Health Care in Canada – A Focus on Wait Times (2012)*, that "access is influenced by many factors, but from the patient's perspective, perhaps the most important is how long they must wait for the care they need". Speech-Language and Audiology Canada (SAC) identified that access to speech, language and swallowing services is a critical concern across Canada (Rvachew & Rafaat, 2014).

National benchmarks for wait times for SLP services have yet to be fully established (Rvachew & Rafaat, 2014). The Pan Canadian Alliance of Speech-Language Pathology and Audiology Organizations (the Alliance) has committed to establishing reasonable wait times benchmarks[7] for different diagnostic grouping (Rvachew & Rafaat, 2014). To date, only the benchmark wait times for pediatric speech sound disorders (SSD) has been released. Speech-Language and Audiology Canada characterizes SSDs as a "high frequency of speech sound errors relative to the child's age peers, impacting the intelligibility of the child's speech" (Rvachew & Rafaat, 2014, p.1). Table 2.1.4 presents the recommended wait times for pediatric SSD. The Alliance is working on other benchmark wait times related to other SLP diagnostic groupings, such as pediatric language disorders and fluency disorders.

[6] The Canadian comparator is taken from Nova Scotia's *2012/2013 Early Development Instrument Results*.

[7] A benchmark wait time is not a standard of care or a practice guideline. There may be variations in the application based on the needs of individual patients and the unique circumstances of the service provider. However, a benchmark allows for measurement of improvements in wait times overall and comparisons among jurisdictions (Rvachew & Rafaat, 2014).

Table 2.1.4: Recommended Wait Times for Pediatric Speech Sound Disorders (SSD)

Time to assessment: The maximum time children should wait for an initial response following the service provider's receipt of referral/self-request for service and accompanying intake information should be 2 months regardless of age and risk status.

Time to intervention: The maximum time children with SSD should wait for intervention following the service provider's assessment may vary with child's age and risk status as follows:

Risk Status	Birth to 3 Years	4 to 6 Years	School Age
High Risk	3 months	1 month	3 months
Low Risk	6 months	3 months	8 months

High Risk Factors

- Reported family history of speech-language delays/disorders and/or reading difficulties;
- Identified language impairments in conjunction with speech sound disorders at the time of assessment;
- Identified difficulties with phonological processing, including non-word repetition tasks and phonological awareness tasks at the time of assessment;
- Child is entering school in September of the coming school year.
- The speech difficulties noted at the time of assessment are impacting the client's ability to participate in activities and roles in his/her daily life.

*Table reproduced from the 2014 SAC Annual Convention poster presentation.

Waitlists (the number of individuals waiting) for health services provide insight into the need/demand for a service , while wait times (the time an individual waits for a service once the need has been identified), gives an indication of the responsiveness and accessibility of the service. The Rehabilitation teams do not currently collect or report on wait times, so each Rehabilitation team was asked to provide its waitlist for SLP services for 2008/09 (prior to implementation of TeleSpeech) and November 2014 (following implementation of TeleSpeech) to determine if there was a change in the need for services. Three of the four Rehabilitation Teams were unable to provide waitlist for SLP services in the 2008-2009 fiscal year, therefore, the 2008/2009 data is not included. Table 2.1.5 presents the waitlist for SLP services in November 2014 for clients between the ages 0 and 5, and clients over the ages 6 and over. There are two waitlists for SLP services; the Assessment waitlist includes the number of individuals waiting for an initial assessment of their needs, and the Treatment waitlist includes individuals whose needs have been assessed, but who are waiting for treatment.

The data collected for November of 2014 (Table 2.1.5), indicates that there are children waiting for both SLP assessment and treatment services. The Hay River Rehabilitation Team is the only team with a waitlist for SLP assessment, which is five children or less. The Stanton Rehabilitation Team is the only team with an SLP treatment waitlist, which has 28 children ages 0 to 5 in Yellowknife waiting for treatment. It is of importance to note that the waitlist fluctuates over time, so this data provides us with a glance at the need at one point in time. While data is not available on the wait time for individuals on the waitlist, i.e., how long have they been waiting for services, it is important to note that the wait time for individuals in small communities is directly related to the frequency with which the Rehabilitation team travels to the community, such as 1 to 2 times year.

Table 2.1.5 : Waitlist for Speech Language Pathology by Age and Team, November 2014				
Rehabilitation Team	**Clients Ages 0 to 5**		**Clients Ages 6 and Over**	
	Assessment	Treatment	Assessment	Treatment
Beaufort-Delta	0	0	0	0
Stanton[1]	0	28	0	0
Hay River	x[1]	0	0	19
Fort Smith	0	0	x[2]	0

[1] Waitlist for Stanton does not include individuals waiting for service from communities outside of Yellowknife or in Nunavut.

[2] Rehabilitation Teams with waitlists of 5 or less are suppressed.

New Referrals to SLP Services

Rehabilitation Teams were asked to provide the number of new referrals for SLP services for 2008/2009 and 2013/2014 fiscal years. The Hay River Rehabilitation Team was the only Team able to provide a complete dataset for new referrals. Additionally, the Rehabilitation Teams do not consistently collect data on the number of new referrals in the catchment area they serve. As a result, a comparison between Rehabilitation Teams cannot be provided. In Hay River, the number of referrals for children over the age of six has increased by 186% between 2008/2009 and 2013/2014, from 14 referrals to 40 referrals.

Q.2 Is TeleSpeech an acceptable tool to assist in delivering SLP services in small communities?

The following section presents data on the acceptability of TeleSpeech as a tool to assist in delivering SLP services in small communities. Data sources for this section include:

- Literature Review with Critical Appraisal - TeleHealth for Speech and Language Pathology: A Review of Clinical Effectiveness, Cost-Effectiveness, and Guidelines (2015)
- Stakeholder questionnaire responses

Literature Review with Critical Appraisal (2015)

In April 2015, a literature review with critical appraisal was completed by the Canadian Agency for Drugs and Technologies in Health (CADTH) with a focus on the clinical effectiveness of TeleHealth for Speech and Language Pathology. The following provides the key points from the CADTH literature review (see Appendix D for the literature review in full):

Background:

TeleSpeech is different from the conventional in-clinic models and is particularly important for patients in the remote or rural areas, who usually have limited access to the healthcare services due to the distance, costs, shortages of speech-language pathologists, or parents' commitment to work. This model may enhance the quality of care by optimizing the timing/intensity/sequencing of interventions and allowing more frequent interactions with patients, thus may be associated with more favorable outcome for them. In addition, a unique benefit of TeleHealth is that the SLP services to be delivered to the patients in their own environment, such as the home, in a local community, school or workplace.

Quantity of Research Available:

A total of 186 citations were identified in the literature search. Following screening of titles and abstracts, 178 citations were excluded and eight potentially relevant reports from the electronic search were retrieved for full-text review. No potentially relevant publications were retrieved from the grey literature search. Of these potentially relevant articles, six publications were excluded for various reasons, while two RCTs met the inclusion criteria and were included in this report.11,12 No relevant systematic reviews or meta-analyses, non-randomized controlled trials or economic evaluations were identified.

Summary of Findings

1. *What is the clinical effectiveness of TeleHealth for the delivery of SLP services to children with speech and language disorders or impairments?*

In the 2013 Grogan-Johnson study, the mean number of sessions attended by the study participants was similar between the two treatment groups, 9.3 sessions in the TeleHealth group and 9.4 sessions in the side-by-side treatment group. The results showed that children in both groups demonstrated some improvement in their speech sound production at the end of the intervention; however, there were no statistically significant between-group differences in assessments after the treatment. The authors concluded that both models helped improve children's speech sound productions.

The 2010 Grogan-Johnson study evaluated the effect of TeleHealth SLP services and conventional on-site SLP services on articulation disorders in young children. The performance of the majority of the preschool- and school-age students from both groups was rated as Mastered or Making Adequate Progress. This rating was not defined in the article. At the end of the first treatment period, there was no statistically significant difference in GFTA-2 scores between TeleHealth and on-site service (p=0.06). The authors indicated that telepractice was a viable approach to deliver services to children with articulation disorders in a public school setting.

2. *What is the cost-effectiveness of TeleHealth for the delivery of SLP services to children with speech and language disorders or impairments?*
   There were no economic evaluations identified.

3. *What are the evidence-based guidelines regarding the use of TeleHealth for the delivery of SLP services to children with speech and language disorders or impairments?*
   There were no evidence-based clinical practice guidelines identified.

Conclusions and Implications for Decision or Policy Making

The clinical evidence regarding the comparative effectiveness of TeleHealth relative to conventional in-person speech-language pathology services on children with speech and language impairments or disorders was limited. Two RCTs examined the use of videoconferencing in school-age children with speech sound impairments and communication impairments. The study findings suggested that an improvement in children's speech-language impairments was observed by using standard speech instrument or by speech-language pathologists in either treatment arm. No significant differences, hence, were found between the interventions. There are uncertainties around the data interpretation given the low quality of the evidence. In addition, there are no data reported for children younger than five years old, and no data available for technologies other than videoconferencing. The cost-effectiveness of the application of TeleHealth model in the study population remains unknown. Guidelines regarding the use of TeleHealth for speech and language pathology in children were not identified.

The evidence from two randomized controlled trials suggests that speech-language pathology treatment, delivered via videoconferencing or an in-person service model,

improved children's speech-language impairments, and there were no significant differences found between these two models. These findings must be interpreted with caution given the limitations in the evidence.

Questionnaire Results

The following subsection presents the findings from TeleSpeech questionnaire relevant to the acceptability of TeleSpeech as a tool to deliver SLP services in small communities. The findings include responses from SLPs, Rehabilitation Managers/Supervisors, Rehabilitation Aides, School Principals, Teachers, Teaching Assistant, Program Support Teachers, and Regional Inclusive Schooling Coordinators.

Acceptability of TeleSpeech

Are TeleSpeech Sessions a good way for children to receive SLP services in small communities?		
Age Group	Strongly Agree/Agree	Strongly Disagree/Disagree
Children Ages 0 to 5	**22 (84.6%)**	4 (15.4%)
Children Ages 6 and over	**42 (97.7%)**	1 (2.3%)

The majority of respondents (84.6%-97.7%) agree TeleSpeech sessions are a good way for children to receive SLP services. Although not ideal in every situation, respondents feel TeleSpeech has been a good way for communities to receive SLP services in between appointments. As some respondents demonstrate:

> *Thank you for offering this service. Please don't take it away! The outreach clinic comes to the school once a year to do assessments. It is essential to making follow up contact with students. (School Staff)*

> *TeleHealth has changed the way that SLPs work, and it means that we have to adapt our therapy sessions. But I think this is a good thing. I have seen amazing progress using TeleHealth. (SLP)*

The SLPs diverged from the other respondents; with over half of the SLPs (57.1%) who disagree that TeleSpeech is a good way for children ages 0 to 5 to receive SLP services. In the open ended questions, all the SLPs respondents expressed that TeleSpeech is not acceptable for all children, particularly children with:

- Complex language disorders;
- Severe language delays;
- Behaviours difficulties; and
- Attention or executive functioning difficulties.

Appropriateness of the TeleHealth Unit for Children Ages 0 to 5

Is the TeleHealth Unit an appropriate tool for delivering SLP services to children ages 0 to 5?		
Respondent Group	Strongly Agree/Agree	Strongly Disagree/Disagree
Health Centre	7 (87.5%)	1 (12.5%)
Schools Staff	5 (71.4%)	2 (28.6%)
SLP Staff	**3 (42.9%)**	**4 (57.1%)**
All Respondents	15 (68.2%)	7 (31.8)

Overall, most respondents (68.2%) agree the TeleHealth Unit is an appropriate tool for delivering SLP services to children ages 0 to 5. However, over half of the SLPs (57.1%) staff disagree the TeleHealth Unit is an appropriate tool for delivering SLP services to this age group. The SLPs explain the appropriateness of TeleSpeech for children ages 0 to 5 is influenced by the developmental maturity of the client. All the SLPs and one health centre staff expressed concern over the attention span and emotional and behavioural maturity of children between the ages of 0 and 5 in their ability to sit through TeleSpeech sessions:

> *It's great for older kids who understand the person is there on the screen, whereas the younger children are more easily distracted. (Health Centre Staff)*

A few SLPs mentioned that TeleSpeech is not appropriate in providing regular therapy to children ages 0 to 5. TeleSpeech works best as follow-up with families for children ages 0 to 5 between community visits for consultation.

Appropriateness of the TeleHealth Unit for Children Ages 6 and Over

Is the TeleHealth Unit an appropriate tool for delivering SLP services to children ages 6 and over?		
Respondent Group	Strongly Agree/Agree	Strongly Disagree/Disagree
Health Centre	12 (92.3%)	1 (7.7%)
Schools Staff	19 (86.4%)	3 (13.6)
SLP Staff	12 (92.3%)	1 (7.7%)
All Respondents	43 (89.6%)	5 (10.4%)

The majority of respondents (90%) strongly agree or agree that the TeleHealth Unit is an appropriate tool for delivering SLP services to school aged children (6+). Respondents explain TeleSpeech can work well as a supplement between community visits for school age children, depending on their therapy needs and developmental maturity.

> I certainly don't want the communities to lose access to this tool, as it is appropriate/helps in some cases. It is important for decision makers to realize that it's **not a "one-size-fits-all" solution**. (SLP)

Telespeech compared to In-Person Treatment

Are TeleSpeech Sessions just as good as seeing the therapist in-person?		
Age Group	Strongly Agree/Agree	Strongly Disagree/Disagree
Children Ages 0 to 5	6 (25.0%)	**18 (75.0%)**
Children Ages 6 and over	12 (30.8%)	**27 (69.2%)**

Regardless of the age group, most respondents feel in-person sessions are more effective than TeleSpeech Sessions. The majority of respondents (75%) felt in-person treatment is the best method to provide SLP services to children ages 0 to 5. It was felt in-person treatment is more engaging, particularly for this age group. The SLPs agree this age group needs play-based, highly interactive therapy. This type of therapy is difficult to achieve through TeleSpeech:

> *TeleSpeech is generally not appropriate for children under five. Preschoolers generally need play-based, highly interactive therapy which is very difficult to facilitate when you are not in the same room as the client. (SLP)*

> *Some speech goals require hands on therapy which cannot be completed through TeleHealth. (SLP)*

However, one theme that emerged through the open ended responses on the questionnaire is that TeleSpeech is better option than nothing. As noted by respondents:

> *Face to face sessions are better but when unavailable is an excellent supplement. (SLP)*

> *This is a better option than having no services, much more cost effective than having an SLP more physically present in smaller communities. (School Staff)*

> *TeleSpeech is the best method available to us at the moment for delivering children in small communities. (SLP)*

Q.3 Do NWT residents have improved access to SLP services as a result of the use of TeleSpeech?

The following section presents data on access to SLP services. Data sources for this section include:

- TeleHealth Utilization Data
- Rehabilitation Team Data
- Stakeholder questionnaire responses

TeleHealth Utilization

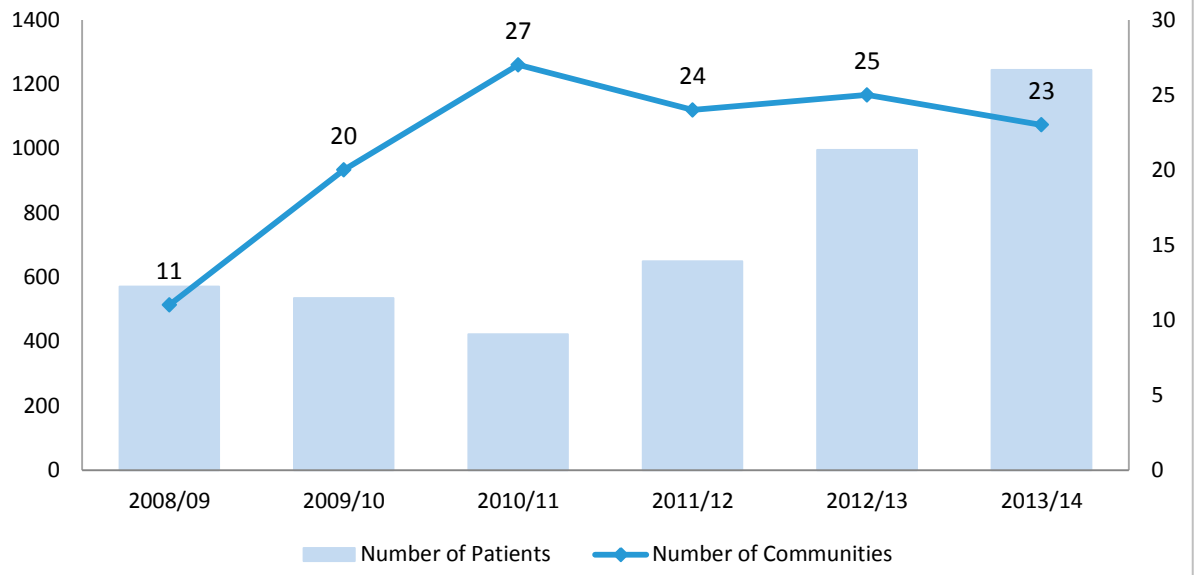
TeleHealth Sessions are scheduled through an electronic system called VC Scheduler. TeleHealth data for the delivery of SLP services between 2008/09 to 2013/14 was extracted from VC Scheduler and analyzed by HSS. Detailed information, such as age, is not captured through VC Scheduler. Furthermore, data entry into VC Scheduler is inconsistently completed and there are no system policies or procedures that guide users across the system to ensure consistency.

