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Communicating care
La communication à coeur

Status of Early Hearing Detection and Intervention Programs in Canada: Results From a Country-Wide Survey

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JENNIFER C. WONG

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 **État d'avancement des programmes de détection et d'intervention précoces des troubles auditifs au Canada : résultats d'une enquête nationale**

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EARLY HEARING DETECTION AND INTERVENTION
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Abstract

In Canada, early hearing detection and intervention programs go beyond population screening of newborn hearing and offer services to confirm the presence or absence of hearing loss and provide services should permanent hearing loss be detected. Early hearing loss identification and intervention is critical to promote language, literacy, and social skills in developing children. However, a report card issued in 2014 from the Canadian Infant Hearing Task Force indicated that comprehensive early hearing detection and intervention programs were not uniformly available across Canada. The current work aimed to update the status of early hearing detection and intervention programs in Canada through a 24-item survey completed by 19 representatives in all 13 provinces and territories. Since 2014, there have been some improvements in early hearing detection and intervention programs in some areas of Canada. In others, comprehensive infant hearing services are not available province- or territory-wide or have not been provided with the necessary resources to sustain a suitable early hearing detection and intervention program. Results revealed that Canada is insufficient in offering comprehensive, accessible, and sustainable early hearing detection and intervention programs. Babies born in Canada deserve access to all components of an early hearing detection and intervention program, regardless of where they live. Continued action from Canada's provincial and territorial governments in addition to federal policy leadership is needed to achieve sufficient and sustainable early hearing detection and intervention programs across the country.

Editor-in-Chief:
 David H. McFarland

Abrégé

Au Canada, les programmes de détection et d'intervention précoces des troubles auditifs vont au-delà du dépistage universel de l'audition des nouveau-nés; ils offrent également des services permettant de confirmer la présence ou l'absence d'une perte auditive et ils fournissent des services d'intervention lorsqu'une perte auditive permanente est détectée. L'identification et l'intervention précoces des pertes auditives sont essentielles afin de favoriser le développement des habiletés sociales, langagières et de littératie des enfants. Un bulletin de rendement publié en 2014 par le Groupe de travail canadien sur l'audition des nourrissons a toutefois indiqué que des programmes de détection et d'intervention précoces des troubles auditifs complets n'étaient pas disponibles de manière uniforme au Canada (Canadian Infant Hearing Task Force, 2014). Le présent article vise donc à mettre à jour l'état d'avancement des programmes de détection et d'intervention précoces des troubles auditifs du Canada grâce à un sondage composé de 24 questions et complété par un total de 19 représentants provenant des 13 provinces et territoires de ce pays. Depuis 2014, des améliorations ont été apportées à certains programmes de détection et d'intervention précoces des troubles auditifs du Canada. Dans certaines régions du Canada, des programmes de détection et d'intervention précoces des troubles auditifs complets ne sont toutefois pas disponibles à l'échelle de la province ou du territoire, ou encore, ceux-ci n'ont pas les ressources nécessaires pour fournir une offre de services adéquate. Les résultats du sondage ont révélé que le Canada n'offre pas des programmes de détection et d'intervention précoces des troubles auditifs complets, accessibles et viables. Les enfants qui naissent au Canada méritent d'avoir accès à tous les éléments d'un programme de détection et d'intervention précoces des troubles auditifs, peu importe leur lieu de résidence. Des actions de la part des gouvernements provinciaux et territoriaux, en plus d'un leadership politique fédéral, sont nécessaires pour permettre de mettre en place des programmes de détection et d'intervention précoces des troubles auditifs suffisants et viables dans tout le pays.

Healthy hearing and communication development have important implications for brain development, learning, behaviour development, personal and social relationships, and well-being (Bagatto & Moodie, 2016; Russ, Tremblay, Halfon, & Davis, 2018). Hearing loss in the early years of life is a “primary health condition that if not acted upon, can have a wide range of potentially adverse effects on the affected child, family and even society at large” (Hyde, 2017b, p. 316). The Life Course Health Development Model and the World Health Organization’s International Classification of Functioning, Disability and Health conceptualize health as not just the absence of disease but as a positive capacity for an individual’s participation in the usual aspects of everyday life (Russ et al., 2018; World Health Organization, 2001). With this conceptualization in mind, we believe that a child’s experiences early in life set a critical foundation for the entire life course (Bryant, Raphael, Schreker, & Labonte, 2011; Russ et al., 2018; Underwood & Frankel, 2012).

Early hearing detection and intervention (EHDI) programs have been implemented in many countries to proactively address hearing health in infants and children. One to three of 1000 babies are born with hearing loss; 50% have no risk indicators (Fortnum, Summerfield, Marshall, Davis, & Bamford, 2001). EHDI programs have been promoted worldwide and implemented in many countries (e.g., Australia, England, United States) to proactively address hearing health (Therrell et al., 2015; Wake et al., 2016; Williams, Alam, & Gaffney, 2015; Wood, Sutton, & Davis, 2015). Based on best practices for EHDI programs (see Moeller, Carr, Seaver, Stredler-Brown, & Holzinger, 2013), these programs should aim to (a) universally screen all newborns, regardless of the presence of risk indicators for early hearing loss; (b) identify babies with permanent hearing loss using appropriate diagnostic techniques; (c) provide intervention services which include support for technology (e.g., hearing devices) and communication development (i.e., spoken and/or signed languages) based on informed and engaged parental choice; (d) provide family support; and (e) monitor and evaluate the impact of the interventions (Bagatto & Moodie, 2016; Hyde, 2017a). These components should reflect the best available evidence and family-centred early-intervention principles (Moeller et al., 2013). Hyde (2017a, 2017b) provided in-depth descriptions of principles and methods of universal newborn hearing screening (UNHS) including a discussion of program evaluation and quality dimensions.

In Canada, the term *early childhood intervention* encompasses a broad range of policies, programs, and coordinated services that promote the healthy development of vulnerable children and their families from

birth to approximately 6 or 7 years of age (Underwood & Frankel, 2012). Health services in Canada, including EHDI, fall under the jurisdiction of each province or territory (Therrell et al., 2015; Underwood & Frankel, 2012). This means that funding, eligibility criteria, and the availability of EHDI services and programs across the 13 provinces and territories can and do vary widely (Canadian Infant Hearing Task Force [CIHTF], 2014, 2016, 2019 [see Appendix]; Eskander & Papsin, 2014; Martin et al., 2018; Patel, Feldman, Canadian Pediatric Society, & Community Pediatric Committee, 2011; Therrell et al., 2015). In addition, individual provinces and territories have their own policy contexts with varying degrees of public transparency (Therrell et al., 2015). The absence of federal legislation for EHDI programs also means that distributional imbalances exist because of the geographical challenges associated with having approximately 18% of Canada’s population living in rural or remote communities dispersed throughout 95% of the area of the second largest country in the world (Martin et al., 2018).

The CIHTF, Speech-Language & Audiology Canada, the Canadian Academy of Audiology, and the Canadian Paediatric Society provided evidence in 2014 that eight EHDI programs in Canada were insufficient and inequitable (CIHTF, 2014). Programs were either not available or not comprehensive in all provinces and territories. Evidence for the cost effectiveness and benefits of EHDI makes improved access to such programs across Canada an important goal (Hyde, 2017a; Patel et al., 2011; U.S. Preventive Services Task Force, 2002).

In the absence of national legislation and guidelines, the CIHTF, a national group of leaders and experts in EHDI, was formalized in approximately 2013 to promote, support, and advocate for comprehensive universal EHDI programs in all Canadian provinces and territories (www.infanthearingcanada.ca). The group is a joint effort of the two Canadian professional associations, Canadian Academy of Audiology and Speech-Language & Audiology Canada. Their Report Card on Early Hearing Detection and Intervention presented in 2014 revealed that five provinces (i.e., British Columbia, New Brunswick, Nova Scotia, Ontario, Prince Edward Island) of 13 provinces and territories included all the components of a suitable EHDI program. The remaining eight provinces and territories did not have all the components of an EHDI program. For some provinces, only screening was available and the services needed to confirm a permanent hearing loss and provide the necessary intervention were only offered locally or regionally, not province- or territory-wide. This lack of accessibility may mean inconsistent or no follow-up

and/or clinical protocols that are not implemented or monitored. Additionally, many of the provinces or territories with insufficient EHDI programs in 2014 lacked a database to track births and outcomes. This crucial part of an EHDI program helps to ensure babies are guided to the next stage of the program and the impact of the intervention is documented. Data of this kind offer more evidence of the impact EHDI programs have on newborn Canadians and help to identify areas of improvement for EHDI program managers and stakeholders.

The purpose of the current study was to (a) investigate the status of implementation of EHDI programs in Canada; (b) consider whether adequate programs were in place in 2018; and (c) update the CIHTF EHDI Report Card. The previous version of the report card (i.e., 2014) captured some different aspects of the Canadian EHDI picture. Changes in the questions and grading for the current work were derived from knowledge gained in the previous work as well as an evolving understanding of the flexible and varied nature of provincial/territorial healthcare implementation.

Results of this study will help us understand if children and their families have equal and sustainable access to hearing loss intervention and support so that each child can develop to their full potential. This work will also provide a starting point to define excellence in EHDI programs for Canada. Excellence is achieved by programs that ensure that the knowledge and skills needed to fulfill EHDI program aspects are aligned with operationally defined performance standards and that there is intentional and deliberate monitoring in place for actual EHDI program performance compared to expected performance (Dunst, 2017; Hyde, 2017a, 2017b).

Method

Study Design

A concurrent embedded mixed methods design was used. This methodology allows researchers to gain a broader perspective because the qualitative data provide enriched descriptions that are not otherwise available or easily quantified (Creswell & Plano Clark, 2011). In the current study, data were primarily collected through a survey of the provinces and territories in Canada. This work was an examination of policy issues and a quality assurance study with third-party interviews. As such, ethics review was not required. Every effort was made to follow the principles of ethical conduct for research involving humans such as informing respondents of the nature of the study and that by completing the survey they are providing their consent. Respondents were prompted to provide additional written details regarding their quantitative survey response choice.

This qualitative text was paired with the quantitative descriptive results from the survey. Triangulation of qualitative comments with quantitative data was facilitated by discussion among a sub-group of CIHTF members to reach a consensus on our understanding of universal EHDI programs in Canada.

Materials

A 24-item online survey (using Survey Monkey®) was created by the sub-group of CIHTF members to gather more specific information about the status of EHDI programs in Canada (see **Table 1**). For each item, respondents chose among multiple responses; they were also provided with a space to explain their response. Items 1 through 4 asked about the role of respondents in their province or territory's services for infant hearing as well as which province or territory they represented. Items 5 through 11 related to legislation, funding, and coordination for certain aspects of EHDI, and Items 12 through 23 related to access to the specific components of EHDI such as UNHS, early intervention, clinical protocols, and monitoring. Item 24 was an open-ended question inviting the respondent to provide additional information and/or comments.

Once the survey analysis was completed and reviewed, specific follow-up questions were derived (see **Table 2**) and emailed to each respondent to gather additional information and achieve clarification of survey responses. This was especially important to accurately inform the 2019 Report Card that the CIHTF released in April 2019 (see the Appendix). One CIHTF member (MB) interacted individually with each respondent through email or phone conversation until clarification and agreement upon responses was achieved.

Participants

The survey link was sent via email (June 1, 2018) to individuals that the CIHTF believed had a significant role and responsibility in managing their province or territory's EHDI program. The respondents for each province/territory were nominated within that region to respond to the survey. If individuals indicated that they were not best suited to respond to the survey, they were asked to provide the CIHTF with the name and email address of a more appropriate respondent. One of the strengths of the CIHTF is that the committee is familiar with infant hearing activities and the professionals involved across Canada. Within the initial communication, it was stated that if the individual did not feel that she/he has the appropriate knowledge or experience to respond to the survey, she/he should transfer the link to someone who did. The Survey Subcommittee

Table 1		
The 24-Items Included in the Canadian Infant Hearing Task Force 2018 Survey of Canadian EHDI Programs		
Items	Questions	Response Options
1	What is your role in your province's/territory's infant hearing program?	Audiologist providing services to children.
		Speech-Language Pathologist providing services to children.
		Ear, Nose, and Throat physician providing services to children.
		Local newborn hearing screening program manager.
		Regional newborn hearing screening program manager.
		Provincial/territorial newborn hearing screening program manager.
		Other.
2	What province/territory are you providing information for?	Open ended.
3	What region within your province/territory are you providing information for?	Open ended.
4	Please provide your name and email address in case we need to contact you to obtain clarification and/or additional information.	Open ended.
5	Are you aware of position statements, approved policies or legislation for your province/territory that recommend UNHS, and/or EHDI?	Yes, these exist for our province/territory.
		Yes, our province/territory had endorsed/adopted an external position statement.
		No.
		I do not know.
6	What is the status of legislative or policy support in your province/territory for universal newborn hearing screening?	Our province/territory has legislated or provided a program for universal newborn hearing screening.
		Regional or local sites in our province/territory have local policies for universal newborn hearing screening.
		Our province/territory does not currently have such legislation or programs.
7	What is the status of legislative or policy support in your province for EHDI programs? (e.g., intervention above and beyond a newborn hearing screen)	Our province/territory has legislated or provided a program for an EHDI program (services in addition to newborn hearing screening).
		Regional or local sites in our province/territory have local policies for an EHDI program (services in addition to newborn hearing screening).
		Our province/territory does not currently have such legislation or programs.
		Comments.