Figure 2.3.1 demonstrates the number of clients and communities participating in TeleSpeech sessions between 2008/2009 and 2013/2014 fiscal years. The number of TeleSpeech sessions fluctuates yearly, but has steadily increased since 2010/11; a total of 4419 SLP sessions were delivered using TeleSpeech between April 2008 and March 2014. The number of communities using TeleSpeech also varies from year to year, but the majority of communities outside of Yellowknife, Inuvik, Fort Smith and Hay River consistently use TeleSpeech. There are some NWT communities that have had consistently low or no participation in TeleSpeech sessions. Fort Resolution, Gamètì, Nahanni Butte, Sachs Harbour, Trout Lake, Wekweètì and Wrigley had no sessions over multiple years in the past four years. Fluctuations in community use are most likely attributable to the following factors:

- Clinical need –TeleSpeech services are only provided to clients who require regular intervention and/or follow-up, and TeleSpeech is an appropriate way for the intervention to occur. In some situations there may be communities that have no residents receiving active SLP or TeleSpeech services.
- Lack of community participation – delivery of TeleSpeech is dependent on an individual in the community supporting the child during the TeleSpeech session. School or health staff may not have the skills or dedicated time to operate the TeleHealth unit and sit in on the TeleSpeech session. Staff turnover affects this significantly.
- Use of TeleSpeech to fill staffing vacancy - TeleSpeech is used to provide services in the regional centers when there is an SLP vacancy in the Rehabilitation Teams. For example, in 2013, SLP services were provided to communities in Hay River and its catchment area

through TeleSpeech rather than in person while there was an SLP vacancy in the Hay River Team. When there is an SLP on staff, communities within the Hay River catchment area rarely use TeleSpeech as most of the communities are within driving distance.

Figure 2.3.1: Number of Sessions and Communities Using TeleSpeech, 2008-2014



Community Outreach Service Days

The purpose of the TeleSpeech project was to integrate the use of TeleHealth into community outreach clinics and routine rehabilitation operations. As a result, the number of community outreach service days was included as a data source to determine if there was a change in the number of service days between 2008/09 and 2013/14 fiscal years. However, the number of community service days is unavailable in all communities for the 2008/09 fiscal year. As such, there are not enough comparator communities within the 2008/09 fiscal year to determine if the provision of TeleSpeech has impacted the provision of in-person SLP sessions.

Despite missing an integral piece of comparative data, the community outreach service days for 2013/14 fiscal year shows the distribution of services throughout the NWT.

Table 2.3.4 outlines the number of service days communities receive through outreach visits from the Rehabilitation Teams for SLP services during the 2013-2014 fiscal year. All communities with over 0.3% of the population receive at least one visit a year from the SLPs. It is important to note that number of services is not dependent solely on the population size of the community. Other factors, such as identification of need (referrals) and complexity of the need influence the number of service days received per community.

Table 2.3.4: Community Service Days by Community and Rehabilitation Discipline Relative to NWT Population, 2013/2014 Fiscal Year

Region/Community	Rehab Team	# of SLP Service Days	Community Pop.	% of total NWT Pop.
Beaufort Delta				
Inuvik	Beaufort-Delta	Team Located Here	3,358	6.8%
Tuktoyaktuk	Beaufort-Delta	5	927	1.9%
Fort McPherson	Beaufort-Delta	6	783	1.6%
Aklavik	Beaufort-Delta	9	663	1.3%
Ulukhaktok	Beaufort-Delta	7	438	0.9%
Paulatuk	Beaufort-Delta	3	315	0.6%
Tsiigehtchic	Beaufort-Delta	2	167	0.3%
Sachs Harbour	Beaufort-Delta	4	129	0.3%
Sahtu				
Norman Wells	Beaufort-Delta	6	764	1.5%
Fort Good Hope	Beaufort-Delta	6	535	1.1%
Tulita	Beaufort-Delta	5	522	1.1%
Deline	Beaufort-Delta	6	506	1.0%
Colville Lake	Beaufort-Delta	3	169	0.3%
Tlicho				
Behchokǫ̀	Stanton	10	2,066	4.2%
Whatì	Stanton	6	505	1.0%
Gamètì	Stanton	3	276	0.6%
Wekweètì	Stanton	0	138	0.3%
Dehcho				
Fort Simpson	Stanton	10	1,230	2.5%
Fort Providence	Stanton	6	792	1.6%
Fort Liard	Stanton	4	567	1.1%
Hay River Reserve	Hay River	Unknown	320	0.6%
Wrigley	Stanton	0	150	0.3%
Jean Marie River	Stanton	0	80	0.2%
Nahanni Butte	Stanton	0	93	0.2%
Trout Lake	Stanton	0	108	0.2%
Kakisa	Hay River	0	65	0.1%
Yellowknife				
Yellowknife & Dettah	Stanton	Team Located Here	20,750	41.9%
Fort Resolution	Fort Smith	6	508	1.0%
Lutsel K'e	Stanton	1	307	0.6%
Hay River				
Hay River	Hay River	Team Located Here	3,727	7.5%
Enterprise	Hay River	0	118	0.2%
Fort Smith				
Fort Smith	Fort Smith	Team Located Here	2,542	5.1%

Service days vary by community, even among communities of similar size and with similar child populations. Figure 2.3.5 presents the number of SLP service days for communities representing between 0.1% and 0.5% of the total NWT population. Enterprise, Kakisa, Wrigley, Wekweètì, Trout

Lake, Nahanni Butte and Jean Marie River do not receive any community visits from the SLPs. In contrast, Sachs Harbour, which has a similar population as Wrigley and Wekweètì, receives four SLP service days per year.

Figure 2.3.5: NWT SLP Community Visits by Number of Services Days and Community's Percentage of Total NWT Population, 2014

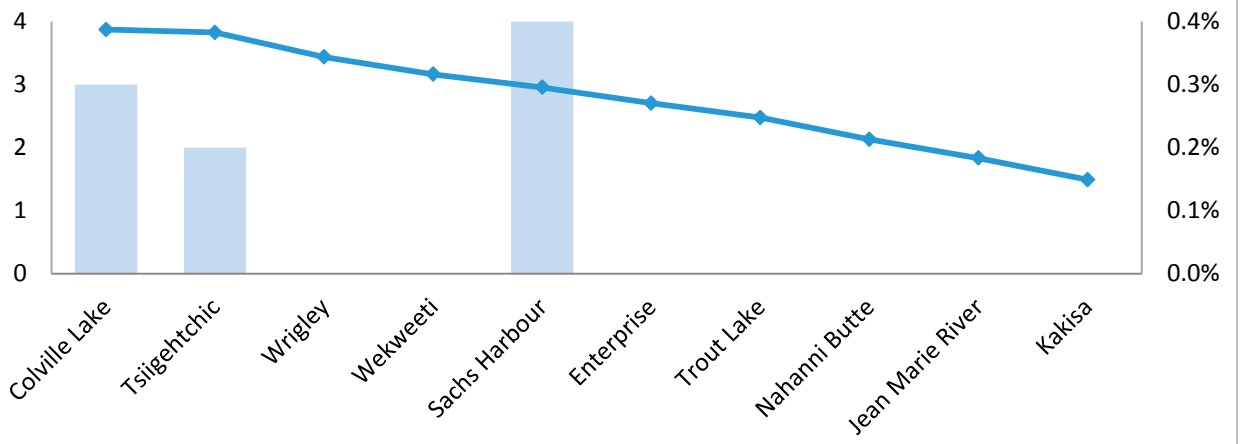


Figure 2.3.6 presents the number of SLP service days for communities representing between 0.6% and 1.0% of the total NWT. Lutsel K'e receives fewer SLP service days than Paulatuk and Gamètì, which has a similar population to Lutsel K'e.

Figure 2.3.6: NWT SLP Community Visits by Number of Services Days and Community's Percentage of Total NWT Population, 2014

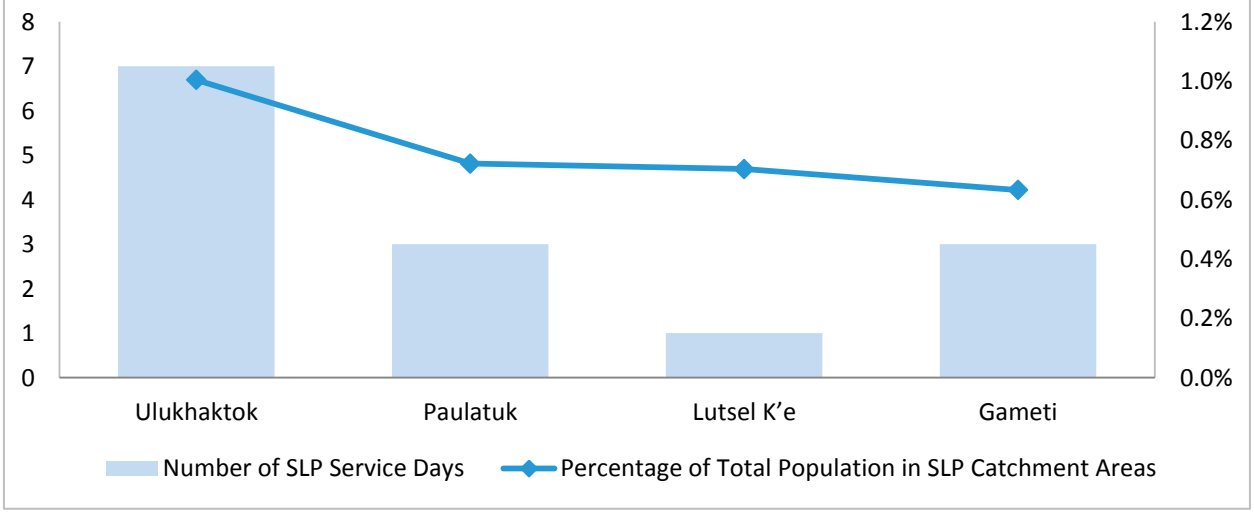


Figure 2.3.7 presents the number of SLP service days for communities representing between 1.1% and 1.5% of the total NWT population. Overall, communities with this population size receive approximately the same number of SLP service days. However, Fort Liard receives fewer SLP service days than these communities despite having a slightly higher population than Fort Good Hope and Tulita.

Figure 2.3.7: NWT SLP Community Visits by Number of Services Days and Community's Percentage of Total NWT Population, 2014

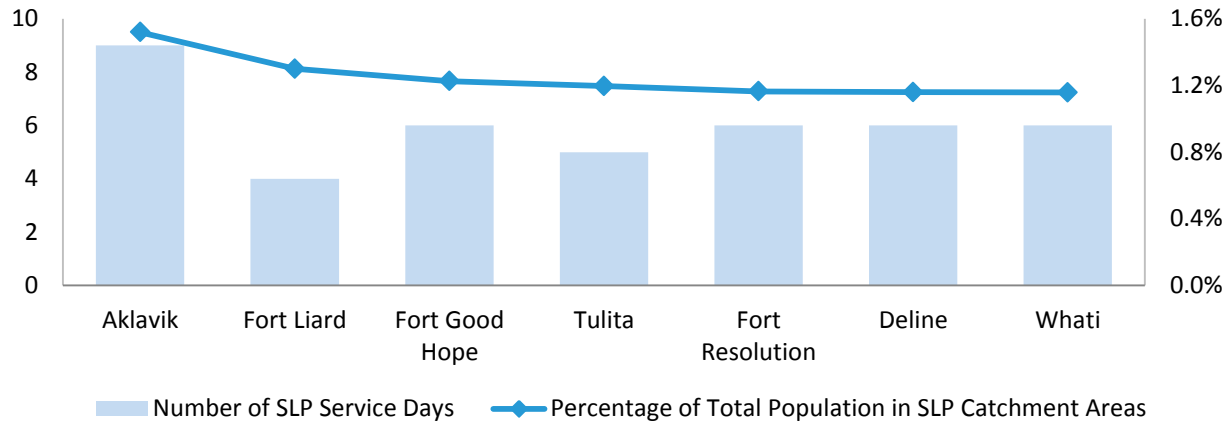
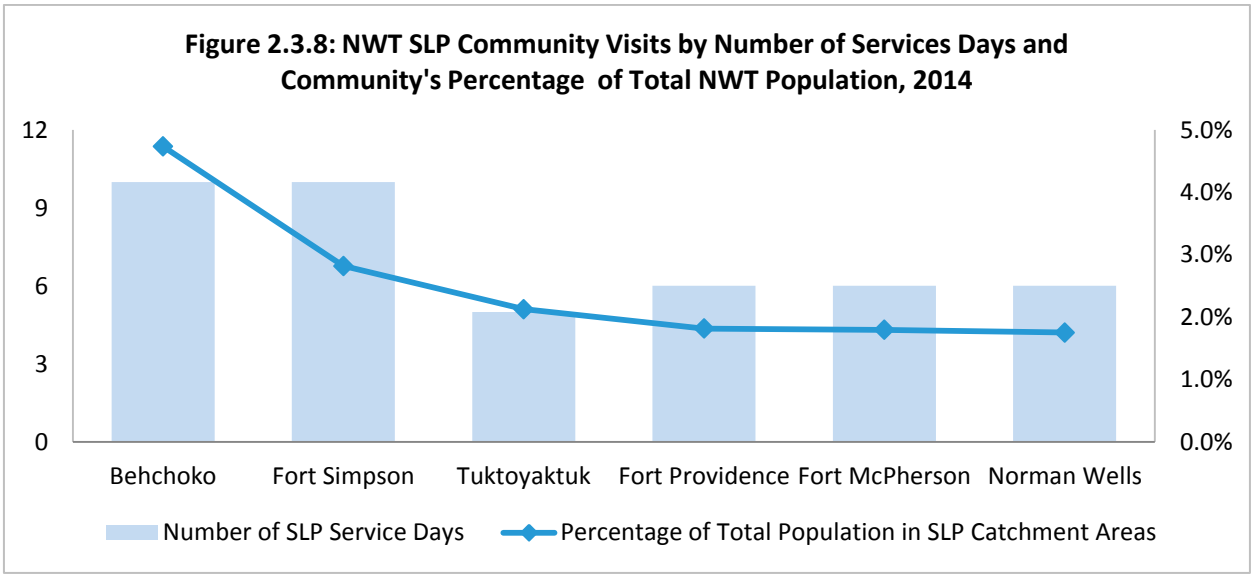


Figure 2.3.8 presents the number of SLP service days for communities representing between 1.6% and 4.5% of the total NWT population. Overall, communities with this population size receive approximately the same number of SLP service days. Despite having a lower population than Behchokǫ̀, Fort Simpson has a similar number of SLP service days. This may due to the fact that Behchokǫ̀ is within driving distance of a service centre (Yellowknife) and therefore receives fewer community visits relative to their population. Furthermore, residents from outlying communities within the Dehcho region will sometimes travels to Fort Simpson when specialists travel to the community.



Community size is an important factor contributing to the number of SLP service days. Among the smallest NWT communities, SLP service days are more likely to be inconsistent. This is likely due to the other major contributing factors, such as the size the caseload in each community and local staff to support rehabilitation outreach clinics. In very small communities it is possible that there are no children on the caseload, eliminating the need for SLP service days. However, community service days are an important in the provision of TeleSpeech sessions. Only children on the SLP caseload use TeleSpeech. Community service days allows for rehabilitation teams to work with community organizations to identify and assess children who require rehabilitation services.

Questionnaire Results

The following subsection presents the findings from the TeleSpeech questionnaire relevant to improved access for SLP services. The findings include responses from SLPs, Rehabilitation Managers/Supervisors, Rehabilitation Aides, School Principals, Teachers, Teaching Assistant, Program Support Teachers, and Regional Inclusive Schooling Coordinators.

Improving Accessibility

Do TeleSpeech Sessions improve access to SLP services?		
Age Group	Strongly Agree/Agree	Strongly Disagree/Disagree
For Children Ages 0 to 5	**21 (95.5%)**	1 (4.5%)
For Children Ages 6 and over	**41 (97.6%)**	1 (2.4%)

The majority of respondents (95.5%-97.6%) agree TeleSpeech improves access to SLP services for children, regardless of their age. Many respondents feel TeleSpeech provides a good supplement to infrequent travel clinics in remote NWT communities, especially where having full-time therapists

would be difficult. One SLP also noted TeleSpeech allowed for continuity of SLP services while their position was vacant.

Some respondents explain:

> *Yes the system does help children ages 0-5 have access to more SLP services, whether these services are direct therapy, team meetings, or parent education/modeling sessions so they can provide therapy in the home. (SLP)*
>
> *It allows SLP to provide regular services to children in the communities. We're not able to provide regular therapy services to school aged children without it. Our program is very reliant on TeleHealth. (School Staff)*
>
> *This has been a great improvement in reaching more children in our communities. (Health Centre Staff)*

One respondent articulated a contrasting view to other respondents. One school was concerned that TeleSpeech might take away from the possibility of more on-site visits as they are a twenty minute drive to the regional centre.

Q.4 Are clients achieving positive outcomes utilizing TeleSpeech?

TeleSpeech is one tool that can be used to provide care required to support a child's rehabilitation needs. TeleSpeech is often paired with in-person SLP sessions, and is ideally supported by family members, and pre-school/school staff to help the child with the treatment plan in between sessions with the SLP. Given the number of variables influencing client outcomes, it is very challenging to draw conclusions about the degree to which TeleSpeech has influenced positive client outcomes. Furthermore, the Rehabilitation Teams do not systematically collect outcome data regarding their SLP clients. Therefore, findings for this evaluation question primarily relied on the questionnaire results.

Questionnaire Results

The following subsection presents the findings from TeleSpeech questionnaire relevant to achievement of positive client outcomes using TeleSpeech. The findings include responses from SLPs, Rehabilitation Managers/Supervisors, Rehabilitation Aides, School Principals, Teachers, Teaching Assistant, Program Support Teachers, and Regional Inclusive Schooling Coordinators.

Positive Outcomes

Do TeleSpeech Sessions help children improve their speech and language skills?		
Age Group	Strongly Agree/Agree	Disagree
For Children Ages 0 to 5	**22 (95.7%)**	1 (4.3%)
For Children Ages 6 and over	**42 (97.7%)**	1 (2.3%)

The majority of respondents (95.7%-97.7%) agree TeleSpeech has helped children improve their speech and language skills. According to one SLP, progress tends to be slower with TeleSpeech sessions than in person sessions.

Children Ages 0 to 5

While there is overall agreement that TeleSpeech has helped to facilitate improvements in speech and language for children ages 0 to 5, respondents agree the right conditions have to be in place: These factors are discussed in detail in the fifth evaluation question.

> *I have seen a child as young as 2 1/2 years old be helped greatly via TeleSpeech. The child was able to maintain attention, the pediatric rehab assistant was phenomenal and the child had an excellent caregiver who attended every session and carried therapy out throughout the week. Having the proper human resources is critical for TeleSpeech therapy to work with young children. (SLP)*

According to some respondents, best results from TeleSpeech occur in children closer to 5 years of age:

It can for children with speech delays if a child is able to sit and co-operate with sessions. This would typically be for children on the older end of this range (i.e. over 4.5 years) (SLP)

Children Ages 6 and Over

Overall, respondents felt TeleSpeech can help older children improve their speech and language skills.

With an appropriate structure, children can achieve high levels of success when they attend regular TeleHealth sessions at their school. (SLP)

Without this help our students would be farther behind in language development and progressing through the curriculum at school. (School Staff)

Other Client Benefits

Other benefits of using TeleSpeech with children were outlined by questionnaire respondents, including:

- Improved confidence
- Helped schools identify potential learning issues
- Allowed for facilitated sessions to improve social skills for students with Autisms Spectrum Disorder

Monitor Progress

Questionnaire respondents also mentioned they appreciated how TeleSpeech allows them to monitor progress of clients more frequently. These sessions also allow the therapists to modify treatment goals and plans. As noted by respondents:

TeleSpeech allows us to have regular contact with the children to monitor their progress and gather further information outside of initial assessments. Assessments during community visits can often be quite rushed due to time constraints and so often not all info is gathered at once. (SLP)

I am able to monitor children's progress, try out new games and goals, and help the speech assistants troubleshoot and think of creative new solutions for behavioral difficulties or perhaps add new goals once old ones have been mastered. I like seeing my kids improve! (SLP)

I like learning how to help the children use the skills they learn from the sessions and to see the progress in the children. (School)

Client Outcomes – Parent Interviews

Overall, parents could not speak to improvements to speech and language skills from TeleSpeech sessions. The majority of parents interviewed indicated their child only received a handful of sessions through TeleSpeech. Another family did not believe their child needed rehabilitation

services. However, one parent felt that TeleSpeech helped to improve her son's speech and language skills:

> *Well my son, he said his first sentence at the age of five, so -- TeleSpeech, it did help with him learning how to speak. Without it, who knows when he would have talked.*

Q.5 What factors have facilitated/hindered TeleSpeech?

As already discussed in this report, questionnaire respondents indicate that children have seen some improvements in speech and language through the use of TeleSpeech; however the right conditions have to be in place. The following section discusses the factors influencing the effectiveness of TeleSpeech. Questionnaire responses are the main source of information informing the results to this evaluation question. When other data is used, it will be indicated in the subsection.

Suitability of the TeleHealth Unit Location

Is the location of the TeleHealth Unit suitable for delivering TeleSpeech services?		
Age Group	Strongly Agree/Agree	Strongly Disagree/Disagree
Children Ages 0 to 5	**33 (78.6%)**	9 (21.4%)
Children Ages 6 and over	**46 (92.0%)**	4 (8.0%)

Children Ages 0 to 5: Most respondents (78.6%) strongly agree or agree the location of the TeleHealth Unit is suitable for delivering TeleSpeech services for children aged 0 to 5. However, respondents indicated that locations of the TeleHealth Unit had to take the following issues into consideration:

- Too large of a room can create an echo
- Too large of a room enables the child to run around
- Too many distractions in the room can make it difficult to maintain the child's attention
- Multipurpose rooms (such as a classroom, meeting space, or clinical room) can lead to scheduling conflicts or distractions
- Lack of resources in the room (appropriate tables, chairs and toys) can challenge the effectiveness of sessions

Children Ages 6 and Over: The majority of respondents (92.0%) strongly agree or agree the location of the TeleHealth Unit is suitable for delivering TeleSpeech services for children ages 6 and over. Many respondents feel the school location is convenient for this age group because it has allowed the treatment of more children, and flexibility in scheduling students if the scheduled student is not at school.

Scheduling Conflicts – TeleHealth Room

How often is the room where the TeleHealth Unit located available when you need to use it?		
Respondent Group	Always or Very Often	Sometimes
SLP Staff	10 (83.3%)	2 (16.7%)
Health Centre Staff	8 (72.3%)	3 (27.3%)
School Staff	18 (90.0%)	2 (10.0%)
Total	36 (83.7%)	7 (16.3%)

Even though the majority of respondents (83.7%) say the location of TeleHealth Unit is always or very often available when they book a TeleSpeech Session, the lack of dedicated space for the TeleHealth Unit has posed problems in some schools and health centres.

One remote NWT community explains their challenge with the location of the TeleHealth Units in the school and health centre. While there is a TeleHealth Unit located in the school, school staff explained the room is small and cluttered with no privacy for it to be of use. As an alternative, staff bring students to the health centre. However, they have difficulties gaining access to the building. As one staff explains:

> *The sessions are scheduled ahead of time, but the health center workers are sometimes late to work so our time gets cut a little shorter, we have to sit outside and wait for them to show up. (School Staff)*

One respondent explained that TeleHealth Sessions are being superseded by other professionals needing the room where the TeleHealth Unit is located. In another school, the TeleHealth Unit is located in a room where regular classes occur. One respondent explains the teacher must find another location to teach her students when TeleHealth Sessions occur.

Two other respondents explain their challenges with no dedicated space for the TeleSpeech Sessions. In one community, the TeleHealth Unit is located in a Health Centre exam room, which is challenging during busy clinics. In another community, scheduling conflicts occur because the TeleHealth Unit is located in a room that may be needed by visiting professionals or used for other events.

Scheduling Conflicts – TeleHealth Unit

How often is the TeleHealth Unit available when you need to use it?		
Respondent Group	Always or Very Often	Sometimes
SLP Staff	11 (91.7%)	1 (8.3%)
Health Centre Staff	12 (85.7%)	2 (14.3%)
School Staff	20 (76.9%)	6 (23.1%)
Total	37 (80.4&)	9 (19.6%)

The majority of respondents (80.45%) indicate the TeleHealth Unit is always or very often available when they need to use it. Scheduling conflicts with the TeleHealth Unit occur more often within the

schools. Some school respondents (23.1%) indicated the TeleHealth Unit is sometimes available when they need to use. As one respondent notes:

> *The equipment is available about half of the time when we wish to schedule video meetings. (School)*

Some reasons for scheduling conflicts include:

- The TeleHealth Unit is being used for e-learning in some schools. One respondent explains:

  > *The unit at one of my schools has not been available as it was being used for high school math by correspondence. Students were sent over to use the unit at the health centre instead. (SLP)*

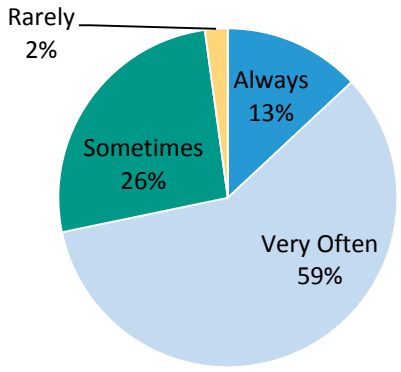
- Scheduling conflicts have arisen since the Education and Health booking systems are separate.

One SLP noted scheduling conflicts may become more frequent in their team as they have increased capacity to offer TeleSpeech Sessions. This issue has emerged since they have filled their second SLP position, and may hire a third SLP position.

Equipment Functionality

Most respondents (85.1%) strongly agree or agree the TeleHealth Unit is in working condition. The following views were expressed by those that disagreed or strongly disagreed that the Telehealth Unit is in working condition: One health centre went over a year without being able to offer TeleSpeech Sessions as their TeleHealth Unit was broken. This TeleHealth Unit is now fixed; another health centre has a broken TeleHealth Unit; and another respondent stated the camera on their TeleHealth Unit no longer moves.

Figure 2.5.1 Questionnaire Respondents Views on how often the TeleHealth unit works when they need to use it (n=46)



When asked "How often does the TeleHealth unit work when you need to use it?", 72% of respondents state the TeleHealth Unit works always or very often when they need to use it. Approximately 30% of SLP respondents and school respondents stated that the TeleHealth Unit

sometimes or rarely worked when they needed to use it. The most common factors affecting the operability of the TeleHealth equipment include:

Sound and Picture Quality: The sound quality of the TeleHealth Unit (echo, sound delay, sound not working) was cited as problematic by many respondents. A couple of parents also mentioned the sound quality as a hindering factor in the effectiveness of TeleSpeech. Other issues mentioned are picture quality and the camera not moving. These issues hinder the ability of the SLP to work with children during TeleSpeech Sessions.

> *Sound quality of the equipment makes it difficult to accurately assess the child's performance (SLP)*
>
> *If the audio/video quality was better, it [TeleSpeech] would be more appropriate. (SLP)*

Technical, Bandwidth and Connection Difficulties: Technical difficulties were repeatedly mentioned as a factor hindering the success of TeleSpeech. 27.3% of respondents stated the TeleHealth Unit works sometimes when they need to use it. Bandwidth and connection issues are specifically mentioned as a technical difficulty affecting the success of running TeleSpeech Sessions. Respondents are frustrated with the number of sessions being interrupted with these types of issues. When these issues occur, time is wasted from the session and can result in cancelled sessions. One of the parents interviewed also echoed the sentiment about the connection issues, stating it was frustrating for their child during sessions. Two SLPs illustrate this point:

> *I'm no expert on technology so I have no idea if it's feasible to expect that the connection/signal be improved, but it certainly doesn't make me keen to use the TeleHealth Unit more when it inevitably loses the connection at least once a session. (SLP)*
>
> *Technical difficulties with equipment also cut into sessions, ruin the flow of sessions and sometimes result in more cancelled sessions. (SLP)*

Comfort Level with the TeleHealth Unit

During a TeleHealth Session, there are two TeleHealth Units being used. One unit is being used by the SLP conducting the session and the other unit is located in the community where the session is being held with the child. At the community level, TeleHealth Units are located in the school and/or the health centre. Therefore, health centre nurses, SLP staff and school staff (e.g.: teachers, education assistants and principles) need to have a level of comfort when using the TeleHealth Unit.

The majority of respondents (95.7%) strongly agree or agree they are comfortable using the TeleHealth Unit. Overall, respondents feel the TeleHealth Unit is relatively user friendly, especially if

there are instructions sheet attached to the unit. However, a couple of the respondents are not as comfortable with the units as they would like to be. As noted by one respondent:

> *Not as comfortable as I would like to be. If everything works as it should, no problem but if technical problems occur I am lost. (School Staff)*

Availability of Technical Support

The majority of respondents know what to do when the TeleHealth Unit is not working (80.5%), know who to contact for help (86.6%) and often receive the support they need to solve the problem (77.5%).

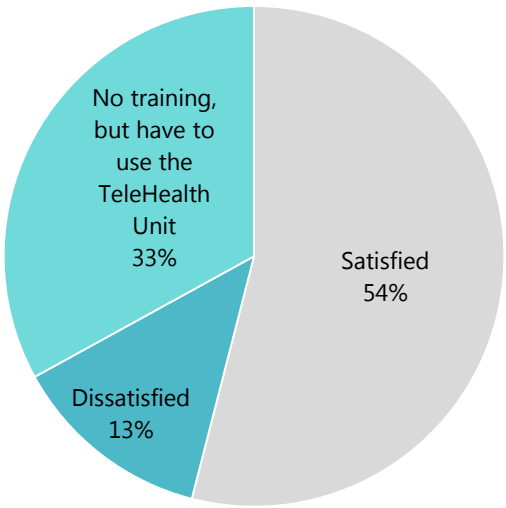
Many respondents use the Health Net Support line when they need technical support. Overall, the respondents find the Health Net Support Staff friendly and helpful. Health Net Support Staff often resolve the issue or at least figure out what is wrong. However, a couple respondents explained sometimes there is no answer at the help desk and the time it takes to resolve the issue can use up some or most of the scheduled TeleHealth time.

> *There have been many technical issues that have come up within the past school year. Sometimes the 'issues' are resolved with tech services but sometimes not. (School Staff)*

Training on the TeleHealth Unit

The respondents had varying degrees of training on the TeleHealth Unit:

Figure 2.5.2 Level of Satisfaction with Training on the TeleHealth Unit (n=46)

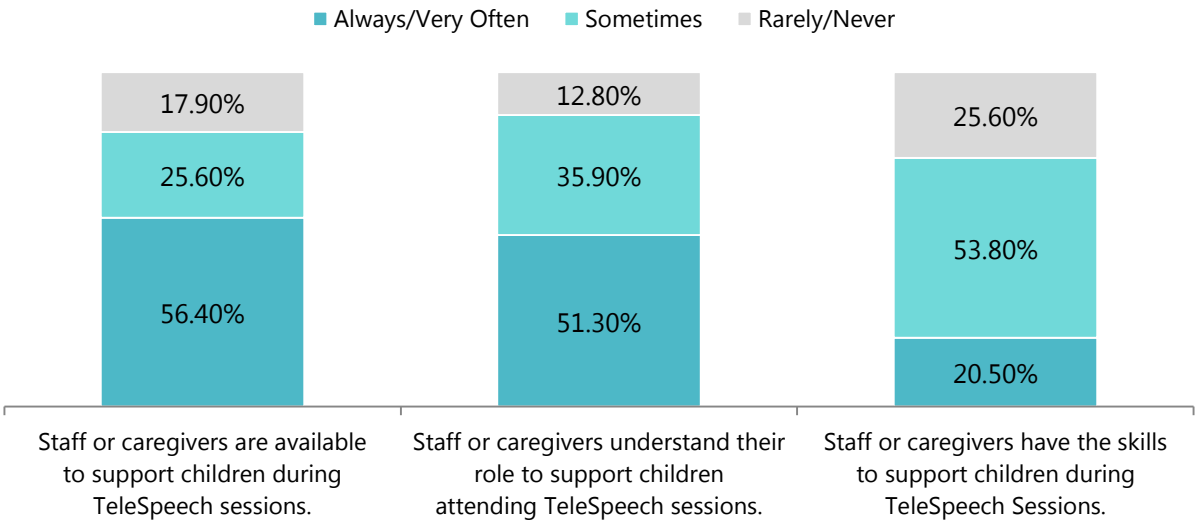


Health Centre and SLPs: Overall, Health Centre Staff and SLPs are satisfied with the training they received on the TeleHealth Unit. Two Health Centre Staff and two SLPs indicated they did not get trained on the TeleHealth Unit, but are expected to use it. One Rehabilitation Team noted their TeleHealth Coordinator has been helpful in training staff on the TeleHealth Unit and is available to answer any questions; the Beaufort Delta is the only region with a TeleHealth Coordinator.