Items	Questions	Response Options
8	What is the status of funding in your province for universal newborn hearing screening and/or an EHDI program?	Sufficient funding exists for screening and/or an EHDI program. Insufficient funding exists for screening and/or an EHDI program. No funding exists for screening and/or an EHDI program. I do not know the status of the funding. Comments.
9	Is there a funded program in your province/territory that coordinates universal newborn hearing screening and/or EHDI?	Funding supports coordination or management of a province/territory wide program. Funding supports coordination or management of a regional program. Funding supports coordination or management of a local program. There are no programs for coordination. I do not know the status of coordination. Other (please comment).
10	Does your province/territory have newborn hearing screening initiatives of any kind, regardless of whether or not they are funded or coordinated?	Yes, province and/or territory wide. Yes, in local programs or hospitals. No. I do not know. Other (please comment).
11	If you answered Yes to the previous question, please describe these services.	Open ended.
12	Does your province/territory have early intervention services for infants who have hearing loss?	A program exists that refers children from screening for hearing loss through hearing assessment to identify permanent hearing loss to funded intervention programs across the province or territory. Specialized pediatric programs exist (for example at some centres or hospitals) that refer children from screening for hearing loss through hearing assessment to identify permanent hearing loss to funded intervention programs across the province or territory. Specialized pediatric programs exist (for example at some centres or hospitals) for screening for hearing loss and assessment/diagnostic follow-up only. No. I do not know. Other (please comment).
13	How are infants with identified risk indicators for late onset and/or progressive hearing loss monitored?	I do not know. Risk indicators are not identified. EHDI program records infant's risk indicator(s), and no audiological monitoring or surveillance occurs within the EHDI program. Audiological monitoring occurs within the EHDI program (infant/child is seen back at regular intervals for surveillance). Other (please provide comments).

Items	Questions	Response Options
14	For infants identified with permanent hearing loss within your EHDI program, how is assistive technology (hearing aids, remote mic systems, batteries, etc.) funded?	We do not have an EHDI program. Full cost is paid for by the family. Funding provided for families who qualify based on income level. Provincial/territorial funding - partial money provided to fund devices. Provincial/territorial funding - full cost of devices provided. Provincial/territorial funding - for batteries and/or earmolds. I do not know. Other (please provide comments).
15	If there is no EHDI program in your province/territory, how are assistive devices funded for children identified with permanent hearing loss?	Open ended.
16	Are service providers working within your EHDI program provided with specific training related to your desired service provision requirements?	We do not have an EHDI program. I do not know if they are provided with training. Yes - they are provided with in-person training. Yes - training is provided through sharing of paper or electronic procedures and documents. No - they are not trained in specific procedures related to service provision. Other (please provide comments).
17	Are service providers working within your EHDI program provided with practice monitoring related to ensuring desired service provision requirements are met?	We do not have an EHDI program. I do not know if they are monitored. Yes – they are monitored. No – they are not monitored. Other (please provide comments).
18	Do protocols exist within your EHDI program (e.g., hearing screening, assessment, hearing aid fitting/ verification, outcomes measurement)?	We do not have an EHDI program. I do not know. Yes. No.
19	If you answered Yes above, does the EHDI program provide training on the protocol?	We do not have an EHDI program. I do not know. Yes. No.

Items	Questions	Response Options
20	If you have protocols in place within your EHDI program, are service providers monitored for protocol adherence?	We do not have an EHDI program.
		We do not have specific protocols in place in our EHDI program.
		Yes - service providers are monitored for protocol adherence.
		No - service providers are not monitored for protocol adherence.
21	Please indicate which of the following parent-to-parent and/or family support services are provided within your EHDI program.	There are no formal parent/family support services currently in place within our EHDI program.
		We have a parent-to-parent support program.
		Training of parent peer support workers.
		Professional (e.g., social worker or similar) support program.
		Training of professional support workers.
		Funding available for support services.
		I do not know.
Other (please provide comments).		
22	Is there a provincial/territorial database in place that records and tracks children within your UNHS and EHDI programs?	I do not know.
		Yes.
		No.
		Other (please provide comments).
23	How are services monitored for children within your EHDI program?	We do not have an EHDI program.
		I do not know.
		Services for children with hearing loss are not monitored.
		Services for children with hearing loss are monitored at the local level (within our clinic[s]).
		Services for children with hearing loss are monitored at a regional level.
24	Please provide any additional information/comments that you believe will facilitate our understanding of EHDI program(s) in your area.	Services for children with hearing loss are monitored at a provincial/territorial level.
		Other (please provide comments).
		Open ended.

Note. Most items provided a check-box list of responses and an area in which respondents could provide text to further expand on their quantitative response data. EHDI = Early hearing detection and intervention, UNHS = Universal newborn hearing screening.

was not able to adjudicate whether a respondent was the most appropriate for that province/territory and therefore accepted responses from the person identified for each region. Reminder emails were sent until data from all provinces and territories were received (October 24, 2018).

Data Analysis

Data analyses were descriptive in nature. The open-

ended written responses, email, and telephone information were combined with the quantitative results at the analysis stage and examined to determine whether descriptive results could be better explained.

Assigning an overall grade for EHDI programs: Sufficient or insufficient. A designation of *Sufficient* was assigned to a province or territory if it had all five EHDI components available at the provincial or territorial level,

rather than only in smaller regional or hospital-based programs. These are as follows:

1. UNHS;
2. Identification of babies with permanent hearing loss;
3. Intervention services which include support for technology and communication development;
4. Family support; and
5. Monitoring and evaluation of the program.

Regional or hospital-based delivery of any of these components can have varying standards, program characteristics, and coverage rates. Provinces and territories where any of these components were missing and/or not implemented province- or territory-wide were graded as *Insufficient*.

Rating differences from the 2014 EHDI report card. In 2014, ratings for EHDI programs in Canada were categorized using three grades: *Excellent*, *Good*, or *Insufficient*. Grades were assigned on the basis of program quality and coverage at the provincial/territorial level that included the same five EHDI components listed above. Screening coverage was given a high weighting in the 2014 Report Card. Excellent and Good categories were assigned for screening coverage of at least 95% or 90%, respectively. As this can be considered a

quality measure, the CIHTF decided not to weight screening coverage in this way for the 2019 Report Card. For the current Report Card, one goal was to understand the status of EHDI programs across Canada by investigating whether each of the five components were being offered in a province or territory. As such, in the 2019 EHDI Report Card, programs were assigned one of two grading categories: Sufficient or Insufficient.

Results

There were 19 survey respondents distributed across all 10 Canadian provinces and three territories. The CIHTF accepted each nominated respondent to be suitable for that region. A single respondent completed the survey and follow-up questions in each province and territory, except for New Brunswick and Newfoundland and Labrador. These two provinces had four respondents each from various regions of the province. The follow-up questions for these provinces were especially important in order to gain consensus from the multiple respondents. Of the 19 respondents completing the survey, five were audiologists providing services to children; one was a speech-language pathologist who provides services to children; one was a regional UNHS manager; three were provincial/territorial UNHS managers; six were audiologists who were local, regional, or provincial newborn hearing screening program managers while also providing services to children; one was the director of the provincial EHDI program; one was a

Follow-up Questions	
Items	Questions
1	If you have a UNHS that is province/territory-wide, what is the percentage of babies screened? This item informs the amount of coverage the program provides.
2	EHDI programs aim to proactively address hearing health and include: (1) screening of all newborns, regardless of the presence of risk indicators (UNHS); (2) identification of babies with permanent hearing loss; (3) intervention services which include support for technology and communication development; (4) family support; and (5) monitoring and evaluation of the impact of intervention. Based on this definition, are ALL of these services offered across the province/territory? That is, does your province/territory have an EHDI program?
3	If you have an EHDI program, do protocols exist and does monitoring that the protocols are being followed occur?
4	Does your program have a database to track program outcomes?

Note. EHDI = Early hearing detection and intervention, UNHS = Universal newborn hearing screening.

provincial EHDI program manager; one was a regional EHDI manager; and one was a local EHDI manager. It is common within EHDI programs to have representatives from a variety of backgrounds.

Only six provinces or territories in Canada have EHDI programs that are considered sufficient based on the five components previously described: Alberta, British Columbia, Northwest Territories, Nova Scotia, Ontario, and the Yukon. The remaining provinces and territories—Manitoba, New Brunswick, Newfoundland and Labrador, Nunavut, Prince Edward Island, Québec, and Saskatchewan—are considered insufficient despite some having localized or regional services. In these areas, any infant hearing programming that exists has poor or unknown coverage, lacks standardized protocols, and/or the area does not have a database and a process for monitoring services and outcomes. Further information gathered from the survey is described in the sections that follow. See **Table 3** for a summary.

One important distinction between a sufficient and an insufficient EHDI program is the province- or territory-wide availability of the relevant program components (e.g., screening, diagnostics, intervention, etc.). Although there are some provinces and territories that do not have province- or territory-wide access to all the necessary EHDI components, it is important to describe what hearing-related services are provided to infants and children across Canada. The following section describes the availability of EHDI components as reported in the survey, with a focus on those provinces and territories who reported an insufficient EHDI program.

EHDI Components

Universal newborn hearing screening. Ten Canadian provinces and territories offer UNHS (i.e., Alberta, British Columbia, Manitoba, New Brunswick, Northwest Territories, Nova Scotia, Ontario, Prince Edward Island, Saskatchewan¹, Yukon). Newfoundland and Labrador, Nunavut, and Québec do not currently offer UNHS. The intent to implement a program in Québec was announced by the provincial government in 2009 and it is currently in development (CIHTF, 2014). Although the lack of UNHS contributes to the provinces/territories of Newfoundland and Labrador, Nunavut, and Québec EHDI programs' ratings of insufficient, they do offer localized pediatric audiology services for infant hearing assessment and intervention. UNHS is a vital component of a comprehensive EHDI program designed to capture newborns who require further audiological assessment and early intervention should a permanent

hearing loss be detected. In addition, it is critical that infant hearing services continue after the UNHS stage. This is because newborn hearing screening does not diagnose or treat hearing loss. It simply indicates that further audiological assessment is required to determine the presence or absence of permanent hearing loss in early infancy. The UNHS component is necessary to support the triage of infants who need further follow-up.

Identification of infants with permanent hearing loss. Infants who do not pass hearing screening must be referred to an audiologist for a hearing assessment and the necessary audiology intervention services (e.g., hearing aid fitting), where available and desired by the family when permanent hearing loss is confirmed. In the absence of a UNHS system, the path to audiology assessment may not be seamless or easily accessible. It would be inappropriate to screen for a condition without having the necessary follow-up in place (World Health Organization, 2001). In addition, the Joint Committee on Infant Hearing (2013) emphasized the need for clinicians with the required experience and expertise to accurately assess infant hearing in a timely manner to support optimal intervention. Without UNHS or a coordinated EHDI system, it is difficult to accomplish timely and appropriate audiology assessment province- or territory-wide. There was not a specific question in the survey that targeted infant hearing assessment, though we did ask whether protocols and training exist for this service (see below). However, in the survey, respondents from all provinces/territories indicated that pediatric audiology assessment was available. The lack of UNHS in Newfoundland and Labrador, Nunavut, and Québec means that access to timely diagnostic and intervention services for infants may be compromised. These regions have regional access to audiology assessment services. For the provinces and territories who have UNHS, audiology assessment is either provided province/territory wide (i.e., Alberta, British Columbia, Northwest Territories, Nova Scotia, Ontario, Yukon) or regionally (i.e., Manitoba, New Brunswick, Prince Edward Island, Saskatchewan).

Intervention services: Technology and communication development. Early intervention is the goal of a comprehensive EHDI program. Without the initial contact of UNHS supported by an early and accurate hearing assessment, optimal and timely intervention is impossible. Furthermore, a coordinated system of services to ensure infants with hearing loss and their family are guided through the process is critical to reduce the impact of early hearing loss on the children's development. Within an EHDI program, intervention services, which include

¹ At the time of the survey, Saskatchewan was preparing to launch their UNHS program. It was launched in the spring of 2019.

Table 3

Summary of EHDI Components for Each Province/Territory in Canada

Province/Territory	UNHS	Identification	Intervention	Family Support	Monitoring/ Database
Alberta	✓	✓	✓	✓	✓
British Columbia	✓	✓	✓	✓	✓
Northwest Territories	✓	✓	✓	✓	✓
Nova Scotia	✓	✓	✓	✓	✓
Ontario	✓	✓	✓	✓	✓
Yukon	✓	✓	✓	✓	✓
Manitoba	✓	x	x	x	x
New Brunswick	✓	x	✓	x	x
Newfoundland and Labrador	x	x	✓	x	x
Nunavut	x	x	x	x	x
Prince Edward Island	✓	✓	x	x	x
Quebec	x	x	x	x	x
Saskatchewan	✓	x	x	x	x

Note. Check marks indicate that the component is implemented province/territory-wide. "X"s indicate the lack of the component or that it is not available province/territory-wide. For Identification and Intervention, audiology assessment and hearing aids and/or communication development is available in regions denoted with an "X" but services are only available regionally. For Monitoring/ Database, some regions have monitoring of service provision but not a database. Both are required for a complete EHDI program. EHDI = Early hearing detection and intervention, UNHS = Universal newborn hearing screening.

technology (e.g., hearing aids, cochlear implants) and support for communication development (e.g., speech-language pathology, American Sign Language), must be linked with UNHS and infant hearing assessment to ensure all infants with hearing loss are supported. Provinces/territories that lack UNHS are less likely to be aware of infants who were born with hearing loss and jeopardize the opportunity to maximize the critical developmental period. A program that refers children from UNHS to hearing assessment and to a coordinated intervention program that is available province- or territory-wide is a required component of a sufficient EHDI program.