Schools: Schools are among the highest users of the TeleHealth Units. However, they have highest level of dissatisfaction with their training and half of the school respondents indicate they were never trained on the TeleHealth Unit, but are expected to use it.

Respondents provided suggestions on how to support training and reduce technical issues on the

Figure 2.5.3 Support for Children during TeleSpeech Sessions (n=39)



TeleHealth Unit:

- New instructions on all TeleHealth Units
- List of contact number for scheduling and for different type of technical issues
- Develop long term training around the TeleHealth Unit for all locations
- Clarify responsibilities around the TeleHealth Unit, especially at the Health Centre
- Dedicate a person responsible for the equipment and scheduling

Support to Deliver TeleSpeech Sessions in the Community

Respondents emphasized the importance of having the right individual(s) supporting TeleSpeech Sessions, whether that is school staff, health centre staff or caregiver/parents (hereafter referred to as caregiver). Figure 2.5.3 shows respondents' views on community staff or caregivers in their availability, understanding on how, and skills to support children during TeleSpeech Session. Around half the respondents (56.4%) stated that staff or caregivers are always/very often available to support children during TeleSpeech Sessions. However, six of nine SLPs feel community staff or parents are never or rarely available to support children during TeleSpeech Sessions. Of those community staff or caregivers who attend TeleSpeech sessions, approximately half the respondents 51.3% feel community staff or caregivers understand their role in supporting these sessions. In contrast to the other categories, only 20.5% of respondents feel community staff or parents always/very often have the skills to support children during TeleSpeech Sessions.

According to questionnaire respondents, effectiveness of TeleSpeech is dependent on the:

- Availability of the community staff to facilitating sessions;
- Skills of community staff to support children during appointments;

- Availability of the community staff to support children in between sessions; and
- Involvement and understanding of caregivers.

Community Staff Availability

Responses on staff availability to support TeleSpeech differed by the age group of clients.

Children Ages 0 to 5: SLP respondents explained the challenge of reaching preschool aged children as there is limited community staff working with this population and TeleSpeech. One SLP explained she is not able to support preschool children through the health centres due to lack of supports available. Two Aboriginal Head Start staff interviewed expressed interest in wanting to work with the Rehabilitation Teams through TeleSpeech to support children attending their program.

Children ages 6 and over: While a couple of schools have a staff dedicated to support TeleSpeech sessions, other schools must balance the demands of their job with time to support TeleSpeech. One regional Inclusive Schooling Consultants explains TeleSpeech can be labour intensive, where one staff member has to be dedicated completely to support TeleSpeech sessions. This issue can be challenging for schools and health centres with limited staff or high staff turnover:

> *Lots of obstacles… availability of someone in the small community to sit with the child and operate the equipment. (SLP)*
>
> *It interrupts the school day because I am the only teacher. The school is small, so other students can disrupt the speech session. (School Staff)*

One SLP explained TeleSpeech effectiveness is depending on how high the school staff prioritizes TeleSpeech:

> *She did not have time to work with the students other than bringing them to session. These students made very little progress. TeleSpeech sessions actually stopped in this community for over a year because it was not a high priority for the school. However TeleSpeech sessions started to run again in this community this year. The school had a new PST who saw that this was a priority... Unfortunately this PST is leaving the community at the end of this year, so it all depends on who the PST is next year and whether TeleSpeech sessions will be productive. (SLP)*

Community Staff Skills

There is general agreement among SLPs that the effectiveness of TeleSpeech is influenced by the skills of the community staff member.

> *TeleHealth is only as good as the person on the other side.* (SLP)
>
> *We need good facilitators who are trained or willing to be trained to work with children. We need human resources!! Not just a machine.* (SLP)

As noted in Figure 2.5.3, only 20.5% of respondents feel staff or caregivers always or very often have the skills to support children during TeleSpeech sessions, which can impact the effectiveness of TeleSpeech.

> *With a small school, we have limited resources and our EAs are simply not trained to provide this service. Luckily, we will be getting a PST/Literacy Coach next year who will be taking on the duties, but for the 7 years I have been here the service has been very inconsistent and frustrating. In the end, it's the students who miss out, unfortunately. (School Staff)*
>
> *A trained facilitator who can carry out additional sessions during the week, will help the child gain communication skills much more quickly (SLP)*

Respondents named qualities caregiver or staff needed in increasing the effectiveness of TeleSpeech for both school aged children and preschool children:

- Facilitate and maintain the child's attention during the TeleSpeech Session
- Have time to work with the child in between sessions
- Understands what is required to support the child
- Willingness to partner with the SLPs
- Trained on how to follow through on the recommendations provided by the SLP
- Interested and works well with the child

However, no ongoing training is available to community staff members regarding how to best support TeleSpeech Sessions. Consequently, the skills of staff vary widely between communities. As one SLP explains, skilled staff are available in some communities, while other communities have administrative assistants or substitute teachers running TeleHealth Sessions. Skills of staff supporting TeleSpeech session can greatly influence the success of the child. Children ages 0 to 5 particularly need a person who can keep the child focused during the session.

Respondents feel TeleSpeech has provided a way to support staff training in communities. Some school staff have improved their skills to help students and have more strategies to support students in between sessions. In one region, the Inclusive Schooling Coordinator contracted an SLP to train Educational Assistants to better support students. According to many respondents, clients are more likely to make gains and achieve goals when there is supportive and skilled staff:

> *Almost as good as seeing the SLP face to face if there is a great facilitator who has some training, understands what is required and do some extra therapy independently between TeleSpeech sessions. (SLP)*

Community Support in between Appointments

The effectiveness of TeleSpeech is influenced by the amount of support the child receives in between appointments. The respondents explain TeleSpeech is not as effective if no one is working

with the child outside of TeleSpeech sessions. The person supporting the child could be an engaged parent/caregiver, early childhood worker, or an assistant.

> *In best case scenarios I use TeleSpeech to mentor the adult in the community who can then carry out several more sessions of therapy during the week. When I see the child the next week via TeleSpeech, there has been some progress and we can carry on to the next step. When there is no one to facilitate extra sessions, TeleSpeech is not as beneficial. (SLP)*

Caregiver Involvement and Understanding

In addition to community staff, caregivers were also named as a factor influencing the success of TeleSpeech. According to the respondents, caregivers play an important role in attending and following up with recommendations from the SLP. According to the SLPs, support in between appointments is essential to see treatment gains for these children. However, many respondents state engaging caregivers is challenging.

> *Ultimately, it's up to the parents to follow through with the teaching. This is more difficult to facilitate. (Health Centre Staff)*
>
> *It does not work for preschoolers unless parents are very engaged and most of the time the children with the highest needs do not have the supports in place to allow sessions to happen. (SLP)*
>
> *In many small communities it is difficult to service children between 0-5 years old as this requires significant buy in, dedication, and work from the family of that child. (SLP)*

Respondents expressed that caregivers' literacy level and understanding of speech development can influence the effectiveness of TeleSpeech.

> *Many of the parents do not have the language skills themselves to support their children in the "homework' part of the speech therapy program. (Health Centre Staff)*

One regional Inclusive Schooling Coordinator feels an information campaign may help to increase caregivers' understanding of what they can do to support their child if they attend TeleSpeech Session. One school is working with caregivers to help them understand the importance of speech development.

Respondents also spoke about the challenge of TeleSpeech engaging caregivers:

> *Much of early language intervention involves teaching parent strategies to promote language development. It is difficult to build parent/guardian-clinician relationship and provide modelling/feedback via TeleHealth. (SLP)*

The following two parent interviews demonstrate the different ends of the spectrum for parental engagement. In Parent Interview A, the parents do not understand the reasons to why their child is

receiving rehabilitation services and do not remember being engaged by the school or SLP. In contrast, in Parent Interview B, the mother attended all the sessions with the child on a weekly basis. There was also a support person working with her child during the appointments. These elements supported her child's improvement in speech and language skills.

Parent Interview A: The family had trouble identifying what services their five year old child was receiving, even when prompted. When asked if they believed if their child needed support, the parents felt it was not needed, but they said the school told them it was needed. The parents said they did not have any engagement with the Rehabilitation Team and did not receive any treatment plans. The only feedback they received was from the school and it was to continue reading to their child.

Parent Interview B: The family explained their experience with TeleSpeech. Their child began receiving TeleSpeech sessions at the age of five. He attended TeleSpeech sessions once a week with his mother. During the appointments, a support person would work with her son while they watched the SLP on the TeleHealth Unit. Overall, they felt that in a community without an SLP, TeleSpeech is a good way for children to receive SLP services. They also felt that TeleSpeech helped to improve her son's speech and language skills:

> Well my son, he said his first sentence at the age of five, so -- TeleSpeech, it did help with him learning how to speak. Without it, who knows when he would have talked.

The mother said that the constant, once a week sessions were helpful in improving his speech and language skills. However, the delayed connection with the TeleHealth Unit was very frustrating for her child.

Caregiver Training and Conferencing

Many SLPs feel caregiver training and conferencing are strong editions to providing treatment to preschool children. TeleHealth could be used to teach parent strategies to promote language development for children ages 0 to 5.

According to the Rehabilitation Teams, they are not doing any specific training through TeleHealth with the exception of teaching individual caregivers some strategies specific to their child's needs.

The members of one Rehabilitation Team mentioned the importance of building community capacity to support preschool children, such as training early childhood workers and caregivers' workshops in the community. One SLP explains workshops could focus on coaching caregivers and preschool workers in effective ways to interact with a child and activities to do at home/in the preschool with the child to build language. She explains this approach is supported by a body of evidence:

A body of evidence supporting this can be found on the Hanen Center website (hanen.org). Hanen is one of the internationally best recognized methods for treating language delays in preschoolers and trains SLPs to teach language building skills to parents and early childhood workers. (SLP)

TeleSpeech Not Offered as An Option

Some parents interviewed indicated that TeleSpeech was not offered as an option for their child to receive additional SLP services or support for the parents in carrying out the treatment plans. Other parents explained they only used the TeleSpeech once and it was never used again with them.

Session Attendance

Consistent session attendance is another factor that impacts the effectiveness of TeleSpeech. Four respondents highlighted the importance of having a community person to bring the child consistently to TeleSpeech appointments. A couple of respondents explain that it is easier to ensure session attendance if the child is in the school (either preschool program located at the school or if they are school aged children).

SLP Materials in the Community

Some SLPs expressed concern over the lack of appropriate resources to support therapy in the communities during the TeleSpeech session, such as toys and other concrete materials. These SLPs explained that adequate materials can facilitate the effectiveness of TeleSpeech by maintaining the child's attention during the session.

We need adequate materials on the child's end to maintain attention, not just boring photocopies of materials that are faxed 10 minutes ahead of time. These materials can then be used by the facilitator during the independent sessions.

SLP Staff Availability to Conduct TeleSpeech Sessions

The majority of the school and health centre questionnaire respondents explained they would like to see more TeleSpeech sessions occur in their community. However, the ability to provide more TeleSpeech sessions is dependent on the SLP's availability to conduct the sessions. TeleSpeech is just one component of their job. In addition to TeleSpeech, SLP services are also provided to preschool age children, school age children and adults in acute care (hospital); long term care and supported living facilities; and ambulatory care settings across the communities within the catchment area for the Rehab team. The following subsections explores how SLP vacancies, supply of SLPs per population and active caseload may impact the delivery of TeleSpeech.

Not enough sessions. Unable to schedule all of the clients that would benefit from the sessions. (School)

I have seen an improvement in providing Speech services but like always, I wish there were more (School)

While TeleSpeech is a good way to receive SLP services in between community visits, the number of sessions that can be provided is very limited as there are few staff members designated to providing services (i.e. 2 SLPs, 1 SLPA to provide services to 13 communities) - especially given therapist travel schedule (1-2 community visits/month). (SLP)

Rehabilitation Teams Staff Vacancies

Table 2.5.1 provides an overview of the SLP vacancies for each Rehabilitation Team during the 2013/2014 fiscal year. When SLP vacancies occur in the smaller Rehabilitation Teams, they have fewer resources to pull from to provide coverage to their clients. These vacancies have an impact on all services provided by the SLPs, including the delivery of TeleSpeech Sessions. While Stanton Rehabilitation Team had total 4 months with one less SLP on staff, they are able to distribute the work to the other six SLPs. For the Beaufort-Delta Rehabilitation Team, one SLP position was unfilled for the entire fiscal year, leaving one SLP to serve the entire Beaufort-Delta and Sahtu region. During this time SLP services were provided through an external SLP contractor during the vacancy to help fill the gaps. In the Hay River Rehabilitation Team, the one SLP position was vacant for 5 months, leaving Hay River, Hay River Reserve, Enterprise and Kakisa without dedicated SLP services for 42% of the fiscal year. During this time, SLP services were provided through an external SLP contractor between April 2013 and September 2013. Both Inuvik and Hay River faced recruitment challenges for their SLP positions. Additionally, Beaufort-Delta's SLP vacancy was for a maternity leave, which may have provided additional challenges for recruiting a term SLP position. For those reasons, the vacancies were open longer than anticipated.

Table 2.1.5: Stanton Rehabilitation Team Staff Vacancies, 2013/2014 Fiscal Year

Rehabilitation Team	Number of SLPs	Number of Months Vacant	Percentage of Filled Positions
Stanton	7	1 SLP position vacant for 1 months 1 SLP position vacant for 3 months	95.2%
Beaufort-Delta	2	1 SLP position vacant for 12 months	50%
Fort Smith	1	O Months Vacant	100%
Hay River	1	1 SLP position vacant for 5 months	58%
NWT	11	21 months combined vacant	84.1%

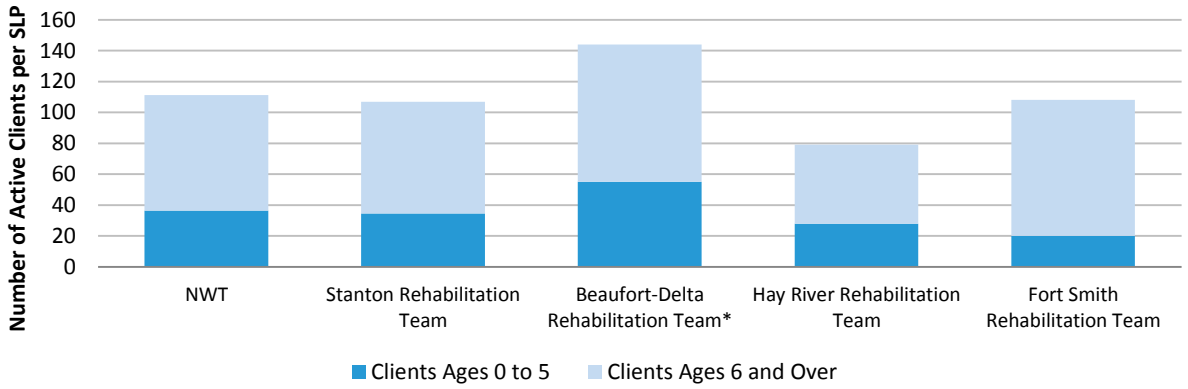
SLP Active Caseload[8]

[8] Literature and National Professional Rehabilitation Associations do not provide a suggested caseload number for rehabilitation therapists. Instead, appropriate caseload per therapist is influenced by "patient

Rehabilitation Teams were asked to provide the active SLP caseload for November 2014. It is important to interpret these numbers cautiously as caseload does not reflect the intensity of therapy required by each client, and this is reflective of a single point in time to demonstrate the average number of clients being supported by the Rehabilitation teams..

The Rehabilitation Teams identified that in November 2014, eleven SLPS were actively providing intervention and support to a total of 1221 individuals; 396 were children ages 0 – 5 years and 825 were ages 6 years and older, including adults. Fort Smith and Stanton Rehabilitation Teams have a similar active caseload per SLP at 107 individuals. Hay River Rehabilitation Team has the lowest active caseload per SLP at 79 individuals. Even without factoring the caseload for clients aged 6 and over in Inuvik, Colville Lake and Tsiigehtchic, the Beaufort-Delta Rehabilitation Team has the highest active caseload per SLP at 144 individuals. With the exception of Fort Smith, the proportion of children 0 – 5 years receiving SLP services per SLP in the Stanton, Beaufort-Delta and Hay River Rehabilitation Team is comparable, ranging between 32.4%-38.2%. The proportion of children 0 – 5 years receiving SLP services in Fort Smith is 18.5%.

Figure 2.5.4 NWT Active Caseload per Speech Language Therapist by Rehabilitation Team and Age, November 2014



* Total caseload number does not include clients aged 6 and over for Inuvik, Colville Lake and Tsiigehtchic

Frequency of TeleSpeech Sessions

Questionnaire respondents also spoke about the frequency of TeleSpeech sessions affecting the effectiveness of this service. Many respondents would like TeleSpeech Sessions offered more often and on an ongoing basis (consistency).

> *Not enough sessions. Unable to schedule all of the clients that would benefit from the sessions. (School)*

characteristics (diagnosis, severity, complexity, population health needs, and client demographics); therapist characteristics (skill mix and experience and roles); facility characteristics (services offered, type and size of facility, and resources available); treatment characteristics (plan and frequency, assessments, and discharge planning) and client outcomes" (Burnett and Klaiman, 2009, p.13).

I have seen an improvement in providing Speech services but like always, I wish there were more (School)

Even though there is a demand for increased TeleSpeech and SLP services, the GNWT only has a limited number of SLPs to provide these services. As one SLP notes:

While TeleSpeech is a good way to receive SLP services in between community visits, the number of sessions that can be provided is very limited as there are few staff members designated to providing services (i.e. 2 SLPs, 1 SLPA to provide services to 13 communities) - especially given therapist travel schedule (1-2 community visits/month). (SLP)

Q.6 Is the TeleSpeech model more cost effective than the alternatives?

TeleSpeech is delivered in a number of NWT communities, which range from driving distance to multiple planes rides away to the closest SLP. Therefore, demonstrating cost-effectiveness is challenging based on the number of variables contributing to cost effectiveness. Furthermore, the mode of delivery is also dependent on the needs of the client. For example, a child with Autism Spectrum Disorder may need to travel to the regional centre on an ongoing basis for intensive therapy; whereas another child could achieve positive outcomes by receiving follow-up appointments through community visits and TeleSpeech sessions. As a result, it was decided to use a fictional case study to demonstrate the cost effectiveness of using TeleSpeech as a tool to supplement in person SLP services when compared to other service delivery options. The following case study is not based on a real family, but it includes some realities of families living in smaller NWT communities

Scenario:
A single mom from Tulita has a 3 year old girl named Emma. During a Well-Child appointment at the Health Centre, the nurse noticed that Emma has a delay in her speech. The nurse made a referral for SLP services to the Beaufort Delta Rehabilitation Team. Fortunately, the next community visit was scheduled a month from when the referral was received by the Rehabilitation Team. Therefore, it was decided to schedule an appointment with Emma during their next visit to Tulita.

During the visit, the SLP assessed Emma and concluded she is in need of SLP services. The following represents four different models of SLP care that Emma can receive:

1) SLP Community Visit
2) Family Travels to Regional Centre
3) TeleSpeech
4) Mixed model (SLP community visit for initial and last appointment, with TeleSpeech follow-up in between)

Table 2.6.1 demonstrates the cost comparison of the different models of SLP service delivery for Emma. The cost comparison is based on 6 sessions per model. The direct costs with TeleSpeech are lower when compared to the SLP community visit and family traveling to the regional Rehabilitation Team. While there are costs associated with the maintenance and eventual replacement of the TeleHealth Unit, the TeleHealth Unit provides benefits to other children requiring SLP services and other healthcare services, as well as training opportunities for other staff.

Table 2.6.1: Comparison between SLP Models of Care								
Area	Model 1: SLP Community Visit*		Model 2: Family Travels to Regional Centre		Model 3: TeleSpeech		Model 4: Mixed model	
	Cost Per Visit	Cost for 6 Sessions	Cost Per Visit	Cost for 6 Visits	Cost Per Visit	Cost for 6 Sessions	Cost for 2 Community Visits	Cost for 6 sessions
Airfare	$2145.98	$12,875.88	$4,291.96	$25,751.76	0	0	$4,291.96	$4,291.96
Per Diems	$500.70	$3,004.20	$144.00***	$864.00	0	0	$1,001.40	$1,001.40
Accommodations	$1320	$7,920.00	$200.00***	$1,200.00	0	0	$2,640.00	$2,640.00
Loss of Clinic time	$700.00**	$4,200.00	0	0	0	0	$1,400.00	$1,400.00
TOTAL COST	$4666.68	$28,000.08	$4,635.96	$27,815.76	0	0	$9,333.36	$9,333.36
Benefits	• SLP can see other patients in Norman Wells and Tulita during the community trip		• Quicker access to SLP intervention, decreasing possibility of developmental delays		• Allows for sessions to occur closer together and can be used for educational purposes and support for caregivers		• SLP can see other patients in Norman Wells and Tulita during the community trips • Allows for sessions to occur closer together and can be used for educational purposes and support for caregivers	
Challenges	• Child may have to wait up to 6 months for intervention, as trip only occurs twice/year • Loss of Clinic time during travel		• Finding childcare for 7 year old child • Loss of working hours for mother		• May be difficult to maintain attention of the young child • Possible technical difficulties • Cost to maintain and replace TeleHealth equipment • Relies on community capacity to deliver these services		• Child may have to wait up to 6 months for intervention, as trip only occurs twice/year • Loss of Clinic time during travel • May be difficult to maintain attention of the young child • Possible technical difficulties • Cost to maintain and replace TeleHealth equipment • Relies on community capacity to deliver these services	
* Since there is no road access into Tulita, the SLP must travel by air to Tulita via Norman Wells to provide treatment to Emma in the community. ** Travel to and from Tulita is approximately 10 hours, plus there is normally overtime with a trip to Tulita. ***For families who are not GNWT, they stay in the transient unit where they have meals provided. If the family opts out of staying here at the hospital, they receive $50 per night plus $18 per person for meals.								

It is important to recognize that TeleSpeech is not a standalone service. TeleSpeech is a part of a service delivery model that includes community outreach visits along with travel to the regional centres. However, TeleSpeech provide an opportunity for a cost-effective way to increase the volume of services for some of the SLP clients. Therefore, a mixed model approach provides a realistic delivery model that maintains the face to face appointments, but with more frequent service provided through TeleHealth Sessions.

Section 3: Discussion & Recommendations

Discussion and Recommendations

This section presents the key findings, discussion and recommendations related to TeleSpeech effectiveness. The recommendations are based on themes and subthemes from the key findings from across the evaluation questions. Table 3.1.1 presents the evaluation findings' themes and relationship to the evaluation question(s).

Table 3.1.1: Evaluation Finding Theme by Relationship to the Evaluation Question(s)

Themes	Related to Evaluation Question(s)
Data Quality	1, 3, 4
Population Needs	1
Good Supplement	2, 3, 4, 6
Appropriateness of TeleSpeech	2, 4, 5
TeleHealth Unit Room Suitability	4, 5
Equipment Functionality	5
Training on the TeleHealth Unit	5
Scheduling Conflicts	5
Vacancies	5
Caregiver Training	5
Community Supports	5
Areas for Further Inquiry	3, 5

Data Quality: Rehabilitation Team Data

The following key findings are related to the quality and existence of Rehabilitation Team Data:

- Hay River was the only Team able to provide a complete dataset for new referrals.
- Three of the four Rehabilitation Teams were unable to provide waitlist to SLP services in the 2008/09 fiscal year.
- While each Rehabilitation Team provided some data regarding the number of new and follow-up appointments, it is challenging to compare these numbers between teams.
- Rehabilitation Teams do not collect data regarding SLP client outcomes.

As demonstrated within the evaluation findings, the type of data collected across NWT Rehabilitation Teams is not consistent. Inconsistencies include how the client groupings are identified (preschool, school age, pediatric, adult outpatient, facility and homecare) and how/if certain type of data is collected. As a result, it was challenging to provide comparable quantitative data for some of the evaluation questions. Furthermore, Rehabilitation Teams do not track client outcomes. Therefore, Rehabilitation service effectiveness is not tracked. Identifying and defining

key performance indicators across teams would be helpful in program planning and identifying areas for improvement.

Recommendations:

27. Establish a set of indicators to be consistently collected and reported to the Department by all Rehabilitation Teams.
28. Identify and implement the collection of client outcome measures by all Rehabilitation teams.

Data Quality: TeleHealth Utilization Data

The following key findings are related to the quality of TeleHealth utilization data:

- Detailed information, such as age, is not captured through TeleHealth scheduling system (VC Scheduler).
- VC Scheduler is inconsistently completed by those responsible for schedule Rehabilitation appointments.

Data collection issues emerged when analyzing the TeleHealth utilization data from VC Scheduler. Therefore, detailed information could not be used to inform the evaluation. Furthermore, data quality was potentially compromised as VC Scheduler is inconsistently completed for TeleSpeech Session. Also, adding fields to VC Scheduler, such as age, would be beneficial in informing future evaluations and program monitoring.

Recommendations:

29. Explore the possibility of adding fields and clarifying coding in the VC Scheduler.
30. Develop territorial policies and procedures to guide data entry into VC Scheduler to achieve data integrity.

Data Quality: Benchmarks for Wait Times

The following key findings are related to benchmarks for wait times:

- The Pan Canadian Alliance of Speech-Language Pathology and Audiology Organizations (the Alliance) is working on benchmark wait times related to SLP diagnostic groupings, such as pediatric language disorders and fluency disorders.
- To date, wait time benchmarks have only been created for pediatric speech sound disorders.

Waitlists are one indicator of access to SLP services. By following wait time benchmarks, it helps in communicating with parents and setting their expectations related to evidence-based benchmarks.

Furthermore, SLP wait time benchmarks establish a framework based on needs rather than geography. This framework helps to ensure that children most at-risk receive SLP services at the most critical development time points (Rvachew & Rafaat, 2014). While the Alliance is just in its infancy in establishing benchmark wait times for the different SLP diagnostic groupings, it would be beneficial for NWT Rehabilitation Teams to follow and report on these wait times as they are released.

Recommendation:

31. Determine the feasibility of adopting the benchmarks once they are established by SAC.

Population Needs

The following key findings are related to where speech and language disparities exist in the NWT:

- In the baseline assessment of 5 year olds, the number of SLP referrals for each child was highest in small communities, followed by Yellowknife and regional centres.
- In the Early Development Instrument (EDI), when compared with Yellowknife and regional centers, children from small communities are more likely to be vulnerable in the domains of language and cognitive development; and communication skills and general knowledge.
- Rehabilitation team data identifies that small communities in different regions receive different levels of service, and some small communities have limited access to SLP services, as they have no community visits or TeleSpeech sessions.

In terms of SLP needs, the EDI results and baseline assessment of 5 year olds reveal the disparities between children in small NWT communities compared to Yellowknife and the regional centers (Inuvik, Hay River and Fort Smith). Data sources such as the EDI results and the baseline assessment point to areas of need in the NWT and can be helpful to improve programming and access.

Rehabilitation team data on community outreach visits and TeleHealth data indicates that community outreach visits and use of TeleSpeech are not consistently aligned with community needs, as identified in the EDI and Baseline assessment data.

Recommendation:

32. The NTHSSA to set clear and consistent standards of services with the Rehabilitation teams in order to determine the number of SLP services days based on clinical need data and population based approach.

Good Supplement

The following key findings are related to how TeleSpeech is a good supplement in between community visits:

- The majority of questionnaire respondents (95.5%-97.6%) agree TeleSpeech improves access to SLP services for children, regardless of their age. Many respondents feel TeleSpeech provides a good supplement to infrequent community outreach clinics in remote NWT communities, especially where having full-time therapists would be difficult. One SLP also noted TeleSpeech allowed for continuity of SLP services while their position was vacant.
- Respondents explain TeleSpeech can work well as a supplement between community visits for school age children, depending on their therapy needs and developmental maturity.
- Respondents also mentioned they appreciated how TeleSpeech allows them to monitor progress of clients more frequently. These sessions also allow the therapists to modify treatment goals and plans, and conduct team meetings, or parent education/modeling sessions so therapy follow-up can be provide in the community.
- The majority of respondents (75%) felt in person treatment is the best method to provide SLP services to children ages 0 to 5. It was felt in person treatment is more engaging, particularly for this age group. The SLPs agree this age group needs play-based, highly interactive therapy.
- The case study demonstrates that TeleSpeech can be a cost effective way to deliver a greater volume of SLP services to children in their communities.

TeleSpeech was introduced as a cost-effective way to increase access to SLP services to small communities. Many respondents feel TeleSpeech provides a good supplement to infrequent outreach clinics in remote NWT communities, especially where having full-time therapists would be difficult. However, in person treatment remains the preferred method for the delivery of SLP services, particularly for children ages 0 to 5. Children ages 0 to 5 typically need play-based, highly interactive therapy, which can be difficult to achieve through TeleSpeech. The evaluation findings point to the value of continuing to provide TeleSpeech sessions to supplement in-person visits.

Recommendation:

33. Where appropriate for the client, continue to supplement in-person visits with TeleSpeech Sessions.

Appropriateness of TeleSpeech

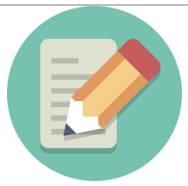
The following key findings are related to the appropriateness of TeleSpeech for preschool and school aged children:

- Appropriateness of TeleSpeech is influenced by the developmental/emotional maturity and attention span of the client, particularly for children ages 0 to 5.
- Many respondents feel the right conditions need to be in place for TeleSpeech to be effective, such as availability of session support from a caregiver, and support between appointments to carry out the treatment plan.
- TeleSpeech is not acceptable for all children, particularly children with complex language disorders; severe language delays; behaviours difficulties; and attention or executive functioning difficulties.
- Some parents interviewed were not presented with TeleSpeech as an option for their child to receive additional SLP services for their child or support for the parents in carrying out the treatment plans. They were unsure as to why they were not offered TeleSpeech as an option.

The majority of respondents agreed TeleSpeech has helped children improve their speech and language skills. However, the right conditions need to be in place for TeleSpeech to be effective. The majority of respondents explain TeleSpeech can work well as a supplement between community visits for school age children, depending on their therapy needs and developmental maturity. TeleSpeech is not appropriate for all pre-school and school age children, particularly children with:

- Complex language disorders;
- Severe language delays;
- Behaviours difficulties; and
- Attention or executive functioning difficulties.

Caregivers are not consistently presented with using TeleSpeech as an option to supplement SLP sessions or to provide support, skill building and follow-up for caregivers. Caregivers interviewed also did not understand why TeleSpeech was not offered as an option. One reason may be the result of the SLP assessing the clients for their appropriateness of the service and coming to the conclusion that the child is not a good candidate for TeleSpeech. However, if the SLP are making these conclusions, it should be clearly communicated to caregivers and/or community staff. Furthermore, clients who are deemed as not suitable candidates for TeleSpeech should be reassessed to see if there are changes in their therapy needs and developmental maturity.



Recommendation:

34. Develop guidelines to ensure TeleSpeech is being offered equitably to children and/or caregivers that could benefit from these services.

TeleHealth Unit Room Suitability

The following key findings are related to the suitability of the TeleHealth Unit Room location:

- The effectiveness of the TeleHealth Unit is influenced by its location. For example:
  - If the room is too large, it can create an echo and/or enables the child to run around.
  - Multipurpose rooms (such as a classroom, meeting space, or clinical room) can lead to scheduling conflicts or distractions.
  - Lack of resources in the room (appropriate tables, chairs and toys) can challenge the effectiveness of sessions.

The physical space where the TeleHealth Unit is located can hinder the TeleSpeech Session. A number of communities expressed concerns over the physical space of where their TeleHealth Unit is located, such as the Unit being located in a shared space or it did not have adequate furniture or supplies to support the sessions. Based on the findings, it appears that some communities do not have adequate space or supplies to support TeleSpeech Sessions. It would be worthwhile to develop guidelines to help schools and health centres determine suitable locations for the TeleHealth Unit. A checklist of supplies would also be helpful in supporting TeleSpeech Sessions. Where the schools or health centres do not have spaces that meet the minimum requirements in the guidelines, it may be beneficial to determine a more suitable location to relocate the TeleHealth Unit.