Through the survey, Manitoba, Nunavut, Québec, and Saskatchewan indicated that intervention services are offered in specialized centres and hospitals and not across the province/territory. This makes access to intervention services, which should occur with a skilled clinician on a routine basis throughout the child’s early years, a challenge. The provinces and territories that provide broad access to high quality intervention services are scaffolded by either UNHS and infant hearing assessment or are within a comprehensive EHDI program. These are Alberta, British

Columbia, New Brunswick, Newfoundland and Labrador, Northwest Territories, Nova Scotia, Ontario, Prince Edward Island, and Yukon.

Family support. Support for families of infants identified as having permanent hearing loss is a vital part of any EHDI program (Henderson, Johnson, & Moodie, 2014, 2016; Moeller et al., 2013) and can take many forms. British Columbia’s EHDI program offers parent-to-parent support, training of peer parent support workers, and provides funding for support services. The EHDI program in Ontario offers parent support through a professional (i.e., social worker) funded by the program. The Yukon provides a parent-to-parent support program as well as training of professional support workers. In the Northwest Territories, due to the low numbers of infants who have hearing loss, family support services are offered in neighbouring provinces. Alberta’s program is relatively new and is refining a program for parent-to-parent support services. Nova Scotia is similarly developing a parent-to-parent support program. Families in Saskatchewan may connect with a regional children’s centre, though it is not yet a formal part of the province’s UNHS program. The remaining provinces/

territories (i.e., Manitoba, New Brunswick, Newfoundland and Labrador, Nunavut, Prince Edward Island, and Québec) do not have formal programs for family support. A lack of formal parent-to-parent support programs means that the managing audiologist will have to continue their support by connecting families with community resources that are not a formal part of their program. As such, the clinicians supporting the family will have little or no control over the quality of these resources and the accuracy and appropriateness of information provided to parents using these resources. These connections occur regardless of the implementation of a sufficient EHDI program and demonstrate the importance of family support when an infant is identified as having a hearing loss. For provinces and territories with a UNHS component only, support is perhaps more critical for the family to be able to locate suitable follow-up services because they have not been implemented or supported in their province or territory.

Monitoring and evaluation of the program. Monitoring and evaluation of an EHDI program assures that services are of high quality so that infants are not being missed or misdiagnosed. Continuing quality assurance initiatives and tracking of infants through a provincial/territorial database ensure that good-quality EHDI programs are in place. A critical component of infant hearing healthcare is the use of evidence-based clinical protocols. Regardless of the existence of a sufficient EHDI program, all Canadian provinces and territories indicated that protocols exist for infant hearing screening, assessment, hearing aid fitting/verification, and outcome measurement. This speaks to the high quality of pediatric audiology services available in Canada. The downside is that for some areas of the country where EHDI programs are insufficient, access to these services and sustainability are lacking.

Provinces that have EHDI programs reported providing in-person training on clinical protocols for hearing screening and audiology assessment, and the provision of hearing aids to infants who have hearing loss (Alberta, British Columbia, Nova Scotia, Ontario). There is also sharing of electronic resources, which is a strategy that the Northwest Territories and Yukon rely on for training and monitoring service providers. Importantly, some provinces and territories that do not have an EHDI program still provide in-person training or sharing of resources for training, especially for hearing screening and audiology assessment (Manitoba, New Brunswick, Newfoundland and Labrador, Prince Edward Island, Québec, Saskatchewan). Of the provinces and territories that provide training, practice monitoring to ensure that the desired service provision requirements are met in all components of care is being conducted by British

Columbia, Ontario, Nova Scotia, Northwest Territories, and the Yukon. Only screening performance is monitored in Manitoba and Québec and both screening and assessment are monitored in Alberta. Prince Edward Island has a single audiologist who upgrades her knowledge regularly and Saskatchewan has plans to monitor screening performance. New Brunswick and Newfoundland and Labrador do not monitor service provision for adherence to clinical protocols. Nunavut has not implemented clinical protocols.

Database. A data management system to track infants through each stage of an EHDI program helps to ensure that all necessary services are accessed by the family. Mechanisms to identify timelines and outcomes for each EHDI service, for each child, allows for the determination of whether the program is meeting recommended benchmarks and is having a positive impact for infants with hearing loss. These data are important for stakeholders in order to evaluate the quality of the program and adjust procedures and services as needed. Sufficient EHDI programs in Canada (i.e., Alberta, British Columbia, Northwest Territories, Nova Scotia, Ontario, Yukon) have a provincial or territorial database that records and tracks infants and their outcomes within the program. Manitoba's database tracks the UNHS outcomes as well as the results of the audiology assessment and intervention recommendations. New Brunswick's database is built for the UNHS component of their program only. Newfoundland and Labrador, Nunavut, and Prince Edward Island do not have databases to track infants or outcomes. At the time the survey was completed, it was indicated that Saskatchewan did not have a database to track infants or outcomes. Databases evolve as the data are analyzed and interpreted. Their accuracy and meaningfulness help support the quality improvement and continuation of EHDI programs.

Other Important EHDI Components

Within the survey, respondents were asked to respond to other questions relevant to the implementation and sustainability of EHDI programs. The information gathered from these sections was not used to rate a province/territory's EHDI program. The topics below are useful for understanding other important components of EHDI programs.

Legislation. It was not the intent of the survey to evaluate the quality of any legislation, but only to determine if legislation exists. Existing legislation indicates provincial/territorial government support for a program and elevates it beyond a regional effort in addition to supporting the sustainability of the EHDI program.

Of the 13 provinces and territories in Canada, seven (i.e., Alberta, Manitoba, New Brunswick, Ontario, Prince Edward Island, Québec, Nova Scotia) have position statements, approved policies or legislation specific to their province or territory that recommend UNHS and/or EHDI, and one (i.e., Northwest Territories) has endorsed external policies or legislation. The Northwest Territories have adopted Ontario's policies and procedures for all but high-risk monitoring, which is modelled after British Columbia's procedures. It was indicated that resources are limited in the Northwest Territories and developing new policies was not necessary. In five others (i.e., British Columbia, Newfoundland and Labrador, Saskatchewan, Nunavut, Yukon), the respondents were not aware whether such documents are used or endorsed in their province or territory. These respondents often reported that policies and legislation are available regionally or locally or are in the process of being developed. Differences in legislation would be expected across provinces/territories because healthcare is not administered on a federal level.

The distinction between UNHS and a complete EHDI program is important because population screening of newborns for hearing loss without province- or territory-wide services for hearing assessment, intervention, family support, monitoring, and tracking does not support babies who are referred from screening for audiologic assessment or who are at risk for developing hearing loss after the newborn period. The existence of legislation that makes the distinction between UNHS and EHDI is critical for support and implementation of optimal hearing health care for children.

Through the survey it was determined that seven provinces or territories (i.e., Alberta, British Columbia, Northwest Territories, Nova Scotia, Ontario, Prince Edward Island, Yukon) have legislation for or provide an EHDI program. Newfoundland and Labrador, Nunavut, and Québec currently do not have legislation for nor provide UNHS or EHDI programs. Despite the legislation or provision of EHDI, New Brunswick, Prince Edward Island, and Saskatchewan lack important components (noted above) that render their EHDI program insufficient.

Funding. For the provinces and territories that provide UNHS or EHDI programs, seven reported sufficient funding (i.e., British Columbia, Northwest Territories, Ontario, Prince Edward Island, Québec, Nova Scotia, Yukon), though for some with long wait lists for audiology and speech-language pathology services, more funding is indicated (e.g., Nova Scotia). This funding also supports coordination or management of EHDI programs in these

provinces and territories. New Brunswick provided funding for equipment and staffing when their EHDI program was initiated in 2002. No further funding was reported at the time of the survey and the respondents indicated that the equipment is now in need of replacement. As such, their funding was reported as insufficient. Manitoba provides sufficient funding for a province-wide UNHS program as well as screening and diagnostic equipment, but provides no funding for the regional coordination of the program or for regionally-based intervention services. Manitoba funds intervention services in two major cities: Winnipeg and Brandon. Funding is also provided for three regions to provide Auditory Brainstem Response assessment to newborns who refer on hearing screening. Alberta provided funding to implement and coordinate a province-wide EHDI program in 2018 and it is premature to determine whether it is sufficient. Saskatchewan provided funding to implement and regionally coordinate a province-wide UNHS program by the spring of 2019; however, funding was not provided for a comprehensive EHDI program. Newfoundland and Labrador has not provided province-wide funding for UNHS or EHDI, though it has local programs that provide UNHS. The representative from Nunavut was unaware of the funding status for any program, though targeted hearing screening of infants at risk of hearing loss is attempted. Many of these babies are referred to Ottawa, Ontario, for hearing assessments.

Hearing aid funding. The funding of personal hearing aids for infants with permanent hearing loss varies across the country, regardless of whether the province or territory has a sufficient EHDI program. In New Brunswick and Nova Scotia, the full cost of the hearing aids is paid for by the family if they do not qualify for income-based funding. Since 2015, the Northwest Territories has provided funding for earmolds and hearing aids for all children with hearing loss until the child's 18th birthday. The Yukon provides hearing aid funding for children based on family income or when other third-party options have not been successful. Partial provincial funding is provided through separate provincial funding sources in Alberta (Aids for Daily Living), Ontario (Assistive Devices Program), and Manitoba (Children's Hearing Aid Program). The Provincial Hearing Aid Program provides funding for the full cost of hearing aids and earmolds in Newfoundland and Labrador. The British Columbia Early Hearing Program includes full funding of the first hearing aid(s) and batteries and earmolds for 3 years. Prince Edward Island provides full funding for hearing aids until the child turns 18 years of age, as does Québec, although details were not provided in the survey responses. Nunavut's funding for hearing aids and earmolds is limited to federally funded Non-Insured Health Benefit status,

as is also available in other provinces and territories. This includes Saskatchewan, which also offers hearing aid funding based on income level.

Coordination. There is availability of hearing assessment and intervention in New Brunswick, although family support and monitoring are not formalized or centrally located. Lack of funding since program inception in 2002 has threatened the sustainability of the New Brunswick program. Prince Edward Island offers province-wide UNHS, audiology assessment, and intervention. Clinical protocols exist although their implementation is not monitored. Prince Edward Island also does not have a database to track infants through the program. This impacts their ability to monitor and manage the quality of the program. Saskatchewan launched their UNHS program in the spring of 2019. This does not include other EHDI components such as audiology assessment or intervention. These services are available only in particular parts of the province, which limits accessibility to infants born in Saskatchewan. Furthermore, the lack of standardized protocols for regional implementation of EHDI components means that service quality in this province will vary from region to region.

Discussion

Research has unequivocally shown that, if not acted upon early in life, hearing loss in infancy can significantly impact speech, language, literacy, and social-emotional development and can have a wide range of potentially adverse effects on the family and society (Ching, Dillon, Leigh, & Cupples, 2018; Tomblin et al., 2015). All children in Canada deserve access to proper hearing screening and timely diagnosis and intervention to reach their full potential. Continued action from Canada's provincial and territorial governments in addition to federal policy leadership is needed to achieve sufficient and sustainable EHDI programs across the country.

There has been some progress in the status of implementation of EHDI programs across Canada since the 2014 Report Card issued by the CIHTF. In the 2019 Report Card, six provinces and territories in Canada were graded as having Sufficient EHDI programs (i.e., Alberta, British Columbia, Northwest Territories, Nova Scotia, Ontario, and Yukon) compared to five in 2014 (i.e., British Columbia, New Brunswick, Nova Scotia, Ontario, and Prince Edward Island). British Columbia, Nova Scotia, and Ontario have managed to sustain sufficient EHDI programs over the 5-year period. British Columbia's EHDI program started in 2006 and Ontario's EHDI program started in 2002, which demonstrates a remarkable ability to maintain high quality hearing health care services for infants and their families

across these provinces over time.

Alberta, Northwest Territories, and the Yukon have achieved a Sufficient grade for their EHDI programs in 2019, which is an improvement from the 2014 Report Card. Alberta's EHDI program was recently implemented in 2018 and reflects all important components of an EHDI program across the province. Prior to receiving the necessary resources for an EHDI program, most babies in Alberta were not screened for hearing loss, audiology services for infants were not province-wide, and tracking of births and outcomes varied. Significant gains were made in this province after the government announced in 2013 their intention to implement a province-wide EHDI program. In the 2014 Report Card, the Northwest Territories EHDI program was graded as *Under Review*. In the 2019 Report Card, similar to Alberta, the Northwest Territories achieved a Sufficient grade for their EHDI program. EHDI components were not available territory-wide in the Yukon in 2014, and they did not have a mechanism to track births or outcomes. In 2019, the Yukon offered all EHDI program components and they have innovatively arranged support from southern provinces (e.g., British Columbia). The Yukon now has a database that tracks infants and outcomes.

In the current report card, the EHDI programs in New Brunswick and Prince Edward Island are graded as Insufficient, which is unfortunate for families since these provinces were graded as Sufficient in 2014. All EHDI program components are available province-wide in Prince Edward Island. Although clinical protocols exist, their implementation is not monitored and they do not have a database to track infants or outcomes. New Brunswick offers some EHDI program components but again they are not available across the province. In particular, family support and monitoring are not formalized or centrally coordinated. In addition, it was reported that New Brunswick's audiological clinical protocols and equipment require updating to meet new practice standards seen in those provinces graded as Sufficient.

Five provinces continue to demonstrate insufficient EHDI programs since the last report card was issued in 2014: Manitoba, Newfoundland and Labrador, Nunavut, Québec, and Saskatchewan. The primary reason for continuing to receive an Insufficient grade is that they lack the components for a complete EHDI program. Manitoba has province-wide UNHS (hearing screening component of an EHDI program) and audiology assessment and intervention services available in some regions. Saskatchewan began offering UNHS in the spring of 2019. Screening alone does not ensure early identification of permanent hearing

loss or early access to intervention. It is not diagnostic or therapeutic for infant hearing loss. Without audiological assessment and intervention, delays in confirming hearing loss in babies will occur and they will not have access to the breadth and quality of early services needed for optimal outcomes. UNHS programs only offer newborn hearing screening. Consequently, when a baby does not pass the screening, the result indicates the need for further audiological assessment and intervention—nothing more. From the survey results, it is apparent that each of these provinces has access to well-trained pediatric audiologists. There is a need for complete EHDI services to be coordinated, resourced, and implemented within all regional health authorities in Manitoba and Saskatchewan to optimize services for babies and their families. Often with UNHS-only programs, databases that track infants and screening outcomes are available. Existing databases could be expanded if a complete EHDI program were implemented. Ideally, a comprehensive national database could provide appropriate tracking, monitoring, and outcome measurement for all provinces and territories.

Nunavut and Newfoundland and Labrador have essentially remained unchanged in their EHDI program implementation since 2014. It is worth repeating that pediatric audiologists are available within this territory and province. Other provinces and territories in Canada have well-defined systems-of-care and they are willing to share strategies for implementation. What appears to be lacking in Nunavut and Newfoundland and Labrador are the resources for territory- and province-wide EHDI development and implementation. Finally, it is noteworthy that the government of Québec announced their intention to implement a UNHS program in 2009 (CIHTF, 2014). Results of the 2019 report card (10 years later) indicate that Québec is still “in the process of program planning” for a UNHS program and has yet to implement province-wide UNHS or EHDI services for babies and their families.

An important finding in our survey is that many of the EHDI programs in Canada were implemented as early as 2002 and in order to sustain access to services and support for children and their families it is imperative that equipment, protocols, staffing, and training of professionals is sustained through appropriate provincial, territorial, and federal funding mechanisms.

Limitations of Current Work

This work has some limitations that are noteworthy. The lack of coordinated and comprehensive EHDI programs across Canada may have resulted in variations in responses for some items depending on the region. This

was addressed as much as possible by having a variety of questions to gather pertinent information from all regions, regardless of the presence of an EHDI program. Further, the respondents had varying backgrounds and roles within infant hearing health care in the region for which they were responding and there were multiple respondents from some regions. Although we asked follow-up questions to clarify as needed, responses may have differed based on these response characteristics. We did not pilot the survey to ensure clarity of the questions, so this may have been a limitation especially as it relates to important constructs such as the difference between UNHS and EHDI and regional versus provincial/territorial implementation. These concepts are critical in the understanding of comprehensive and coordinated EHDI programs.

Call to Action

The findings from the current survey point to a somewhat more encouraging situation for EHDI programs in Canada compared to the status in 2014. However, it is concerning that seven provinces and territories representing approximately 35% of Canada’s population (Statistics Canada, 2018) still have EHDI programs that are insufficient. As a result of this work, the CIHTF calls for action to improve access to comprehensive infant hearing services across Canada. All stakeholders including parents, physicians, nurses, audiologists, speech-language pathologists, researchers, and government policy makers, whether provincial, territorial, or federal, can participate in the following ways:

1. Within a province or territory that has insufficient EHDI implementation:
 - a. Reach out to provinces and territories who have implemented a sufficient EHDI program to gain an understanding of the resources needed to develop and implement a comprehensive and sustainable program.
 - b. Request access to standardized clinical protocols and guidelines to begin to support the babies who have hearing loss in your region immediately.
2. Within a province or territory that has sufficient EHDI implementation:
 - a. Continue to commit and invest in your EHDI program to ensure it remains coordinated and comprehensive across the province or territory.
 - b. Maintain attention on program quality improvement and sustainability by reviewing data

and implementing appropriate action as needed.

- c. Work collaboratively with other provinces and territories in Canada who have an insufficient EHDI program to support the development and implementation of comprehensive infant hearing services.

All provinces and territories are encouraged to work towards the development of a federally supported national-level database to track outcomes. With these actions in mind, Canada has an opportunity to broaden access to comprehensive EHDI programs across the country.

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Disclosures

No conflicts of interest, financial or otherwise, are declared by the authors.

Appendix: 2019 Report Card on Canadian Early Hearing Detection and Intervention Programs



2019 Report Card on Canadian Early Hearing Detection and Intervention Programs

CANADA'S GRADE: INSUFFICIENT

This report card was developed by the Canadian Infant Hearing Task Force (CIHTF).

Early Hearing Detection and Intervention (EHDI) programs aim to proactively address infant hearing health and include the following components: **1) universal hearing screening of all newborns; 2) identification of babies with permanent hearing loss; 3) intervention services which include support for technology and communication development; 4) family support; and 5) monitoring and evaluation of the program.**

Grades were assigned based on all five of the components being available province or territory-wide.

PROVINCE/TERRITORY (IN ALPHABETICAL ORDER)	GRADE	DESCRIPTORS
Alberta	SUFFICIENT	<ul style="list-style-type: none"> 89%+ babies screened* All EHDI components province-wide Clinical protocols are implemented and monitored Database tracks infants and outcomes <p>*program recently implemented</p>
British Columbia	SUFFICIENT	<ul style="list-style-type: none"> 97%+ babies screened All EHDI components province-wide Clinical protocols are implemented and monitored Database tracks infants and outcomes
Manitoba	INSUFFICIENT	<ul style="list-style-type: none"> 92%+ babies screened Some EHDI components but not province-wide Clinical protocols exist for some components but implementation is not monitored Database tracks screening component only
New Brunswick	INSUFFICIENT	<ul style="list-style-type: none"> 98%+ babies screened Some EHDI components but not province-wide Family support and monitoring are not formalized or centrally coordinated Clinical protocols from 2002 are being used and not monitored Regional databases mostly track screening numbers but not outcomes
Newfoundland and Labrador	INSUFFICIENT	<ul style="list-style-type: none"> Screening coverage unknown Some EHDI components but not province-wide Clinical protocols exist but implementation is not monitored No database to track infants or outcomes
Northwest Territories	SUFFICIENT	<ul style="list-style-type: none"> 99%+ babies screened All EHDI components territory-wide Clinical protocols are implemented and monitored Database tracks infants and outcomes

PROVINCE/TERRITORY (RANKED IN ALPHABETICAL ORDER)	GRADE	DESCRIPTORS
Nova Scotia	SUFFICIENT	<ul style="list-style-type: none"> • 96%+ babies screened • All EHDI components province-wide • Clinical protocols are implemented and monitored • Database tracks infants and outcomes
Nunavut	INSUFFICIENT	<ul style="list-style-type: none"> • Screening coverage unknown • Some EHDI components but not territory-wide • Clinical protocols are not implemented • No database to track infants or outcomes
Ontario	SUFFICIENT	<ul style="list-style-type: none"> • 94%+ babies screened • All EHDI components province-wide • Clinical protocols are implemented and monitored • Database tracks infants and outcomes
Prince Edward Island	INSUFFICIENT	<ul style="list-style-type: none"> • 97%+ babies screened • All EHDI components province-wide • Clinical protocols exist but implementation is not monitored • No database to track infants or outcomes
Quebec	INSUFFICIENT	<ul style="list-style-type: none"> • 30%+ babies screened (in the process of universal newborn hearing screening program planning) • Some EHDI components but not province-wide • Clinical protocols exist for some components but implementation is monitored for screening only • Regional databases exist to track infants up to 6 months of age
Saskatchewan	INSUFFICIENT	<ul style="list-style-type: none"> • Screening coverage unknown (universal newborn hearing screening is targeted for spring 2019) • Some EHDI components but not province-wide • Clinical protocols are not implemented • No database to track infants or outcomes
Yukon	SUFFICIENT	<ul style="list-style-type: none"> • 99%+ babies screened • All EHDI components available with support from southern provinces (e.g., BC) • Clinical protocols are implemented and monitored • Database tracks infants and outcomes

CIHTF is a national group of leaders in hearing health who promote and advocate for comprehensive EHDI programs across Canada. The Task Force is a collaboration of Speech-Language & Audiology Canada (SAC) and the Canadian Academy of Audiology (CAA): www.infanthearingcanada.ca

All children in Canada deserve access to proper hearing screening, timely diagnosis and appropriate intervention to reach their full potential. Continued action from Canada's provincial and territorial governments, in addition to policy leadership at the federal level, is needed to achieve sufficient and sustainable EHDI programs across the country.

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The Therapeutic Alliance: A Must for Clinical Practice



L'alliance thérapeutique : un incontournable pour la pratique clinique

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KEYWORDS

THERAPEUTIC ALLIANCE

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Abstract

The role of the therapeutic alliance in the success of interventions has been well demonstrated in areas related to speech-language pathology and audiology. Based on this knowledge, this article presents the theoretical foundations of the therapeutic alliance, distinguishing it from the therapeutic relationship. The central concept of shared decision making is presented, followed by factors that may influence the establishment and quality of the therapeutic alliance. A low-quality therapeutic alliance is associated with the possibility that the client will discontinue the intervention, hence the importance of paying special attention to this dimension. In situations where clinicians have difficulty establishing an alliance, it is their responsibility to identify how they may be contributing to this situation and reflect on their own actions in order to make the necessary corrections.

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Abrégé

Le rôle de l'alliance thérapeutique dans le succès des interventions est bien établi dans les domaines connexes de l'orthophonie et de l'audiologie. En s'appuyant sur ces connaissances, le présent article présente les fondements théoriques de l'alliance thérapeutique, en la distinguant notamment de la relation thérapeutique. Le concept central de la prise de décision partagée est présenté, suivi des facteurs susceptibles d'influencer l'établissement et la qualité de l'alliance thérapeutique. Une alliance thérapeutique de faible qualité est associée à la possibilité que le patient mette fin à l'intervention lui étant offerte, d'où l'importance d'accorder une attention particulière à cette dimension. Dans les situations où les cliniciens ont de la difficulté à établir une alliance, il est de leur responsabilité d'identifier de quelle façon ils contribuent à cette situation et de réfléchir sur leurs propres actions afin d'apporter les correctifs nécessaires.

Over the last few decades, research in the field of speech-language pathology has increasingly focused on evidence-based practices (American Speech-Language-Hearing Association, 2005). To reduce the uncertainty surrounding clinical decisions and therapeutic choices, clinicians must actively use the knowledge deriving from both scientific research and their own clinical experience (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). More recently, the need to take clients' preferences and values into account has been recognized as being central to the clinical process (Dollaghan, 2007; Furlong, Serry, Erickson, & Morris, 2018; Schwarz, Coccetti, & Cardell, 2020). Thus, clinicians must master two types of competence. The first is *clinical competence*, that is, their mastery of all the knowledge relating specifically to their area of expertise. The second is *relational competence*, namely all the attitudes and skills required to develop a strong therapeutic alliance with the client (Wampold, 2001). Even when the intervention plan is relevant, it can only be successfully implemented when the speech-language pathologist (S-LP) manages to establish, develop, and maintain a therapeutic alliance with clients and their family. In each intervention, every day, S-LPs activate a *clinical-relational* process in their clinical work (Côté & Hudon, 2016).

In 2002, the American Psychological Association published findings on the elements characterizing the effectiveness of interventions. The therapeutic alliance was the main element cited (Norcross, 2002). The links between the quality of the therapeutic alliance and the effectiveness of interventions has been empirically demonstrated in the fields of psychotherapy and health-related professions (Hall, Ferreira, Maher, Latimer, & Ferreira, 2010; Martin, Garske, & Davis, 2000). Two meta-analyses focusing on adult clientele have reported a modest but significant relationship between the therapeutic alliance and intervention outcomes. The first of these meta-analyses included 24 studies and reported an average effect size¹ of .26 (Horvath & Symonds, 1991), while the second included 79 studies and reported an effect size of .22 (Martin et al., 2000). Two other meta-analyses, focusing on children and adolescents ($n = 49$ and $n = 23$ studies, respectively), reported similar results (Karver, Handelsman, Fields, & Bickman, 2006; Shirk & Karver, 2003). In the medical field, the reported effect size is .11 (Kelley, Kraft-Todd, Schapira, Kossowsky, & Riess, 2014). Although these effect sizes may appear modest at first glance, in areas where so many factors can influence outcomes (e.g., severity of the disease, psychosocial stressors), their impact is significant (Rutledge & Loh, 2004). Taken together, these findings

suggest that the therapeutic alliance is more strongly associated with the results of interventions than the specific techniques and approaches used by clinicians (Manning, 2010; Norcross, 2002; Plexico, Manning, & DiLollo, 2010). In psychotherapy and intervention involving individuals or families, the therapeutic alliance has been identified as a process that is essential to change (Elvins & Green, 2008). Indeed, it is considered the vehicle for delivering effective change (Lawton, Haddock, Conroy, Serrant, & Sage, 2020).

In the field of speech-language pathology, the therapeutic alliance is also mentioned as a key factor of the success of interventions in fluency disorders (Plexico et al., 2010), aphasia rehabilitation (Lawton et al., 2020; Lawton, Sage, Haddock, Conroy, & Serrant, 2018), and child speech and language disorders (Fourie, Crowley, & Oliviera, 2011; Freckmann, Hines, & Lincoln, 2017). For example, a qualitative study involving 28 participants (19 men, 9 women) having received from 6 months to more than 12 years of therapy for stuttering identified seven characteristics that were effective in promoting successful change in this regard. The clinician's ability to build a strong alliance with his/her clients was mentioned as one of the most significant factors (Plexico et al., 2010). For the participants of this study, "the clinicians who were perceived as more competent were those who were able to promote an effective therapeutic alliance" (Plexico et al., 2010, p. 348).