Recommendation:

35. Develop guidelines for room location suitability of the TeleHealth Unit.
36. Develop a checklist of materials and supplies at the community level to support TeleSpeech sessions.
37. Where current locations do not meet the minimum requirements in the guidelines, examine the feasibility of relocating the TeleHealth Unit to a more suitable location.

Equipment Functionality

The following key findings are related to the equipment functionality of the TeleHealth Unit:

- 30% of SLP and school respondents stated that the TeleHealth Unit sometimes or rarely worked when they needed to use it.

- The most common issues cited as affecting equipment functionality are:
    - Sound and picture quality; and
    - Technical, bandwidth and connection difficulties.
- 77.5 % of respondents indicated they receive the support they need to solve technical problems with TeleHealth.

Frustration was expressed regarding the equipment functionality. Poor sound and picture quality were repeatedly mentioned by all respondent groups and influenced the effectiveness of TeleSpeech sessions. Furthermore, technical, bandwidth and connection difficulties were repeatedly mentioned as factors hindering the success of TeleSpeech. Respondents are frustrated with the number of sessions being interrupted with these types of issues, which result in time being wasted from the session or the session being cancelled. Respondents also indicate that the technical support that is offered does not necessarily result in resolution of the issue, and may result in sessions being cancelled. There was no data available to quantify this extent to which these difficulties occurs, however continued difficulties with equipment functionality threaten the ability of SLPs to deliver effective SLP sessions. Furthermore, frustration with the equipment functionality may decrease the likelihood of SLPs using TeleSpeech to offer SLPs services as a supplement to in person sessions.

Recommendation:

38. Collect data to monitor technical difficulties.
39. Determine solutions to improve the functionality of TeleHealth equipment supported by HSS and schools.

Training on the TeleHealth Unit

The following key findings are related to training on the TeleHealth Unit:

- There is no official training program for the TeleHealth Units in the NWT.
- Varying degrees of training provided by the workplace on the TeleHealth Unit.
- Schools are among the highest users of the TeleHealth Units. However, they have highest level of dissatisfaction with their training and half of the school respondents were never trained on the TeleHealth Unit, but are expected to use it.

The ability of community staff and SLPs to use the TeleHealth Unit has a direct impact on the effectiveness of TeleSpeech. If community staff and SLP have challenges in using the TeleHealth Unit, TeleHealth sessions are cancelled or session time is shortened. School staff have the highest dissatisfaction with training on the TeleHealth Unit. Many school staff indicated they did not receive any training on how to use the units. However, schools have the highest volume of TeleSpeech sessions when compared with the Health Centres. There needs to be an ongoing training program in place for TeleHealth users in the NWT.

Recommendation:

40. Develop and implement an ongoing training program for TeleHealth users.

Scheduling Conflicts

The following key findings are related to scheduling conflicts with the TeleHealth Unit and room location:

- The TeleHealth Unit is being used for both TeleSpeech and e-learning in some schools.
- TeleHealth Sessions are being superseded by other professionals needing the room where the TeleHealth Unit is located in Health and Social Services locations.
- Scheduling conflicts have arisen since the Education and Health booking systems are separate.

Overall, scheduling of the TeleHealth Room and TeleHealth Unit was not an issue for the majority of the respondents. The Community Health Centers tended to encounter room scheduling issues more frequently than other respondents, most often due to multipurpose room locations of the TeleHealth Unit. Scheduling difficulties due to the availability of TeleHealth unit occurs more frequently in schools, as the TeleHealth Unit is used for other purposes, such as eLearning. There have also been some issues with scheduling that resulted from the school and HSS not being able to view each other's schedule, as they have different scheduling systems.

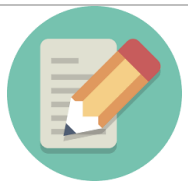
Recommendation:

41. Increase videoconference capabilities in schools that use the TeleHealth Units for eLearning to reduce scheduling conflicts.
42. Align the scheduling systems between the school and health system to reduce scheduling conflicts.

Vacancies

The evaluation identified that Rehabilitation staff vacancies affect the provision of SLP services, including TeleSpeech Sessions. Recruitment of SLPs can be challenging in the NWT, particularly in smaller Rehabilitation Teams. When covering a maternity leave, southern SLPs may be less inclined to relocate to a remote community for a year term. If the Rehabilitation Team is only funded for one or two SLPs, a vacancy can reduce SLP services in half or leave a complete gap in services.

Therefore, these vacancies can have big impacts on the provision of services. In the past, Rehabilitation Teams have contracted out SLP services during vacancies to fill service gaps the past.



Recommendation:

43. Rehabilitation teams identify and implement strategies to reduce the impact of SLP vacancies on service delivery.

Caregiver Training

The following key findings are related to caregivers and their influence on children's speech and language outcomes:

- Caregivers play an important role in attending sessions and following up with recommendations from the SLP.
- Caregivers' literacy level and understanding of speech development can influence the effectiveness of TeleSpeech.
- Most SLPs stated caregiver training and conferencing are important for a more effective model than solely providing treatment to preschool children. TeleHealth could be used to teach parent strategies to promote language development for children ages 0 to 5.

Caregivers are critical in supporting positive speech and language outcomes for their child. While in-person sessions and TeleSpeech Sessions are helpful in assessing the child, generating treatment plans, and providing some degree of therapy, it is essential that caregivers support their child in between sessions. However, there are factors influencing caregiver involvement, such as ability to attend the sessions and understand what is needed of them, and having the skills to support speech and language development with the child. TeleHealth Sessions could be a tool to enhance caregivers' understanding and skills of how to best support their child. Furthermore, some SLPs mentioned that some caregivers were unsure of how to promote language development with their child. All NWT residents would benefit from increased awareness in this area.

Recommendation:

44. HSS to identify strategies and resources to coach caregivers on how to support their children in between SLP sessions and during TeleSpeech Sessions.
45. HSS to collaborate with ECE to develop messaging on how to promote language development for children to all residents of the NWT.

Community Supports

The following key findings are related to community staff and the effectiveness of TeleSpeech:

- Skills of staff supporting TeleSpeech session can greatly influence the success of the child.
- Children ages 0 to 5 particularly need a person who can keep the child focused during the session.
- Challenges exist in reaching preschool aged children as there is limited community staff working with this population and TeleSpeech.
- A number of attributes were listed in the findings that support the effectiveness of TeleSpeech for both school aged children and preschool children.
- Skills and availability of staff vary widely between communities.

One of the most influential factors in the effectiveness of TeleSpeech is the availability and skills of community staff to support the TeleSpeech Session and to support the child in between sessions. The evaluation results reveal many challenges exist in having dedicated staff with the right skillset to support TeleHealth sessions, particularly for children ages 0 to 5. As a result, the effectiveness of TeleSpeech is influenced greatly by this factor. As there are multiple organizations involved in the delivery of TeleSpeech, it is important that the roles and responsibilities of these organizations for supporting the delivery of TeleHealth Sessions be more clearly defined; this would likely positively impact the effectiveness of TeleSpeech. Furthermore, a concerted effort is needed to train community staff and organizations on how to better support speech and language development in children and during TeleSpeech Sessions.

Recommendation:

46. HSS and ECE work collaboratively to define their respective roles and responsibilities in the delivery of TeleSpeech, such as delivering training, scheduling appointments, attending appointment, supporting children in between appointments.
47. Determine appropriate person(s) to provide training for community organizations (e.g.: health centres, and preschool and school programs) on how to better support children with rehabilitation needs without compromising clinical services.
48. Determine appropriate person(s) to provide specific training for community staff that attend TeleSpeech appointments with preschool and school aged children to enhance their skills in supporting TeleSpeech sessions without compromising clinical services.

Areas for Further Inquiry

The following key findings are related to the provision of SLP services:

- Fort Resolution, Gamètì, Nahanni Butte, Sachs Harbour, Trout Lake, Wekweètì and Wrigley had no sessions over multiple years in the past four years.
- A number of communities do not receive any community visits from the SLPs.
- Differences exist in the number of services days for communities of similar population.
- One school was concerned that TeleSpeech might take away from the possibility of more on-site visits as they are a twenty minute drive to the regional centre.
- Majority of the school and health centre questionnaire respondents explained they would like to see more TeleSpeech sessions occur in their community. However, the ability to provide more TeleSpeech sessions is dependent on the SLP's availability to conduct the sessions.
- Variability in the caseloads per Rehabilitation Teams.

Since the introduction of TeleSpeech, the number of sessions of increased steadily over the past six years. However, there are communities with low participation in TeleHealth sessions. Fort Resolution, Gamètì, Nahanni Butte, Sachs Harbour, Trout Lake, Wekweètì and Wrigley had no sessions over multiple years in the past four years. It is important to note TeleSpeech services are only provided to clients who require regular intervention and/or follow-up. In some situations there may be communities that have no residents receiving active SLP services. Therefore, communities without any interaction with the SLPs may not have an entry point for services, especially if community organizations do not know which community members would be appropriate for services.

Wekweètì, Wrigley, Trout Lake and Nahanni Butte did not receive community visits by the SLP. Also, differences exist in the number of services days for communities of similar population. Community visits allow SLPs to assess children and determine their suitability for supplementary sessions through TeleHealth.

The majority of communities would like to see more TeleSpeech sessions occur in their community on a regular basis. However, the ability to provide more TeleSpeech sessions is dependent on the SLP's availability to conduct the sessions. TeleSpeech is just one component of their job. Teams are also responsible for providing services to preschool age children, school age children and adults in the following settings: acute care (hospital); long term care; supported living; ambulatory care; homecare; and schools. The caseloads vary between Rehabilitation Teams. The Beaufort-Delta SLPs have the highest caseload when compared to the other Teams. Their caseload would likely impact the frequency of TeleSpeech appointments.

	**Recommendation:** 49. Determine why certain communities have received little to no TeleSpeech Sessions over the past 4 years. 50. Determine why certain communities do not receive community visits from the SLPs. 51. Conduct a case complexity and caseload study to determine strategies on how to more effectively manage caseloads, better distribute resources between Rehabilitation Teams, and how to deliver more SLP sessions.

Area for Further Research

A lack of clinical evidence was available to determine the effectiveness of TeleSpeech relative to in-person treatment, particularly for children ages 0 to 5. The EDI results and one-time baseline assessment highlight the speech and language disparities in small NWT community. Therefore, it is important to explore opportunities for research partnerships to build clinical evidence in this area. Research findings can help to further improve the delivery of SLP services to clients in small NWT communities.

	**Recommendation:** 52. Explore research partnerships to build clinical evidence of the effectiveness of TeleSpeech relative to in-person treatment.

Conclusions

There is a need for SLP services in the NWT, particularly in the smaller communities outside the regional centre. However, the delivery of SLP services to small communities are infrequent and does not necessarily meet rehabilitation needs of NWT residents. This is particularly problematic for children ages 0 to 5 as the early identification of children with developmental needs is essential in ensuring "appropriate interventions are provided as soon as possible to allow children to develop their full potential, maximize their level of function and prevent further disabilities" (Grilli et al. 2007, p.173).

Overall, the integration of videoconferencing with the rehabilitation service delivery model has strengthened services to rural and remote communities in the NWT. TeleSpeech provides a good supplement to infrequent outreach clinics in remote NWT communities, especially where having full-time therapists would be difficult. Overall, TeleHealth was viewed as an acceptable tool to

deliver SLP services in small communities, particularly for school-aged children. However, the effectiveness of the TeleSpeech is complex and impacted by a number of factors. For example, TeleSpeech is not appropriate for children with complex language disorders, severe language delays, behaviours difficulties; and attention or executive functioning difficulties. Furthermore, the effectiveness of TeleSpeech is diminished if community supports and caregivers are not present during the session and if they are not supporting the child in between appointments. The functionality and the physical location of the TeleHealth Unit also contribute to the effectiveness of TeleSpeech.

Despite these challenges, children have experienced positive outcomes through the use of TeleSpeech. Furthermore, TeleSpeech is a cost-effective way of increasing the volume of services for small communities. In order to maximize the effectiveness of TeleSpeech, it will be important to address the recommendations resulting from this evaluation.

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Appendices

Appendix A: Evaluation Framework

Evaluation Questions		Indicator(s)/Data
What do you want to know?		*Which measure(s) will answer the question?*
Relevance	Q1: Is there a need for SLP services in small communities?	a) # of children with speech and language delays and disorders b) # of children referred for SLP services c) Description of need for services within NWT schools d) # of NWT children ages 0-5 on waitlist e) # of NWT adults and children on waitlist f) # of NU adults and children on waitlist g) # of new referrals for NWT children ages 0-5 by community h) # of new referrals for NWT adults and children by community i) # of new referrals for NU adults and children by community
Acceptability	Q2: Is TeleSpeech an acceptable tool to assist in delivering SLP services in small communities?	a) Evidence in literature review about acceptability of TeleSpeech b) Evidence in literature review about whom and when should TeleSpeech be used? c) Evidence in literature review about what drives in-person intervention during TeleSpeech? d) SLP perspective e) Communities groups/schools perspective f) Supervisors and managers views g) Parents' views
Effectiveness	Q3: Do NWT residents have improved access to SLP services as a result of the use of TeleSpeech?	a) Community coverage pre-TeleSpeech versus post-TeleSpeech - # of TeleSpeech sessions, by community and location of equipment - # of community visits, by community and rehab team b) Parents' perception c) SLP perceptions
	Q4: Are clients achieving positive outcomes utilizing TeleSpeech?	a) SLPs' perceptions b) Schools' perceptions c) Parents' perceptions
	Q5: What factors have facilitated / hindered TeleSpeech?	a) % of TeleHealth Units being utilized for TeleSpeech/# of TeleHealth Units being used b) Staff Vacancies c) Health Centre Staff and School Staff opinion on: - Level of proficiency/comfort with equipment - Adaptability with technology - Level of integration into job - Equipment scheduling - Equipment availability - Equipment location suitability - Equipment effectiveness - Equipment appropriate/acceptability - Condition of the TeleHealth Unit

Evaluation Questions		Indicator(s)/Data
What do you want to know?		*Which measure(s) will answer the question?*
		- Ability to engage other care providers in session or parents - Availability and competencies of community based workers d) SLPs opinion on: - Level of proficiency/comfort with equipment - Adaptability with technology - Level of integration into job - Equipment scheduling - Equipment availability - Equipment location suitability - Equipment effectiveness - Equipment appropriate/acceptability - Condition of the TeleHealth Unit - Ability to engage other care providers in session or parents e) Parents' opinion on: - Quality of care - Continuity - Level of engagement - Awareness of your role
Efficiency	Q7: Is the TeleSpeech model more cost effective than the alternatives?	*Case Study with Tulita examining 3 service delivery models for intervention (TeleSpeech, Client Travel to Regional Centre, Community based worker) for Tulita*

Appendix B: Parent Interview Guide

Rehabilitation Services Guardian Interview - CONFIDENTIAL WHEN COMPLETED	
Respondent's Name:	Interview Start Time:
Home Community:	

Hello. My name is _____ and I'm doing telephone interviews on behalf of the Department of Health and Social Services. Thank you for taking the time to answer questions about your experience with Rehabilitation Services.

Your answers will help improve the delivery of Rehabilitation Services to small communities in the Northwest Territories.

All information collected in this interview will be kept confidential. The information you give may appear in Department and/or public documents about Rehabilitation Services, but will not include your name or your child's name or any other information that could be used to identify you.

The interview should take about 30 minutes, depending on how much you want to expand on your answers to each of the following questions.

Your participation is voluntary. You do not have to answer any question and can stop at any time. If you decide to stop, it will not affect your child receiving Rehabilitation Services.

Do you agree to be interviewed about your experience with Rehabilitation services?

If yes, say "Thank you" [and proceed to question 1]
If no, "Thank you for your time. If you change your mind, you can contact me at 867-920-3285. Have a great day",

1. How old is your child?

2. At what age did they begin rehabilitation services?

3. What Rehabilitation services is your child receiving?
   - ☐ Occupational Therapy
   - ☐ Physiotherapy
   - ☐ Speech Language Pathology
   - ☐ Audiology

4. Does your child receive any of these services through TeleHealth?
   - ☐ Occupational Therapy
   - ☐ Physiotherapy
   - ☐ Speech Language Pathology
   - ☐ Audiology

5. How often does your child go to TeleHealth/TeleSpeech Sessions?

6. Where does your child go for their TeleHealth/TeleSpeech Sessions?

7. How often does your child have in person appointments with the therapist?
   In your community?
   In the regional centre?