Lawton et al. (2018) conducted in-depth, semi-structured interviews exploring the point of view of 22 S-LPs working with people with aphasia post-stroke. Their findings also point to the importance of the therapeutic alliance for the success of interventions. Their data highlight the relevance of developing shared expectations of therapy. They also emphasize the need to jointly define the goals of the intervention and the role of both the clinician and client in achieving these goals (Lawton et al., 2018).

The term *therapeutic alliance* is often used interchangeably with *therapeutic relationship* (e.g., Elvins & Green, 2008; Freckmann et al., 2017; Lawton et al., 2018, 2020). For example, Lawton et al. (2018) placed equal emphasis on the "importance of showing empathy" and the need to "delineate roles." However, we suggest that these two behaviours refer to distinct components of the clinical-relational process. The therapeutic relationship is a component of the therapeutic alliance rather than an equivalent term. To better guide clinical work, these concepts should be properly delineated.

¹ An effect size is a measure of the strength of the relationship between two variables. It corresponds here to the difference between two means, divided by the standard deviation. In accordance with the guidelines published by Cohen (1988), a modest effect is set at 0.20, a moderate effect at 0.50, and a high effect at 0.80 and above.

Objectives

Based on the knowledge developed in speech-language pathology and related fields, the purpose of this article is to present the definitions of the therapeutic alliance, distinguishing it from the therapeutic relationship. The concept of shared decision making will also be exposed as another crucial component of the clinical-relational process rooted in a person-centred approach.

Definitions of Concepts

Therapeutic Alliance

The tripartite conceptualization of the therapeutic alliance introduced by Bordin (1979) stipulates that the clinician and client must come to an agreement on (1) the goals of the intervention and (2) the explicit tasks and intervention intensity required to meet them, by creating (3) an affective bond. The first two components of the therapeutic alliance, setting goals and establishing the necessary tasks, are relatively concrete and explicit (Freckmann et al., 2017). Goal setting implies a mutual understanding of the problem about which the client is consulting, and of the client's strengths and needs. Agreeing on the tasks required to meet these goals entails defining and clearly delineating the roles of each party—clinician, client, and family. Shared decision making is the process whereby clinicians and clients work together to make these decisions (Haesebaert, Adekpedjou, Croteau, Robitaille, & Légaré, 2019).

The third dimension, the development of a bond, refers to a more abstract component of the alliance, namely its emotional component (Bordin, 1979). This bond can only be created in the context of a trusting relationship between the clinician and the client. In fact, the establishment of a trusting therapeutic relationship is the first condition of the therapeutic alliance.

Therapeutic Relationship

The therapeutic relationship is the ground on which the therapeutic alliance is constructed. It involves all the feelings and attitudes that the clinician and client have towards one another and the way they are expressed (Fourie et al., 2011; Norcross, 2002). On the part of the clinician, it requires respect, listening, authenticity, and empathy, as well as a real interest in the personal experience of the client who is struggling with communication difficulties (Di Blasi, Harkness, Ernst, Georgiou, & Kleijnen, 2001; Kelley et al., 2014).

The therapeutic relationship develops right from the very first contacts between the clinician and the client. It is

during the evaluation of the client's needs, and sometimes even the first telephone contact, that the key elements of a trusting relationship will or will not be established. In this sense, the first meetings with the client are decisive for the development of the therapeutic alliance. To foster this relationship of trust, the clinician must engage in a real partnership with the client (Dumez, 2012; Joosten et al., 2008; Plexico et al., 2010). The clinician must show openness and commitment to the client (Lawton et al., 2018, 2020; Plexico et al., 2010). A good therapeutic relationship is characterized by relational symmetry resulting from a complementarity of roles (Leahy, 2004). The S-LP is the communication disorders expert, whereas clients are the experts of their own lives and, consequently, the best placed to identify and communicate their needs, preoccupations, preferences, and so on. As stated by Weston (2001, p. 438), in the medical context, "[...] physicians still have an obligation to contribute their expertise to the discussion and to involve patients in such a way that patients can use that expertise in making their own decisions about care." By putting the client at the centre of the intervention, such a clinician–client partnership is aligned with World Health Organization guidelines. These guidelines stipulate that client autonomy and empowerment are the basic values and underlying premises for the provision of healthcare (Joosten et al., 2008). Developing and maintaining a trusting therapeutic relationship requires a person-centred approach and a real conviction of the uniqueness of each client/family (Bishop, Kayes, & McPherson, 2019; Côté & Hudon, 2016).

Shared Decision Making

Shared decision making is defined as a collaborative process whereby clinicians and clients work together to make choices regarding therapeutic actions (Elwyn, Frosch, & Kobrin, 2016; Haesebaert et al., 2019). This process has its roots in the field of ethics and respect for the rights and autonomy of people (Moore & Kaplan, 2018).

Several studies have confirmed that a significant proportion of clients wish to play an active role in decisions regarding their health (Kiesler & Auerbach, 2006). Clients increasingly recognize that they are the best judges concerning these issues and in decisions regarding interventions that affect them (O'Connor et al., 2003). For these decisions to be not only shared but also informed, it is imperative for clients to have a clear understanding of the problem in question. It is also essential for clients to have a fair understanding of the different intervention options and scientific facts supporting them. In the first place, it is crucial that the clinician share and explain to the client the path of his/her clinical reasoning. It is also important for the clinician

to discuss with the client the advantages and disadvantages of each of the therapeutic alternatives available (Légaré et al., 2010). Client values and preferences need to be clarified and openly discussed (Dollaghan, 2007). The clinician must always ensure that the client understands what is at play and not hesitate to suggest postponing the decision if further explanation is required or the client needs time to reflect (Légaré et al., 2010). The decision must be made in full knowledge of the facts.

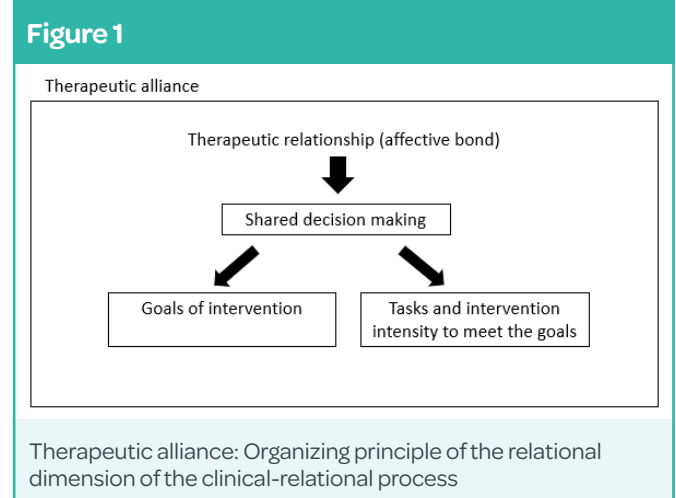
In a systematic review of shared decision making and patient outcomes in 39 studies, Shay and Lafata (2015) noted that shared decision making was associated with affective-cognitive outcomes and, to a lesser extent, behavioural and health outcomes. Affective-cognitive outcomes include knowledge, attitudinal, and affective/emotional effects. Behavioural outcomes refer to adherence to recommended interventions and health behaviours, while health outcomes include quality of life and biological measures of health.

The process of shared decision making has the effect of increasing the client's understanding of the problem, adherence to intervention, confidence, satisfaction and, more generally, health and well-being. For example, the results of a prospective cohort study involving 83 adults with neurological disabilities showed significant correlations between goal-planning engagement, goal attainment, and functional outcomes (Turner-Stokes, Rose, Ashford, & Singer, 2015). The results of a cross-sectional survey of adults initiating biological treatment of autoimmune disease showed that persistence in treatment was longer for participants who engaged in shared decision making (Lofland et al., 2017). More generally, the results of a meta-analysis ($n = 35$ studies) confirmed that clients who were involved in shared decision making, chose a treatment condition, or received their preferred intervention showed higher satisfaction, higher completion rates, and better clinical outcomes (Lindhiem, Bennett, Trentacosta, & McLearn, 2014). These results underscore the importance of shared decision making, jointly defining with the client the objectives of the intervention and the means of achieving it. This is at the heart of the therapeutic alliance. Indeed, including clients in decision making has been associated with more favourable outcomes for their health (Duncan, Best, & Hagen, 2010; Légaré et al., 2010). Shared decision making increases the quality and effectiveness of interventions (Côté & Hudon, 2016).

In Sum

The therapeutic alliance can be conceived as the organizing principle of the relational dimension of the clinical-relational process. This organizing principle is

operationalized through two components: (1) a therapeutic relationship of trust (affective bond) which favours (2) shared decision making aimed at helping the clinician and client/family develop a common view of (a) the goals of the intervention and (b) the explicit tasks and intervention intensity required to meet these goals. **Figure 1** sets out and illustrates the components of the clinical-relational process constantly in play during a speech-language pathology intervention.



The crucial role played by the establishment of a good therapeutic alliance in the effectiveness of interventions is quite clear. However, for clinicians working with people struggling with language impairment, this can constitute a challenge (Lawton et al., 2018) because communication impairment can impact the degree of collaboration and the ability to reach consensus (Rosewilliam, Roskell, & Pandyan, 2011). The experience of S-LPs and their in-depth knowledge of communication impairment provide them with the keys to overcome these pitfalls (Hersh, 2010). Yet, the establishment of a therapeutic alliance, through a trusting therapeutic relationship including shared decision making, can be positively or negatively modulated by factors relating to clinicians or clients, as well as external factors (Baldwin, Wampold, & Imel, 2007; de Roten, 2011). The sources of variability identified in studies on language impairment are reported in **Table 1**.

Sources of Variability in the Therapeutic Alliance

Factors Relating to Clinicians

Establishing, developing, and maintaining a good therapeutic relationship is challenging. Such a relationship implies that clinicians be constantly attentive to their role and to clients' subjective experiences in order to respond with empathy. The clinician should express receptiveness to the client's point of view and intervene in ways that can generate hope (Horvarth & Bedi, 2002).

Table 1		
Factors Relating to Clinicians, Clients, and the Context of the Intervention		
	Type of clients	References
Factors relating to clinicians		
Adapt their behaviour and style of communication to degree of severity of language impairment presented by client	Adults with aphasia	Lawton, Haddock, Conroy, Serrant, & Sage (2020) Slingsby (2006)
<ul style="list-style-type: none"> Persons with severe impairment, attending therapy over a long period (e.g., persons with severe aphasia) valued therapeutic empathy, enjoyment of therapy, and hope 	Adults with aphasia	Lawton et al. (2020)
<ul style="list-style-type: none"> Persons with mild therapy valued professional competence, therapeutic challenge, and firmness 	Adults with aphasia	Lawton et al. (2020)
Adapt to individuals' relational preferences and needs	Adults with aphasia	Lawton, Sage, Haddock, Conroy, & Serrant (2018)
Propose relational proximity, not as a friend, but not too formal	Adults with aphasia	Lawton et al. (2018)
Give honest feedback on progress and recovery	Adults with aphasia	Lawton et al. (2018)
Use humour sparingly: can foster solidarity and togetherness	Adults with aphasia	Simmons-Mackie & Schultz (2003)
Acknowledge the person's lived experience	Adults with aphasia	Simmons-Mackie & Damico (2011)
Demonstrate passion for assisting the client	Adults with stuttering	Plexico, Manning, & DiLollo (2010)
Communicate clearly their understanding of the client's experience	Adults with stuttering	Plexico et al. (2010)
Listen carefully and focus on the client's unique goals and capabilities	Adults with stuttering	Plexico et al. (2010)
In paediatric context: make sure the therapy is enjoyable	Children with language difficulties	Fourie, Crowley, & Oliviera (2011)
Factors relating to clients		
Motivated to participate in shared decision-making process	Adults with aphasia	Lawton et al. (2018)
Perceive that they play an active role in the therapeutic process	Adults with aphasia	Lawton et al. (2018)
External factors		
Service delivery model prioritizing impairment-based approach and time constraints	Adults with aphasia	Lawton et al. (2018)
Limited time resources	Adults with aphasia	Lawton et al. (2018)
Relational discontinuity	Adults with aphasia	Lawton et al. (2018)
Medical model	Adults with aphasia	Lawton et al. (2018)

Supporting the process of change requires flexibility in the application of the therapeutic approach (Côté & Hudon, 2016). Adopting a flexible approach can help clinicians meet the varied needs of clients. Indeed, clients differ regarding their language impairment, but also their expectations when it comes to their relationship with the S-LP (Lawton et al., 2018). Clinicians may consider some changes to be meaningful, but clients may not value these changes (Finn, 2003). It is important for clients to have a say concerning the types of change they see as worthwhile (Manning, 2010).

However, it is important to note that while, for some clients, empathy may promote the therapeutic alliance by making them feel understood, for other clients, it can also be perceived as an intrusion (Horvath & Bedi, 2002). To have a beneficial effect on the therapeutic alliance, the empathy demonstrated by the clinician must therefore be consistent with the preferences and perceptions of clients (Constantino, Castonguay, Zack, & DeGeorge, 2010; Horvath & Bedi, 2002). Failure to recognize the client's emotions and possible criticism, and an over-focus on detail, are all possible barriers to establishing a therapeutic alliance (Karver et al., 2006).

Other strategies and behaviours are also negatively associated with the therapeutic alliance. For example, pushing clients to talk when they do not wish to do so, or being overly formal, can compromise the quality of the therapeutic alliance. This appears to be particularly true for teenagers (Constantino et al., 2010). With this clientele, it is also important to avoid strategies that are more appropriate for young children, which can be perceived with suspicion and disinterest (DiGiuseppe, Linscott, & Jilton, 1996).

Factors Relating to Clients

Clients' perception of the usefulness of the intervention and expectation of change, as well as their receptivity to and motivation to change, are considered factors that can influence the establishment of a good therapeutic alliance with the clinician (Constantino et al., 2010; Hersoug, Høglend, Havik, & Monsen, 2010; Karver, Handelsman, Fields, & Bickman, 2005; Ross, Polaschek, & Ward, 2008). If clients have had negative experiences in the past, this can make them wary of engaging in a new therapeutic relationship (Rooney, 2009). Where they are at in terms of the stages of therapeutic change and how they expect to be able to cope with their problem are some of the variables pertaining to the client in any intervention session (Manning, 2010).

Seeing the clinician as trustworthy, honest, authentic, and empathic can induce positive feelings toward the clinician and lead to the development of a supportive

therapeutic alliance (Karver et al., 2005). Some authors state that clients may be more inclined to form a therapeutic alliance with clinicians they perceive to be credible and competent (Karver et al., 2005). Strong (1968) defined a credible clinician as a person who presents him/herself clearly, with simplicity and authenticity. This kind of clinician inspires confidence (Ackerman & Hilsenroth, 2003). In a study involving adults who stuttered, clinicians who were perceived as lacking competence were described as ineffective in conveying to the client a sense of acceptance, understanding, and trust (Plexico et al., 2010).

It is true, however, that not all clients are willing to take an active part in decision making. Age-related factors, experience of health care use, acceptance of the problem, and cultural values, for example, may influence the degree to which clients wish to be involved in this process (McKeown, Reiningger, Martin, & Hoppmann, 2002). Clinicians must thus have realistic expectations regarding the involvement of different clients and adjust to the role that each is willing to play in this decision-making process (Pomey et al., 2015). Take, for example, a 9-month-old child for whom a diagnosis of profound hearing loss has just been confirmed. The need to intervene will be very clear for both parents and stakeholders. Accordingly, the discussion will focus on defining the best therapeutic approach, the short- and medium-term goals of the intervention, its intensity, and the roles of the parents and clinician. By contrast, in a situation where the need to intervene may appear less obvious, such as with a client with a neurodegenerative disease, the discussion will have to address the client's expectations of the intervention. The possible benefits will be exposed while also emphasizing the inevitable progression of the disease and its consequences.

External Factors

Other persons may also influence the establishment of a therapeutic alliance between the client and the clinician, including family members, friends, and other significant figures in the client's life (Ross et al., 2008). Through the values they convey, their perceptions, and comments on the intervention, these different actors all have the potential to encourage or undermine the therapeutic alliance that develops between clients and their clinicians.

Regarding the context of the intervention, two meta-analyses focusing on adult clients receiving psychotherapy reported that intervention type did not moderate the relationship between the therapeutic alliance and intervention outcomes (Horvath & Symonds, 1991; Martin et al., 2000). Freckmann et al. (2017) came to the same conclusion in a study comparing the strength of the

therapeutic alliance between S-LPs and their clients in two clinical settings. More specifically, the therapeutic alliance was equally as strong in both face-to-face and telepractice settings and was thus not affected by the service delivery model.

Nevertheless, the intervention context appears to be the most important external factor likely to impair the therapeutic alliance (Wolter, Corbin-Lewis, Self, & Elsweler, 2011). Constraints related to the organization of services (e.g., a limited number of appointments granted by the institution, the impossibility of meeting in the family home or the child's daycare centre) are likely to interfere with the establishment of a therapeutic alliance. This is the case when such constraints prevent action that the clinician considers relevant but is unable to apply (Lawton et al., 2018). Moreover, prioritizing a medical model may compromise the establishment of a therapeutic alliance. Such a model encourages clients to adopt a passive attitude, concurring with the clinician, who chooses the intervention that they consider best (Joosten et al., 2008). The therapeutic alliance is also largely compromised in a context characterized by frequent relational discontinuity caused by high staff turnover, due to illness, vacations, new employees, or restructuring of workloads in institutions (Légaré et al., 2013).

In summary, a low-quality therapeutic alliance is associated with the possibility that the client will discontinue the intervention and lose interest in any future intervention. The inability of clinicians to develop an effective therapeutic alliance may lead to emotions in the client such as shame, inadequacy, hopelessness, frustration, anger, guilt, embarrassment, and discouragement (Plexico et al., 2010). It is thus crucially important to pay attention to this dimension, especially during early appointments (Horvarth & Bedi, 2002). In situations where clinicians have difficulty establishing a therapeutic alliance, it is their responsibility to identify how they might be contributing to this situation rather than putting the blame on the client's characteristics. Clinicians must reflect on their own actions and make the necessary corrections. Clinical supervision is a possible avenue in such a context. Feedback is recognized as a powerful tool for professional development and learning (Van de Ridder, McGaghie, Stokking, & ten Cate, 2015).

Strategies for Establishing, Maintaining, or Improving the Therapeutic Alliance

Training at both the under- and postgraduate levels is the most frequently cited strategy for improving clinicians' ability to first develop and then maintain and improve their skills in the relational side of the therapeutic process

(e.g., Légaré et al., 2013; Rose, Rosewilliam, & Soundy, 2017; Strauss et al., 2015). Such training can be implemented to foster the development of a therapeutic alliance (Crits-Christoph et al., 2006) and manage ruptures in this alliance (Castonguay et al., 2004). Just as the initial training of S-LPs prepares them to effectively execute their clinical expertise, such training should also give equal emphasis to the relational side of therapy, or *how* therapy is implemented (Lawton et al., 2018; Manning, 2010).

Engaging clinicians in a process of reflexivity could be the way to achieve this. Applying reflective skills can allow clinicians to take a step back from their action and identify concrete ways to improve it (Mann, 2011). Reflective practice is conceived as a learning process that takes place over time, emphasizing the back and forth between action and reflection. It allows for the transformation of a clinician's practice, as a result of this learning (Lison, 2013). Clinicians reflect on their own concrete experiences, identifying the elements that raise questions for them. The clinician then analyzes these elements and seeks and validates alternatives, arriving at an understanding of the phenomenon that will allow for new experience. The cycle then begins again—reflective practice is an iterative process. This process, together with constructive feedback, facilitates awareness of what works well and what does not, and how the clinician can improve (Embo, Driessen, Valcke, & Van Der Vleuten, 2014).

Some activities, practiced individually, with a mentor or in groups, promote reflective practice. One example is the case method. What is essential, however, is feedback. Feedback is what provides access to a level of generalization that results in a change in practice over the long term. Becoming a reflexive clinician takes not only time (Larrivee, 2000) and a supportive environment (Mann, Gordon, & MacLeod, 2009), but also mentoring (Donnay & Charlier, 2008).

Communities of practice can also be supportive, enhancing the clinician's ability to develop a quality therapeutic alliance with clients and their families. Communities of practice are groups of people who share a common concern or passion. Together, they can learn to improve their practice through regular interaction with one another (Wenger-Trayner, Fenton-O'Creedy, Hutchinson, Kubiak, & Wenger-Trayner, 2014).

Conclusion

It is essential that speech-language services be based on the latest scientific knowledge and professional best practices. However, high-level clinical expertise is not

enough to ensure the effectiveness of speech-language interventions. It is also and above all the responsibility of clinicians to establish a good therapeutic alliance with their clients and their families in order to maximize the benefits of their interventions. Developing and maintaining therapeutic relationships requires a person-centred approach and a real conviction of the uniqueness of each client/family.

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Disclosures

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Appendix

Here are some interesting references for clinicians who want to deepen their knowledge of the topic of this article.

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MOTS-CLÉSNORMES
DÉVELOPPEMENTALESDÉVELOPPEMENT
LANGAGIER

ENFANTS

ÂGE PRÉSCOLAIRE

FRANÇAIS

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David H. McFarland**Indicateurs normatifs du développement du langage en français québécois à 36, 42 et 48 mois : résultats du projet ELLAN****Correction :** Cet article a été corrigé en date du 27 janvier 2021 pour rectifier des erreurs dans les tableaux 2 et 5.**Normative Indicators of Language Development in Québec French at 36, 42, and 48 Months of Age: Results of the ELLAN Study****Correction:** This article was corrected on January 27 2021 to fix errors in Tables 2 and 5.**Audette Sylvestre
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L'objectif de cette étude est de présenter des indicateurs normatifs du développement du vocabulaire réceptif et expressif, ainsi que des composantes phonologique et morphosyntaxique du langage expressif, des enfants québécois unilingues francophones âgés de 3 à 4 ans. Ces indicateurs sont basés sur les résultats obtenus par 99 enfants recrutés à l'âge de 36 mois précisément ($M = 36,1$ mois; $\hat{E}-T = 0,2$). Les données ont été recueillies lors de trois visites distinctes, réalisées à six mois d'intervalle, à l'aide d'outils valides sur le plan psychométrique et fréquemment utilisés par les orthophonistes dans leur pratique clinique. Une technique statistique de rééchantillonnage utilisant l'intervalle de confiance à 95% du 10^e rang centile a permis de regrouper les enfants en difficulté, ceux se situant dans une zone d'incertitude et ceux ayant un développement typique, et ce, pour chaque mesure de langage. Les résultats à chacune des mesures confirment une progression significative des compétences langagières des enfants entre l'âge de 3 et 4 ans. Ils suggèrent également que les mesures utilisées sont suffisamment sensibles pour détecter l'évolution des habiletés langagières des enfants âgés de 36, 42 et 48 mois, confirmant ainsi leur pertinence clinique. L'interprétation des normes des outils originaux est discutée à la lumière des scores obtenus. Les données normatives de la présente étude s'ajoutent à un corpus de connaissances qui constituent des points de repère indispensables pour le travail clinique et la recherche.

Abstract

The objective of this study is to present normative indicators of the development of receptive and expressive vocabulary as well as phonological and morphosyntactic components of expressive language among unilingual francophone Québec children aged 3 to 4 years. These indicators are based on the results obtained by 99 children recruited at precisely 3 years of age ($M = 36.1$ months, $SD = 0.2$). The data were collected during three separate visits conducted 6 months apart, using psychometrically valid tools frequently used by speech-language pathologists in their clinical practice. A statistical resampling technique using the 95% confidence interval of the 10th percentile on each language measure led to the categorization of children into three groups, namely children presenting difficulties, those in a zone of uncertainty, and those presenting typical development. The results for each measure confirm a significant increase in children's language skills between the ages of 3 and 4 years. They suggest that the measures used are sensitive enough to detect changes in language skills of children aged 36, 42, and 48 months, thus confirming their clinical relevance. Interpretations of the norms of the original tools are discussed in relation to the current indicators. The normative data provided in this study add to a body of knowledge which serve as essential benchmarks for clinical work and research.

Des données normatives sur le développement du langage des enfants sont essentielles pour le travail clinique et la recherche en orthophonie. L'évaluation normative permet de déterminer si la trajectoire langagière d'un enfant s'écarte suffisamment des jalons développementaux pour justifier une intervention orthophonique (de Villiers et de Villiers, 2010; Paul, 2001). Elle permet de décrire les forces et les zones spécifiques de difficultés dans le langage d'un enfant et de déterminer l'importance des atteintes (Chevie-Muller et Narbona, 2007; Haynes et Pindzola, 2004). Ces données sont indispensables à la sélection et à la hiérarchisation des priorités d'intervention (Elin Thordardottir, Keheyia, Lessard, Sutton et Trudeau, 2010). Dans un contexte de recherche, le recours à des normes développementales garantit aussi l'admissibilité des participants et justifie leur assignation aux groupes d'études.

Or, de telles données normatives sont pratiquement inexistantes pour les chercheurs et les orthophonistes qui travaillent auprès de jeunes enfants francophones au Québec (Monetta et al., 2016). Ce constat est particulièrement criant pour les enfants âgés de 3 à 4 ans, qui sont pourtant très nombreux à consulter pour une première évaluation en orthophonie. Seuls le développement du vocabulaire réceptif et de la longueur moyenne des énoncés (LMÉ), ainsi que l'âge d'émergence de certaines flexions verbales et de la production des consonnes sont appuyés par des données normatives québécoises pour les enfants de cette tranche d'âge (Monetta et al., 2016).

Les normes actuellement disponibles au Québec

À partir de l'âge de 30 mois, le vocabulaire réceptif est souvent mesuré avec l'*Échelle de vocabulaire en images Peabody* (ÉVIP; Dunn, Thériault-Whalen et Dunn, 1993). Toutefois, il est apparu que les normes développées avec cet outil pour la population franco-canadienne sous-estimaient les habiletés de la plupart des enfants francophones du Québec (Godard et Labelle, 1995). Ce premier constat a aussi été confirmé auprès d'enfants québécois âgés de 4,5 à 5,5 ans (Elin Thordardottir et al., 2010). Malgré le fait que les normes originales de l'ÉVIP ne s'appliquent pas au contexte québécois et compromettent la justesse de l'interprétation des résultats, cet instrument de mesure est largement utilisé en clinique et en recherche.

Le volet expressif de la morphosyntaxe a été étudié par Elin Thordardottir (2015), qui a analysé des échantillons de langage spontané produits par 14 enfants québécois unilingues francophones âgés de 3 ans ($M = 35,8$ mois, $\bar{E}-T = 2,8$). Ces échantillons de langage ont été recueillis lors d'un jeu libre entre l'enfant et une auxiliaire de recherche. Les résultats ont indiqué que les enfants de cet âge

produisaient des énoncés d'une longueur moyenne de 3,26 mots ($\bar{E}-T = 0,66$) et de 4,12 morphèmes ($\bar{E}-T = 0,98$). Elin Thordardottir a aussi étudié les temps et modes verbaux produits au moins une fois par les enfants de 3 ans à partir des mêmes échantillons de langage. Les résultats ont montré que les participants de cette étude produisaient au moins une occurrence de passé composé, d'imparfait, d'impératif et de conditionnel.