8. Rate the following: TeleSpeech is a good way for my child to receive SLP services in small communities.
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ Disagree
   - ☐ Strongly Disagree
   - ☐ I don't know

   Please explain:

9. Rate the following: TeleSpeech helped my child to have more SLP services
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ Disagree

☐ Strongly Disagree

☐ I don't know

Please explain:

10. TeleSpeech has helped my child improve their speech and language skills.
    ☐ Strongly Agree
    ☐ Agree
    ☐ Disagree
    ☐ Strongly Disagree
    ☐ I don't know
    Please explain:

11. Has TeleSpeech helped your child in any other way?
    If yes, in what ways?
    If no, why not?

12. Rate the following: TeleSpeech Sessions are just as good as seeing the therapist in person for my child.
    ☐ Strongly Agree
    ☐ Agree
    ☐ Disagree
    ☐ Strongly Disagree
    ☐ I don't know
    Please explain:

13. What do you like about TeleSpeech Sessions?

14. What don't you like about TeleSpeech Sessions?

15. Do you have any ideas on how we can make TeleSpeech Sessions better?

16. Please add any other comments you would like to share about TeleSpeech Sessions.

Thank you for taking the time to talk with me today. I really appreciate you sharing your experiences.

Appendix C: Stakeholder Questionnaire

The Department of Health and Social Services would like you to share your experience with TeleSpeech, so that we can better understand how Rehabilitation Services are delivered to the communities you serve, what is working, and what needs to be improved.

The information you provide will be used in Department and public documents related to Rehabilitation Services in small communities. No identifiable information will be used in these documents.

Your participation is voluntary. You do not have to answer every question and can stop at any time.

Thank you for taking the time out of your day to fill out this questionnaire.

---

1. Which of the following best describes your age group?
   - ☐ 20 to 29
   - ☐ 30 to 39
   - ☐ 40 to 49
   - ☐ Over 50

2. How many years have you provided health services to children?
   - ☐ Under 1 year
   - ☐ 2 to 5 years
   - ☐ 6 to 10 years
   - ☐ Greater 10 years

3. How do you work with Speech Language Pathology (SLP) services being delivered through TeleHealth (TeleSpeech) (check all that apply)
   - ☐ Deliver session to child
   - ☐ Provide leadership to staff who work with TeleSpeech
   - ☐ Work with families to help them attend TeleSpeech sessions
   - ☐ Schedule TeleSpeech sessions
   - ☐ Set up TeleHealth Unit
   - ☐ Attend TeleSpeech sessions with child

☐ Help with treatment plans between appointments
☐ I do not provide support for TeleSpeech
☐ Other (please specify)

4. Which children attending TeleSpeech Sessions do you work with?
   ☐ Children Aged 0 to 5
   ☐ School Aged Children (6+)
   ☐ Children Aged 0 to 5 and School Aged Children (6+)
   ☐ I don't work with children who attend TeleSpeech Sessions

5. TeleSpeech Sessions are a good way for children aged 0 to 5 to receive SLP services in small communities.
   ☐ Strongly Agree
   ☐ Agree
   ☐ Disagree
   ☐ Strongly Disagree
   ☐ I don’t know

   Comments:

6. TeleSpeech Sessions help children aged 0 to 5 have more SLP services.
   ☐ Strongly Agree
   ☐ Agree
   ☐ Disagree
   ☐ Strongly Disagree
   ☐ I don’t know

   Comments:

7. TeleSpeech Sessions help children aged 0 to 5 improve their speech and language skills.
   ☐ Strongly Agree
   ☐ Agree
   ☐ Disagree
   ☐ Strongly Disagree
   ☐ I don’t know

   Comments:

8. Please list any other ways that TeleSpeech Sessions have helped children aged 05:

9. TeleSpeech Sessions are just as good as seeing the therapist in person for children aged 0 to 5.
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ Disagree
   - ☐ Strongly Disagree
   - ☐ I don't know

   Comments:

10. TeleSpeech Sessions are a good way for school aged children (6+) to receive SLP services in small communities.
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ Disagree
   - ☐ Strongly Disagree
   - ☐ I don't know

   Comments:

11. TeleSpeech Sessions help school aged children (6+) have more SLP services.
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ Disagree
   - ☐ Strongly Disagree
   - ☐ I don't know

   Comments:

12. TeleSpeech Sessions help school aged children (6+) improve their speech and language skills.
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ Disagree
   - ☐ Strongly Disagree
   - ☐ I don't know

   Comments:

13. Please list any other ways that TeleSpeech Sessions have helped school aged children (6+):
    - ☐ Strongly Agree
    - ☐ Agree
    - ☐ Disagree
    - ☐ Strongly Disagree
    - ☐ I don't know

    Comments:

14. TeleSpeech Sessions are just as good as seeing the therapist in person for school aged children (6 +).
    - ☐ Strongly Agree
    - ☐ Agree
    - ☐ Disagree
    - ☐ Strongly Disagree
    - ☐ I don't know

    Comments:

15. Who else provides support to TeleSpeech Sessions within your organization?

16. How often do you work with TeleHealth Units?
    - ☐ Not at all
    - ☐ Less than once a month
    - ☐ 1 to 2 times a month
    - ☐ 3 to 4 times a month
    - ☐ More than 5 times a month

17. I am comfortable using the TeleHealth Unit.
    - ☐ Strongly Agree
    - ☐ Agree
    - ☐ Disagree
    - ☐ Strongly Disagree
    - ☐ I don't know

Comments:

18. I am satisfied with the training I received on how to use the TeleHealth Unit.
    - ☐ Strongly Agree
    - ☐ Agree
    - ☐ Disagree
    - ☐ Strongly Disagree
    - ☐ I was not trained, but I am expected to use the TeleHealth Unit
    - ☐ I don't know

    Comments:

19. The TeleHealth Unit is available when I need to use it.
    - ☐ Always
    - ☐ Very Often
    - ☐ Sometimes
    - ☐ Rarely
    - ☐ Never
    - ☐ Does Not Apply

    Comments:

20. The location of TeleHealth Unit is available when I book a TeleSpeech Session.
    - ☐ Always
    - ☐ Very Often
    - ☐ Sometimes
    - ☐ Rarely
    - ☐ Never
    - ☐ Does Not Apply

    Comments:

21. The location of the TeleHealth Unit is suitable for delivering TeleSpeech services for children aged 0 to 5.
    - ☐ Strongly Agree
    - ☐ Agree
    - ☐ Disagree
    - ☐ Strongly Disagree

☐ I don't know

Comments:

22. The location of the TeleHealth Unit is suitable for delivered TeleSpeech services for school aged children (6+).
    - ☐ Strongly Agree
    - ☐ Agree
    - ☐ Disagree
    - ☐ Strongly Disagree
    - ☐ I don't know

    Comments:

23. I know the steps required to schedule a TeleSpeech Session.
    - ☐ Yes
    - ☐ No
    - ☐ Does Not Apply

    Comments:

24. The TeleHealth Unit is in good working condition.
    - ☐ Strongly Agree
    - ☐ Agree
    - ☐ Disagree
    - ☐ Strongly Disagree
    - ☐ I don't know

    Comments:

25. The TeleHealth Unit works when I need to use it.
    - ☐ Always
    - ☐ Very Often
    - ☐ Sometimes
    - ☐ Rarely
    - ☐ Never
    - ☐ Does Not Apply

    Comments:

26. I know what to do when the TeleHealth Unit is not working.
    - ☐ Yes
    - ☐ No
    - ☐ Does Not Apply

    Comments:

27. I know who to contact when the TeleHealth Unit is not working.
    - ☐ Yes
    - ☐ No
    - ☐ Does Not Apply

    Comments:

28. The support I received was helpful in solving my problem.
    - ☐ Always
    - ☐ Very Often
    - ☐ Sometimes
    - ☐ Rarely
    - ☐ Never
    - ☐ Does Not Apply

    Comments:

29. The TeleHealth Unit is an appropriate tool for delivering SLP services to children aged 0 to 5.
    - ☐ Strongly Agree
    - ☐ Agree
    - ☐ Disagree
    - ☐ Strongly Disagree
    - ☐ I don't know

    Comments:

30. The TeleHealth Unit is an appropriate tool for delivering SLP services to school aged children (6+).
    - ☐ Strongly Agree
    - ☐ Agree
    - ☐ Disagree

- ☐ Strongly Disagree
- ☐ I don't know

Comments:

31. Care providers or parents are available to support children during TeleSpeech sessions.
    - ☐ Always
    - ☐ Very Often
    - ☐ Sometimes
    - ☐ Rarely
    - ☐ Never
    - ☐ Does Not Apply

    Comments:

32. Care providers or parents understand their role to support children attending TeleSpeech sessions.
    - ☐ Always
    - ☐ Very Often
    - ☐ Sometimes
    - ☐ Rarely
    - ☐ Never
    - ☐ Does Not Apply

    Comments:

33. Care providers or parents have the skills to support children during TeleSpeech Sessions.
    - ☐ Always
    - ☐ Very Often
    - ☐ Sometimes
    - ☐ Rarely
    - ☐ Never
    - ☐ Does Not Apply

    Comments:

34. What do you like about TeleSpeech Sessions?

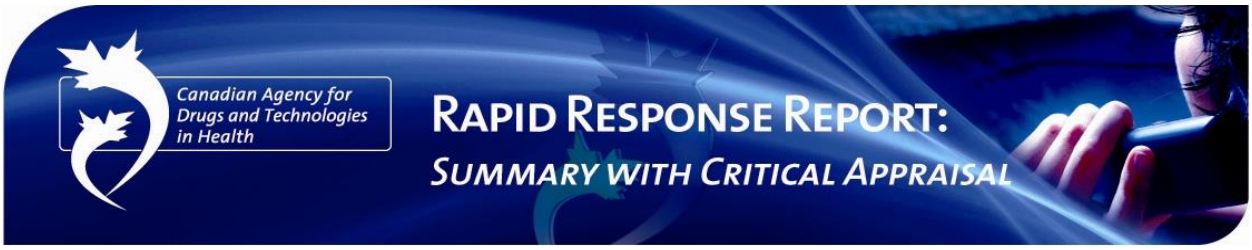
35. What don't you like about TeleSpeech Sessions?

36. Do you have any ideas on how to improve the TeleHealth Unit/TeleSpeech Session?

37. Please add any other comments you would like to share about the TeleHealth Unit or TeleSpeech Sessions:

Appendix D: Literature Review with Critical Appraisal (2015)

(Begins on next page)



TITLE: Telehealth for Speech and Language Pathology: A Review of Clinical Effectiveness, Cost-Effectiveness, and Guidelines

DATE: 07 April 2015

CONTEXT AND POLICY ISSUES

Difficulties in speech and language development are reported frequently among children. According to American Speech-Language-Hearing Association, the prevalence of language difficulties in preschool-age children was estimated between 2% and 19%.[1] Among school-age children, the prevalence of language impairment ranged from 3.1% to 23.0%.[2] Language impairments at a young age, such as in the first three years of life, have a negative impact on children's academic life and their adulthood and are related to social, emotional, and behavioral problems. Thus, early identification and thorough and specific assessment and treatment are crucial.[1] Access to speech-language pathology (SLP) services, however, may be limited for many children and their families, particularly those residing in rural and remote areas.

Telehealth is a means of providing healthcare services (diagnosis and/or treatment) remotely using communications technologies such as interactive video, audio, computer and other more advanced technologies.[3] The term of telehealth is often used interchangeably with telemedicine, telerehabilitation and telepractice. It is different from the conventional in-clinic models and is particularly important for patients in the remote or rural areas, who usually have limited access to the healthcare services due to the distance, costs, shortages of speech-language pathologists, or parents' commitment to work.[2,4,5] Telehealth has been widely used in various areas of medicine, such as heart disease, stroke, diabetes, psychiatric problems, dermatological disorders, and speech-language disorders or impairments.[4,6,7] This model may enhance the quality of care by optimizing the timing/intensity/sequencing of interventions and allowing more frequent interactions with patients, thus may be associated with more favorable outcome for them. In addition, a unique benefit of telehealth is that the SLP services to be delivered to the patients in their own environment, such as the home, in a local community, school or workplace.[8] The clinical evidence on the effectiveness of telehealth in children with speech-language disorders is uncertain.[2,4,6] With over 80% of Canadian population now using the internet and the rapid growth in various forms of technology,[9] it is necessary to examine the impact of delivering speech pathology services directly into the everyday lives of people with speech-language disorders via telehealth.

The purposes of this review were to identify the evidence regarding the clinical effectiveness and cost-effectiveness of telehealth for the delivery of SLP services to children with speech and language disorders or impairments and to summarize the recommendations from evidence-based practice guidelines regarding the use of telehealth in the target population.

RESEARCH QUESTIONS

1. What is the clinical effectiveness of telehealth for the delivery of speech language pathology services to children with speech and language disorders or impairments?

2. What is the cost-effectiveness of telehealth for the delivery of speech language pathology services to children with speech and language disorders or impairments?

3. What are the evidence-based guidelines regarding the use of telehealth for the delivery of speech language pathology services to children with speech and language disorders or impairments?

KEY FINDINGS

The evidence from two randomized controlled trials suggests that speech-language pathology treatment, delivered via videoconferencing or an in-person service model, improved children's speech-language impairments, and there were no significant differences found between these two models. These findings must be interpreted with caution given the limitations in the evidence.

METHODS

Literature Search Methods

A limited literature search was conducted on key resources including CINAHL, PubMed, The Cochrane Library (2015, Issue 3), University of York Centre for Reviews and Dissemination (CRD) and ECRI databases, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2010 and March 10, 2015.

Rapid Response reports are organized so that the evidence for each research question is presented separately.

Selection Criteria and Methods

One reviewer screened citations and selected studies. In the first level of screening, titles and abstracts were reviewed and potentially relevant articles were retrieved and assessed for inclusion. The final selection of full-text articles was based on the inclusion criteria presented in Table 1.

Table 1: Selection Criteria	
Population	Children with speech and language impairment or disorders Subgroups: • children age 0-5 years • children age ≥ 6 years
Intervention	Telehealth alone Telehealth in combination with in-person SLP services
Comparator	In-person SLP services or no comparator
Outcomes	Q1: Clinical effectiveness Q2: Cost-effectiveness Q3: Guidance regarding the use of telehealth in the study population
Study Designs	Q1: Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies Q2: Economic evaluations Q3: Evidence-based clinical practice guidelines

SLP=Speech Language Pathology

Exclusion Criteria

Articles were excluded if they did not meet the selection criteria outlined in Table 1, were duplicate publications, were published prior to 2010, or if they were referenced in a selected systematic review. Articles were also excluded if they enrolled adult patients only, or when a mixed population of adults and children was enrolled, there were no separate results available for children. Articles were excluded if health-related outcomes were not reported.

Critical Appraisal of Individual Studies

The quality of the included randomized controlled trials (RCTs) were critically appraised using Downs and Black checklist.[10] Numeric scores were not calculated. Instead, a review of the strengths and limitations of each included study were described.

SUMMARY OF EVIDENCE

Details of study characteristics, critical appraisal, and study findings are located in Appendices 2, 3, and 4, respectively.

Quantity of Research Available

A total of 186 citations were identified in the literature search. Following screening of titles and abstracts, 178 citations were excluded and eight potentially relevant reports from the electronic search were retrieved for full-text review. No potentially relevant publications were retrieved from the grey literature search. Of these potentially relevant articles, six publications were excluded for various reasons, while two RCTs met the inclusion criteria and were included in this report.[11,12] No relevant systematic reviews or meta-analyses, non-randomized controlled

trials or economic evaluations were identified. Appendix 1 describes the PRISMA flowchart of the study selection.

Summary of Study Characteristics

Study Design

The treatment effect of telehealth relative to conventional on-site therapy was assessed in two RCTs conducted by Grogan-Johnson and colleagues.[11,12] The 2013 Grogan-Johnson study included school-age children with speech sound disorders,[11] and the 2010 Grogan-Johnson study enrolled preschool- and school-age children.[12] Randomization in the first trial was carried out by drawing students' names out of a hat and alternately assigning them to one of the two treatment groups thereafter,[11] while the method of randomization was not reported in the second trial.[12] A power calculation was not reported in either study.

Country of Origin

The RCTs that evaluated the treatment effect of telehealth on speech disorders were conducted in the US.[11,12]

Patient Population

Fourteen children with speech sound impairments, aged from 6 to 10 years old were enrolled in the 2013 Grogan-Johnson study.[11] The mean age for the participants was 8.4 years (range: 6.4 to 9.9 years) in the telehealth group and was 9.0 years (range: 7.9 to 10.0 years) in the comparator group.