Dans une étude menée par MacLeod, Sutton, Trudeau et Elin Thordardottir (2011), l'ordre d'acquisition des consonnes a été étudié chez 153 enfants québécois francophones âgés de 20 à 53 mois, répartis en six groupes d'âge comportant chacun de 17 à 30 participants. Cette étude a révélé que quatre consonnes étaient acquises avant l'âge de 36 mois (/t, m, n, z/), 12 consonnes/semi-consonnes l'étaient entre 36 et 53 mois (/p, b, d, k, g, ɲ, f, v, ʁ, l, w, ɥ/) et quatre consonnes/semi-consonnes l'étaient après l'âge de 53 mois (/s, ʃ, ʒ, j/). MacLeod, Sutton, Sylvestre, Elin Thordardottir et Trudeau (2014) ont aussi publié des données sur le ratio de consonnes produites correctement par ces mêmes 153 enfants (moyenne et score équivalent à un écart-type sous la moyenne). Aucune autre donnée normative n'est néanmoins disponible pour le développement de la phonologie, notamment en ce qui concerne la production des syllabes. Ces données sont pourtant nécessaires à une évaluation approfondie du langage d'un enfant et à l'établissement d'un plan d'intervention. En effet, sachant que les difficultés phonologiques figurent parmi les motifs les plus fréquents pour entreprendre un suivi auprès d'un orthophoniste chez les jeunes enfants (62% des objectifs d'intervention; Thomas-Stonell, Oddson, Robertson et Rosenbaum, 2010), il importe de bien établir les balises développementales de cet aspect du langage.

Compte tenu de la rareté des données normatives en français québécois permettant d'évaluer le développement langagier des enfants âgés de 3 à 4 ans, les décisions cliniques sont souvent prises sur la base de critères subjectifs, en utilisant des tests informels ou des tests formels traduits de l'anglais à la pièce (Elin Thordardottir et al., 2010). L'absence de normes auxquelles comparer le niveau de développement langagier des enfants peut entraîner des décisions cliniques injustifiées. En outre, pour l'ensemble des études disponibles en français québécois, les échantillons de chaque tranche d'âge étudiée sont de petite taille (14 à 30 participants selon les études). Des échantillons plus importants sont nécessaires pour obtenir des données valides et fiables sur lesquelles appuyer la prise de décision lors de l'évaluation clinique et de la recherche en orthophonie.

Dans ce contexte, la présente étude a pour objectif de présenter des indicateurs normatifs du développement du vocabulaire réceptif et expressif, ainsi que des composantes morphosyntaxique et phonologique du langage expressif, des enfants québécois unilingues francophones âgés de 3 à 4 ans. Ces résultats contribueront à compléter le portrait actuellement parcellaire des jalons développementaux du langage des enfants et soutiendront le travail clinique et de recherche en orthophonie.

Méthodologie

Les données présentées dans le présent article sont tirées de l'Étude longitudinale sur le langage et la négligence (ELLAN; Sylvestre, 2014-2019). Celle-ci vise entre autres à identifier les trajectoires développementales du langage d'enfants âgés de 3 à 5 ans en situation de négligence et pris en charge par les Directeurs de la protection de la jeunesse. Elle a aussi pour objectif de les comparer à celles

d'une population d'enfants non négligés du même âge. La réalisation de cette étude a été approuvée par les comités d'éthique à la recherche de l'Institut de recherche du Centre jeunesse de Québec (CJQ-IU-2014-03) et de l'Institut de recherche du Centre jeunesse de Montréal (CJM-IU : 14-05-06).

Participants

Puisque cet article vise à établir des normes développementales, seules les données du groupe de comparaison de l'étude ELLAN sont présentées. Celui-ci est formé de 99 enfants québécois francophones recrutés dans des centres de la petite enfance des régions de Québec et de Montréal, à l'âge de 36 mois précisément ($M = 36,1$ mois; $\acute{E}-T = 0,2$). Les caractéristiques sociodémographiques des participants sont présentées dans le **tableau 1**.

Tableau 1		
Caractéristiques sociodémographiques des participants au début de l'étude		
Variabiles	<i>n</i> (%)	Données populationnelles ^a
Structure familiale (N = 99)		
Biparentale	93 (93,9)	87,0%
Monoparentale	6 (6,1)	13,0%
Nombre d'enfants dans la famille (N = 99)		
Deux et moins	76 (76,8)	84,4%
Plus de deux	23 (23,2)	15,6%
Scolarité du répondant principal (N = 99)		
Secondaire ou professionnelle	9 (9,1)	-
Collégiale	21 (21,2)	-
Universitaire	69 (69,7)	-
Scolarité de l'autre figure parentale (N = 94)		
Secondaire ou professionnelle	26 (27,7)	-
Collégiale	22 (23,4)	-
Universitaire	46 (48,9)	-
Revenu familial brut (N = 98)		
≤ 39 999\$	4 (4,1)	-
40 000\$-79 999\$	24 (24,5)	-
≥ 80 000\$	70 (71,4)	-
Sous le seuil de faible revenu^b (N = 95)	3 (3,2)	-

Note. ^aLes données proviennent du recensement de 2016 (Institut de la statistique du Québec, 2018a, 2018b). ^bLe seuil de faible revenu est calculé en fonction du revenu familial brut et de la taille du ménage (Institut de la statistique du Québec, 2019b).

Pour être considérés unilingues et participer à l'étude, les enfants devaient avoir été exposés au français plus de 90% du temps depuis leur naissance (Pearson, Fernandez, Lewedeg et Oller, 1997). Ceux qui présentaient une condition biologique susceptible d'être associée à des difficultés de langage (p. ex. surdité) ont été exclus, de même que ceux qui recevaient ou avaient reçu des services en orthophonie au moment d'entrer dans l'étude. Ces critères respectent les directives établies par Peña, Spaulding et Plante (2006), qui recommandent l'utilisation d'un groupe de comparaison composé d'enfants au développement typique lorsque le but est de déceler des enfants qui présentent des difficultés. Ainsi, l'échantillon normatif de référence offre un standard auquel comparer la performance d'autres individus. L'inclusion d'enfants présentant des difficultés langagières dans un groupe de comparaison est requise lorsque l'objectif est de statuer sur le degré de sévérité des difficultés présentées par des enfants (Peña et al., 2006).

Lorsqu'on compare le présent échantillon aux données populationnelles disponibles pour les enfants de 4 ans (Institut de la statistique du Québec, 2018a, 2018b), il ne se distingue pas de façon importante sur la base de la structure de la famille (93,9%, 87,0%; $p = 0,06$) et du nombre d'enfants dans la famille (76,8%, 84,4%; $p = 0,07$). Ceci permet de limiter les biais dus à l'influence de ces variables sur le développement langagier des enfants. Toutefois, aucune donnée n'est disponible pour le niveau de scolarité des parents et le revenu brut annuel des familles du Québec ayant des enfants d'âge préscolaire. À titre informatif, le revenu brut total d'un couple ayant un enfant ou plus dépassait 110 000\$ par année en 2014 (112 700\$), année à laquelle l'étude a commencé (Institut de la statistique du Québec, 2019a).

Matériel et procédure

Les données ont été recueillies au domicile familial lors de trois visites distinctes, réalisées à six mois d'intervalle les unes des autres (enfants respectivement âgés de 36, 42 et 48 mois). Lors de la première visite, un questionnaire visant à documenter certaines caractéristiques sociodémographiques (structure familiale, nombre d'enfants dans la famille, rang de naissance de l'enfant cible, niveau de scolarité des deux parents, revenu familial total) a d'abord été rempli avec le parent répondant; celui-ci a été mis à jour lors des visites subséquentes.

Le vocabulaire réceptif et expressif, ainsi que la phonologie et la morphosyntaxe expressives, ont été mesurés à l'aide d'outils valides sur le plan psychométrique et fréquemment utilisés par les orthophonistes dans leur

pratique clinique et par les chercheurs. La collecte de données auprès des enfants a été entièrement enregistrée sur vidéo afin de permettre la transcription ultérieure des corpus de langage spontané et de la phonologie.

Vocabulaire réceptif. La forme A de l'ÉVIP (Dunn et al., 1993) a été utilisée pour mesurer le vocabulaire réceptif de l'enfant. L'ÉVIP s'administre à l'aide d'un livret comportant 170 pages sur chacune desquelles sont représentées quatre images. L'enfant doit montrer celle désignée à voix haute par l'expérimentateur. Le degré de difficulté du test est croissant et l'expérimentateur interrompt l'administration après que l'enfant ait commis six erreurs parmi huit items consécutifs. La distribution des scores est standardisée ($M = 100$, $É-T = 15$).

Dans la forme originale de l'ÉVIP, les coefficients d'homogénéité (corrélations de Spearman-Brown) sont respectivement de 0,75 (groupe d'âge : 3-0 à 3-5 ans) et de 0,83 (groupe d'âge : 3-6 à 3-11 ans). Le coefficient de stabilité (corrélation test-retest) est de 0,72 pour les deux formes de l'ÉVIP. La validité de contenu est assurée par le fait que l'ÉVIP s'appuie sur la démarche originale effectuée pour le *Peabody Picture Vocabulary Test-Revised* (Dunn et Dunn, 1981). De plus, les termes retenus appartiennent au français universel (et non régional) et constituent donc un échantillon représentatif de la langue française (Pauzé, Toupin, Déry, Mercier et Joly, 2004).

Vocabulaire expressif. Le vocabulaire expressif a été mesuré avec la version francophone de l'*Expressive One Word Picture Vocabulary Test-2000* (EOWPVT-2000; Gardner, 2000). Ce test comporte 170 images qui illustrent des objets, actions ou concepts que l'enfant doit nommer à l'aide d'un seul mot. La prononciation du mot n'est pas prise en considération pour autant que celui-ci soit reconnaissable. Le test se termine lorsque l'enfant produit six erreurs consécutives. Ce test est également standardisé ($M = 100$, $É-T = 15$).

Morphosyntaxe. Le niveau de développement de la morphosyntaxe a été estimé par l'analyse des flexions verbales produites (temps et modes) et le calcul de la LMÉ de l'enfant en mots et en morphèmes. La LMÉ en morphèmes tient compte de l'ensemble des manipulations grammaticales effectuées par l'enfant et s'avère ainsi plus révélatrice du développement morphosyntaxique que la LMÉ en mots (Parisse et Maillart, 2004). Pour être considéré acquis, une flexion ou un mode verbal devait être produit au moins une fois par un enfant donné.

Un échantillon de langage spontané a été recueilli dans un contexte de jeu symbolique semi-structuré et

standardisé d'une durée de 15 minutes (*Jeu de village*; Sylvestre et Morissette, 1989), qui était réalisé entre l'enfant et l'expérimentateur. Le scénario prédéterminé de ce jeu a été respecté afin d'assurer une passation uniforme et d'offrir à tous les participants les mêmes occasions de s'exprimer. L'enregistrement vidéo du *Jeu de village* a permis de transcrire mot à mot 50 énoncés produits par l'enfant, à partir de la troisième minute de l'enregistrement. Les trois premières minutes ont été exclues afin de permettre à l'enfant de se familiariser avec l'activité. Une analyse de 50 énoncés est considérée valide pour mesurer les habiletés syntaxiques des jeunes enfants (Elin Thordardottir, 2016; Paul, 2001). Les limites des énoncés ont été établies en se basant sur les deux indices proposés par Leadholm et Miller (1994), soit les pauses et l'intonation. Chaque mot ou énoncé était réécouté jusqu'à trois fois en utilisant un casque d'écoute, avant qu'un mot ou un énoncé soit considéré inintelligible.

Codification des échantillons de langage. Un protocole de codification, basé sur les directives du logiciel d'analyse systématique de transcriptions de langage (Miller et Iglesias, 2012) et incluant les procédures pour le français définies par Elin Thordardottir (2005), a été utilisé pour coder les échantillons de langage spontané. L'utilisation de ce logiciel a permis de réduire le risque d'erreurs liées au codage et de garantir la cohérence du calcul des indicateurs (Miller, Andriacchi et Nockerts, 2016). Les procédures du logiciel d'analyse systématique de transcriptions de langage prévoient un code pour la personne (/Px) et le temps/mode (/Tx) pour toutes les flexions verbales. Aucun code n'est suggéré pour les flexions de genre ou de nombre (p. ex. elle/elles), à l'exception des participes passés (p. ex. Elles sont allées le voir = Elles sont|être/AUX/PLN allées|aller/Tx le/GP voir). De plus, les procédures originales de ce logiciel ne prévoient aucun code pour l'accord en temps des verbes produits à l'indicatif présent qui est marqué par l'accord à la personne (p. ex. Je marche = Je marche|marcher/P1; Ils marchent = Ils marchent|marcher/P6). Dans la présente étude, un code a néanmoins été ajouté pour l'accord en temps de l'indicatif présent, et ce, afin de rendre compte de l'ensemble des flexions et modes verbaux produits par les enfants. L'enjeu relatif à la différence rarement audible entre l'indicatif et l'impératif présent (p. ex. je marche vs marche) a été résolu par les indices fournis dans les vidéos et dans le script.