In the 2010 Grogan-Johnson study, 38 children aged from 4 to 12 years old, with communication impairments (i.e., articulation, language and/or fluency disorders) and followed an Individualized Education Plan that encompassed the provision of SLP services, were included.[12] The results for six children were not reported in this study: three did not receive baseline evaluation, two did not complete therapy and one was dismissed from SLP services due to a change in her condition. The demographic characteristics of the study participants were not reported, so it is unclear how many of them were preschoolers.

Interventions and Comparators

The 2013 Grogan-Johnson study was conducted to compare a speech sound intervention delivered via a telehealth model with a conventional side-by-side service delivery model.[11] Students participating in a 5-week summer speech sound intervention program were assigned to either the telehealth group (computer-based videoconferencing) or the side-by-side treatment group. During the 5-week period, a 30-minute individual session was provided twice a week in both groups. Seven students were assigned to the telehealth group, and another seven to the side-by-side treatment group.

In the 2010 Grogan-Johnson study, participants were randomly assigned to 4-month telehealth therapy (computer-based videoconferencing) followed by conventional on-site therapy (Group A), or 4-month conventional on-site therapy following by 4-month telehealth therapy (Group B).[12] There was no washout period between the two treatments. Seventeen students were assigned to Group A, and another 17 students were assigned to Group B.

Outcomes

The outcome measures in the 2013 Grogan-Johnson study were improvement in speech sound production, which was measured using a standardized assessment tool, the *Sounds-in-Words and Sounds-in-Sentences subtests* of the Goldman-Fristoe Test of Articulation 2 (GFTA-2), and listener judgments that were performed by graduate SLP students to identify improvement in productions of error phonemes noted at baseline evaluation.

The outcome measures in the 2010 Grogan-Johnson study included student progress and participant satisfaction through a survey.[12] Student performance was rated with the scale, *Mastered*, *Making Adequate Progress*, *Making Inadequate Progress* and *Objective Not Initiated*. Two other scales were employed to measure communication impairments and articulation. The Functional Communication Measures (FCMs) are a series of 7-point scales to rate the student's functional change at the start and the end of treatment. The second scale was GFTA-2, which was commonly used in schools to assess articulation and was administered by the investigators at the beginning, middle and end of the study. The data after the first 4-month treatment period were reported in the study.

Summary of Critical Appraisal

Both studies stated their objectives and inclusion/exclusion criteria. Even though they both indicated that they were RCTs, the quality of these two studies was compromised. In the 2013 Grogan-Johnson study, treatment allocation was assigned on the basis of a pseudo-random sequence (i.e., alternation), and the method of randomization was not described in the 2010 Grogan-Johnson study. The power calculation and sample size determination were not reported in either study. The study results should be interpreted with caution given the range of sample sizes (n = 14[11] to 38[12] participants). Also, the 2013 Grogan-Johnson study did not specify if the intention-to-treat approach was used in the statistical analyses, while in the 2010 study, the results were reported based on the participants who had completed the treatment. In the 2010 Grogan-Johnson study, participant satisfaction was reported. The results, however, must be interpreted with caution given the survey response rates among the students (76.3%), parents (66.7%) and staff (55.6%).

English was the primary language in the study participants. In addition, participants in both studies were recruited in Ohio, US, so it is unclear whether the findings can be generalized to broader patient populations.

Summary of Findings

1. *What is the clinical effectiveness of telehealth for the delivery of speech language pathology services to children with speech and language disorders or impairments?*

   In the 2013 Grogan-Johnson study, the mean number of sessions attended by the study participants was similar between the two treatment groups, 9.3 sessions in the telehealth group and 9.4 sessions in the side-by-side treatment group. The results showed that children in both groups demonstrated some improvement in their speech sound production at the end of the intervention; however, there were no statistically significant between-group differences in assessments after the treatment. The authors concluded that both models helped improve children's speech sound productions.

The 2010 Grogan-Johnson study evaluated the effect of telehealth SLP services and conventional on-site SLP services on articulation disorders in young children. The performance of the majority of the preschool- and school-age students from both groups was rated as *Mastered* or *Making Adequate Progress.* This rating was not defined in the article. At the end of the first treatment period, there was no statistically significant difference in GFTA-2 scores between telehealth and on-site service (p=0.06). The authors indicated that telepractice was a viable approach to deliver services to children with articulation disorders in a public school setting.

2. *What is the cost-effectiveness of Telehealth for the delivery of Speech Language Pathology services to children with speech and language disorders or impairments?*

There were no economic evaluations identified.

3. *What are the evidence-based guidelines regarding the use of Telehealth for the delivery of Speech Language Pathology services to children with speech and language disorders or impairments?*

There were no evidence-based clinical practice guidelines identified.

Limitations

The literature search did not identify health technology assessments, systematic reviews, non-randomized controlled trials, or economic evaluations regarding the comparative clinical and cost-effectiveness of telehealth relative to conventional in-person SLP services. The evidence from two RCTs (n = 14[11] and 38[12] participants) was reported. The method for randomization was questionable in one study and unknown in another. Given that there was no power calculation in either study and an intention-to-treat analysis was not reported, study findings should be interpreted with caution. Also, the generalization of the study results to other populations remained uncertain because of the patient characteristics in these two studies, where eligible participants were all from Ohio, US, and English was required to be their primary language.

In the study that enrolled preschoolers,[12] the proportion of children younger than 5 years old was not reported, and there were no results available for this particular subgroup. Furthermore, videoconferencing was the only telehealth technology that was examined in the included studies. Patient-reported outcomes, such as health-related quality of life, functional status and long-term academic performance, were not evaluated in these studies that ranged from five weeks[11] to eight months[12] in duration.

CONCLUSIONS AND IMPLICATIONS FOR DECISION OR POLICY MAKING

The clinical evidence regarding the comparative effectiveness of telehealth relative to conventional in-person speech-language pathology services on children with speech and language impairments or disorders was limited. Two RCTs examined the use of videoconferencing in school-age children with speech sound impairments and communication impairments. The study findings suggested that an improvement in children's speech-language impairments was observed by using standard speech instrument or by speech-language pathologists in either treatment arm. No significant differences, hence, were found between the interventions.

There are uncertainties around the data interpretation given the low quality of the evidence. In addition, there are no data reported for children younger than five years old, and no data available for technologies other than videoconferencing. The cost-effectiveness of the application of telehealth model in the study population remains unknown. Guidelines regarding the use of telehealth for speech and language pathology in children were not identified.

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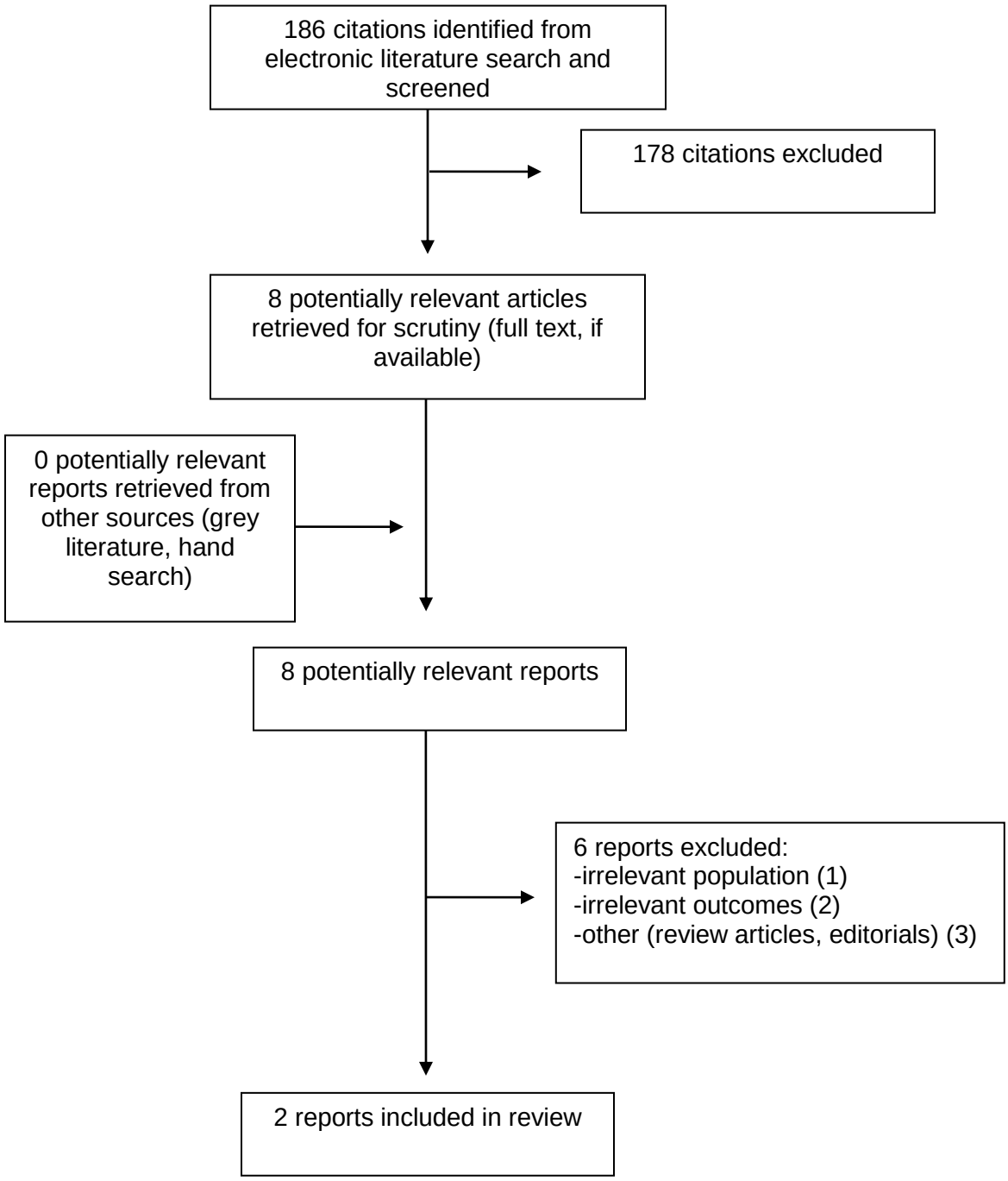
APPENDIX 1: Selection of Included Studies



APPENDIX 2: Characteristics of Included Publications

Table A1: Characteristics of Included Clinical Studies

First Author, Publication Year, Country	Study Design	Patient Characteristics	Intervention(s)	Comparator(s)	Clinical Outcomes
Grogan-Johnson, 2013[11] USA	RCT Key exclusions: significant hearing loss/visual impairment, autism, cerebral palsy, cognitive impairment, cleft lip/palate, neurological impairment.	School-age children with speech sound impairments (had motoric/phonetic-based speech sound disorders characterized by difficulty producing 1 to 3 specific speech sounds at levels of isolation, syllables or words, but with generally intelligible speech). English should be the primary language. N=14, ages: 6-10 years, 13 of them were receiving speech sound intervention at enrolment, 1 had no current intervention.	Telehealth service delivery model: twice a week for 30-min individual sessions during a 5-week summer intervention program. N=7.	Side-by-side service delivery model: twice a week for 30-min individual sessions during a 5-week summer intervention program N=7.	Improvement in speech sound production, measured by a standardized assessment tool (subtest of GFTA-2) and listener judgments.
Grogan-Johnson, 2010[12] USA	RCT Key exclusions: autism, pervasive developmental disorder, severe cognitive deficit or severe emotional disturbance.	Preschool- and school-age children with communication impairments (i.e., articulation, language and/or fluency disorders). English should be the primary language. N=38 (results	4-month telehealth therapy followed by 4-month on-site therapy, no washout period between the two phases. N=17.	4-month on-site therapy followed by 4-month telehealth therapy, no washout period between the two phases. N=17.	Student progress, communication impairments measured by FCMs, articulation measured by GFTA-2, participant (students, parents and staff) satisfaction.

Table A1: Characteristics of Included Clinical Studies					
First Author, Publication Year, Country	**Study Design**	**Patient Characteristics**	**Intervention(s)**	**Comparator(s)**	**Clinical Outcomes**
		available for 32 students), ages: 4-12 years.			

FCM = Functional Communication Measures; GFTA = The Goldman-Fristoe Test of Articulation; RCT = randomized controlled trial

APPENDIX 3: Critical Appraisal of Included Publications

Table A2: Strengths and Limitations of Randomized Controlled Trials using Downs and Black checklist[10]

Strengths	Limitations
Grogan-Johnson, 2013[11]	
• Objectives were stated • Intervention, comparator and outcomes were clearly described • SLPs conducted the speech sound intervention sessions were certified and had multiple years of experience as SLPs providing intervention for children through telehealth; investigators who assessed speech sound productions had no knowledge of the research purpose • P values were reported • Conflict of interest was reported.	• Quasi-randomized trial • Patient characteristics (e.g. time since initial diagnosis, previous treatment, comorbidity, etc.) were not reported in details • No justification of sample size selection • No information regarding loss to follow up.
Grogan-Johnson, 2010[12]	
• Objectives were stated • Intervention, comparator and outcomes were clearly described • P values were reported • Conflict of interest was reported.	• Method of randomization was not reported • Patient characteristics (e.g. definitive diagnosis, time since initial diagnosis, previous treatment, comorbidity, number of preschool-age children, etc.) were not reported in details • No justification of sample size selection • Findings were not reported in details (e.g. results before cross over) • Survey response rate was low (for the outcome of participant satisfaction)

SLP = speech language pathologist

APPENDIX 4: Main Study Findings and Author's Conclusions

Table A3: Summary of Findings of Included Studies

Main Study Findings	Author's Conclusions
Grogan-Johnson, 2013[11]	
Student progress: • Individual descriptive data showed that levels of speech sound impairments varied at baseline, but all students advanced to higher levels of speech sound production after the treatment. • GFTA-2 scores: ○ No significant differences between groups, p=0.44 for raw scores, p=0.644 for standard scores; ○ There was statistically significant difference in scores between pre- and post-intervention in both groups, p=0.020. • Listener judgments ○ Statistically significant difference was observed between baseline and end of treatment in both groups, p=0.007; ○ No significant difference was observed between mean listener judgments in the amount of xchange across time in either group.	• School-age children improved their speech sound production whether traditional intervention services were provided via telepractice or side-by-side delivery models. Furthermore, there was no significant difference in the performance of the children who received services in the telepractice condition compared with the side-by-side condition according to independent judges. (pg.218) • Both groups benefited from intervention and that benefit was the same regardless of type of intervention. (pg.215)
Grogan-Johnson, 2013[11]	
• Student progress: Performance of the students rated as *Mastered* or *Making Adequate Progress* at end of 1st treatment period: Telehealth: 75.3% On-site therapy: 75.6%, p value NR. GFTA-2 scores at end of 1st treatment period: There was no statistically significant difference in between telehealth and on-site service, p=0.06. Participant satisfaction: Students, parents and staff expressed satisfaction with telehealth delivery model. Response rate to the survey was 76.3%, 66.7% and 55.6%, respectively.	• Videoconferencing appears to be an effective and reliable service delivery method for school age children who receive speech language therapy services in public schools. (pg.139)

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English

Si vous voulez ces informations dans une autre langue officielle, contactez-nous.
French

Kīspin ki nitawihtīn ē nīhīyawihk ōma ācimōwin, tipwāsinān.
Cree

Tłı̨chǫ yatı k’ę̀ę̀. Dı wegodı newǫ dè, gots’o gonede.
Tłı̨chǫ

ʔerıhtł’ís Dëne Sųłıné yatı t’a huts’elkër xa beyáyatı theɔ́ą ɔat’e, nuwe ts’ën yółtı.
Chipewyan

Edı gondı dehgáh got’ı̨e zhatıé k’ę́ę́ edatł’éh enahddhę nıde naxets’ę́ edahłí.
South Slavey

K’áhshó got’ı̨ne xədə k’é hederı ɔedı̨htl’é yerınıwę nídé dúle.
North Slavey

Jii gwandak izhii ginjìk vat’atr’ijąhch’uu zhit yinohthan jì’, diits’àt ginohkhìi.
Gwich’in

Uvanittuaq ilitchurisukupku Inuvialuktun, ququaqluta.
Inuvialuktun

ᑕᒃᑯᐊ ᑎᑎᖅᑲᐃᑦ ᐱᓕᒍᐃᖅᑎᑦ ᐃᓄᒃᑎᑐᓪᖅᓯᒪᓂᑎᒃ, ᐅᕐᖅᑎᓐᓄᓂ ᐅᖅᑲᓕᔪᓐᓇᖅᑐᑎᑦ.
Inuktitut

Hapkua titiqqat pijumagupkit Inuinnaqtun, uvaptinnut hivajarlutit.
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