Fiabilité des transcriptions. La procédure en deux étapes, proposée par Heilmann et al. (2008), a été suivie afin de garantir la fiabilité des transcriptions. D'abord, 15% des transcriptions (45 corpus) ont été relues par un transcripateur indépendant qui regardait l'interaction

enregistrée sur bande vidéo et notait les désaccords. L'accord obtenu lors de ce processus était de 95,1%. Ensuite, 15 corpus (5% du matériel) ont été transcrits par ce même transcripateur indépendant. L'accord obtenu lors de ce processus était de 85,3%, ce qui est considéré acceptable (Heilmann et al., 2008).

La quatrième auteure (C.J) a codé tous les échantillons de langage, dont 22% ont aussi été codés par une assistante de recherche. Pour la LMÉ en mots, le coefficient de corrélation intraclasse était de 0,990, avec un intervalle de confiance (IC) à 95% se situant entre 0,979 et 0,995 ($F(1, 29) = 199,11, p < 0,001$), alors que pour la LMÉ en morphèmes, il était de 0,992, avec un IC à 95% allant de 0,983 à 0,996 ($F(1, 29) = 245,66, p < 0,001$). Le coefficient de corrélation intraclasse pour le nombre de flexions verbales était quant à lui de 0,991, avec un IC à 95% se situant entre 0,981 et 0,996 ($F(1, 29) = 216,94, p < 0,001$). Ces coefficients de corrélation intraclasse témoignent d'une excellente fidélité interjuges (Koo et Li, 2016) et du consensus obtenu lors des transcriptions.

Phonologie. Le développement phonologique a été évalué à l'aide du protocole d'*Évaluation sommaire de la phonologie chez les enfants d'âge préscolaire* (MacLeod et al., 2014), qui contient les 40 mots du *Casse-tête d'évaluation de la phonologie* (Auger, 1994). Ce protocole inclut toutes les consonnes du français en position initiale, médiale et finale, ainsi que plusieurs groupes consonantiques. Il contient également des mots composés d'une à trois syllabes. L'enfant doit nommer spontanément les images ou les répéter après évocation de la part de l'expérimentateur. Une transcription en alphabet phonétique international est ensuite réalisée, donnant lieu à quatre calculs de proportions : (1) les mots correctement produits, (2) les consonnes correctement produites, (3) le respect de la structure syllabique (c.-à-d. l'absence de transformations sur le plan segmental, comme des réductions syllabiques ou d'un groupe consonantique) et (4) le respect du nombre de syllabes de chaque mot. Les calculs du respect de la structure syllabique et du nombre de syllabes par mot ne font pas initialement partie des analyses proposées dans le protocole d'*Évaluation sommaire de la phonologie chez les enfants d'âge préscolaire*. Ils ont été ajoutés dans le cadre de la présente étude.

La structure syllabique, en termes de consonnes (incluant les semi-consonnes) et de voyelles, a également été transcrite ce qui a permis la comparaison entre la structure syllabique de la cible et celle de la production de l'enfant. En cas de différence, le respect de la

structure syllabique était considéré comme fautif. Le calcul du respect du nombre de syllabes a été établi par la comparaison entre le nombre de voyelles (position nucléaire de la syllabe) de la cible et celui de la production de l'enfant. En cas de différence, le nombre de syllabes était considéré comme étant incorrect.

Lors de la transcription, chaque mot était réécouté jusqu'à trois fois en utilisant un casque d'écoute, avant d'être considéré inintelligible. La procédure de Heilmann et al. (2008) a aussi été suivie pour la transcription des productions phonologiques. Le pourcentage d'accord sur les transcriptions atteint 95,1% et celui calculé à partir des transcriptions effectuées de façon indépendante est de 87,7%. La fiabilité interjuges a été calculée sur 20% des transcriptions et a atteint 100% pour les quatre variables mesurées.

Analyses

Les analyses ont été réalisées avec les logiciels *IBM SPSS Statistics* (version 25.0) et *R Statistical Software* (version 3.4.3). Le 10^e rang centile a été utilisé comme seuil pour déterminer la présence de difficultés chez l'enfant (Tomblin, 2000). Il s'agit du seuil typiquement utilisé par les orthophonistes dans leur pratique pour juger de la présence de difficultés cliniquement significatives (Elin Thordardottir et al., 2011).

Les normes ont été estimées par une technique de rééchantillonnage (*bootstrapping*, $N = 5000$; Efron et Tibshirani, 1993). Cette technique permet d'estimer la valeur du 10^e rang centile 5000 fois, en modifiant légèrement la composition de l'échantillon à chaque reprise. Ainsi, au lieu de porter un jugement sur une valeur unique du 10^e rang centile, le rééchantillonnage permet d'identifier dans quelle zone (IC à 95%) peut varier ce 10^e rang centile si la composition de l'échantillon avait été légèrement différente. La zone dans laquelle le rang centile varie constitue alors une zone d'incertitude à savoir si l'enfant se situe à l'intérieur ou à l'extérieur de la norme. Dans cette zone, il convient de faire une évaluation prudente du développement de l'enfant en s'appuyant sur l'analyse approfondie d'un ensemble de données plutôt que de recourir à la comparaison à une norme. Cependant, en dehors de cette zone, c'est-à-dire au-delà de la borne supérieure de l'IC et en deçà de la borne inférieure de l'IC, la qualification norme/hors norme est appuyée par l'analyse statistique. La technique de rééchantillonnage est applicable à n'importe quel type de distribution de sorte qu'il n'est pas nécessaire de présumer que les variables sont distribuées normalement.

Ce type d'analyse statistique a permis de déterminer des

seuils de coupure entre ces trois zones. Ainsi, la première zone regroupe les enfants dont les scores se situent sous la borne inférieure de l'IC à 95% du 10^e rang centile. Ce sont ceux pour qui on peut affirmer avec confiance que leur niveau de développement se situe en deçà du 10^e rang centile et qu'ils présentent des difficultés dans la variable langagière mesurée. La deuxième zone est composée des enfants ayant obtenu des scores se situant entre les bornes inférieure et supérieure de l'IC à 95% du 10^e rang centile (bornes incluses). Cette zone intermédiaire rassemble les participants pour lesquels il est impossible de conclure avec certitude si leur résultat se situe en deçà ou au-delà du 10^e rang centile (zone d'incertitude). Une troisième zone comprend les enfants dont les scores se situent au-dessus de la borne supérieure de l'IC à 95% du 10^e rang centile. Ces enfants ne présentent vraisemblablement pas de difficultés dans la variable langagière mesurée (développement typique).

Afin de vérifier si les normes progressent en fonction de l'âge des participants, des analyses de variance ont été réalisées à l'aide du logiciel *nparLD* (*non-parametric ANOVA for longitudinal data*) qui produit une statistique ATS (*ANOVA-type statistic*; Noguchi, Gel, Brunner et Konietzschke, 2012) au lieu d'un rapport F. Ce type d'analyse n'implique aucune présupposition quant à la distribution des données et constitue ainsi un choix plus judicieux que l'analyse classique (*ordinary least squares*; Noguchi et al., 2012).

Résultats

Le **tableau 2** présente la moyenne et l'écart-type pour chacune des variables langagières. Il rapporte également la valeur du 10^e rang centile et l'IC à 95% autour de cette valeur, par groupe d'âge. Le nombre de participants varie légèrement pour chaque mesure et pour chaque temps, compte tenu de difficultés techniques (p. ex. bris de la caméra) ou de la non-collaboration de l'enfant à certaines tâches.

Tant pour le vocabulaire réceptif que pour le vocabulaire expressif, les résultats indiquent que les enfants de 36 mois obtiennent des résultats conformes aux normes développementales de l'outil original pour leur groupe d'âge, c'est-à-dire une moyenne autour de 100 et un écart-type de 15. Ils s'en éloignent graduellement par la suite pour atteindre une différence d'un écart-type supérieur aux normes de l'outil original à l'âge de 4 ans.

Sur le plan de la phonologie, une progression est non seulement observée chez les enfants entre les temps de mesure, mais aussi entre les quatre habiletés évaluées à un même temps. Une habileté est considérée en voie

Tableau 2

Résultats à chacune des mesures langagières (moyenne et écart-type) et valeur du 10^e rang centile avec intervalle de confiance à 95% autour de cette valeur à 36, 42 et 48 mois

	36 mois (N entre 89 et 98)		42 mois (N entre 90 et 95)		48 mois (N entre 87 et 93)	
	M	10 ^e rang centile	M	10 ^e rang centile	M	10 ^e rang centile
	(É-T)	IC (95%)	(É-T)	IC (95%)	(É-T)	IC (95%)
Vocabulaire réceptif						
ÉVIP	101,5 ^a (16,6)	14,0 ^b 11,0–17,0	107,7 ^a (13,5)	23,1 ^b 18,8–28,0	113,6 ^a (15,2)	34,0 ^b 32,0–37,2
Vocabulaire expressif						
EOWPVT-2000	100,5 ^a (16,0)	20,0 ^b 17,0–22,1	106,3 ^a (14,5)	28,3 ^b 25,0–31,0	110,8 ^a (12,8)	38,0 ^b 35,2–41,0
Phonologie						
Mots correctement produits (% moyen)	53,4 (21,1)	27,5 15,8–35,0	64,4 (19,5)	37,1 30,0–47,5	75,5 (17,1)	55,0 47,5–60,0
Consonnes correctement produites (% moyen)	78,4 (13,4)	63,3 55,6–70,0	84,3 (11,1)	71,8 67,6–78,5	89,3 (8,7)	79,9 77,3–83,3
Respect de la structure syllabique (% moyen)	85,2 (11,6)	69,5 67,2–74,2	90,0 (9,7)	79,9 71,2–83,3	94,2 (5,2)	86,4 83,3–89,2
Respect du nombre de syllabes (% moyen)	98,1 (10,3)	97,5 95,0–97,5	99,7 (1,1)	97,5 97,5–100	99,6 (1,2)	97,5 97,5–100
Morphosyntaxe						
Longueur moyenne des 50 énoncés en mots	3,8 (0,7)	2,8 2,8–3,1	4,3 (0,9)	3,2 2,9–3,6	4,6 (0,9)	3,5 3,3–3,8
Longueur moyenne des 50 énoncés en morphèmes	5,7 (1,1)	4,3 4,2–4,7	6,3 (1,4)	4,8 3,8–5,2	6,9 (1,3)	5,3 4,8–5,7

Note. IC = Intervalle de confiance; ÉVIP = Échelle de vocabulaire en images Peabody, Forme A (Dunn, Thériault-Whalen et Dunn, 1993); EOWPVT-2000 = Expressive One Word Picture Vocabulary Test – 2000 Edition (Gardner, 2000). ^aScore normalisé (moyenne et écart-type); ^bCalculé à partir des scores bruts.

d'acquisition si elle est observée dans 75% des occasions de production et acquise si elle est observée dans 90% des cas (Paul, 2001). Ainsi, le respect du nombre de syllabes des mots est considéré acquis dès 36 mois (en moyenne les enfants âgés de 36 mois respectent le nombre de syllabes dans 98,1% des occasions qui leur sont offertes) et celui des structures syllabiques à 42 mois (90,0%). La proportion de consonnes correctement produites est toujours en voie d'acquisition à 36 mois (78,4%) et tend vers le critère d'acquisition à 48 mois (89,3%). Enfin, la production entièrement correcte des mots, incluant tous leurs aspects phonologiques, demeure en voie d'acquisition à l'âge de 48 mois (75,5%).

La LMÉ en mots et en morphèmes connaît également une progression entre l'âge de 36 et 48 mois, alors que les énoncés de l'enfant passent de 3,8 à 4,6 mots et de 5,7 à 6,9 morphèmes. Le **tableau 3** rapporte, en pourcentage, les flexions et les modes verbaux produits au moins une fois par les enfants dans le corpus de langage spontané. L'indicatif présent est produit à au moins une occasion par la totalité des enfants dès l'âge de 36 mois. Toujours à cet âge, le passé composé est déjà maîtrisé (91,6%) et le futur proche est tout près de l'être (86,3%). L'utilisation de l'imparfait augmente de façon marquée entre 36 (17,9%) et 48 mois (47,9%). Enfin, le futur simple et le plus-que-parfait sont exprimés par une faible proportion de participants

Tableau 3

Temps et modes verbaux produits au moins une fois à l'âge de 36, 42 et 48 mois

	36 mois (N = 95) % ^a	42 mois (N = 95) % ^a	48 mois (N = 94) % ^a
Morphosyntaxe			
Présent	100,0	100,0	100,0
Passé composé	91,6	81,1	89,4
Futur proche	86,3	93,7	93,6
Imparfait	17,9	23,2	47,9
Futur simple	3,2	8,4	11,7
Plus-que-parfait	3,2	4,2	8,5
Modes			
Impératif	88,4	78,9	94,7
Subjonctif	16,8	32,6	48,9
Conditionnel	12,6	12,6	20,2

Note. ^aLes pourcentages reflètent la proportion du groupe ayant produit un temps de verbe ou un mode au moins une fois dans un verbatim de 50 énoncés.

(3,2% chacun) à 36 mois et leur utilisation augmente peu entre 36 et 48 mois (11,7% et 8,5% respectivement). Quant aux modes verbaux, l'impératif est tout près d'être acquis à 36 mois (88,4%), tandis que le subjonctif et le conditionnel sont exprimés dès 36 mois (16,8% et 12,6% respectivement) et augmentent graduellement jusqu'à 48 mois (48,9% et 20,2% respectivement).

Les résultats de l'analyse de variance présentés dans le **tableau 4** confirment une augmentation graduelle des scores en fonction de l'âge des participants pour toutes les variables langagières, sauf pour le respect du nombre de syllabes dans les mots qui atteint son seuil maximal à 42 mois ($p < 0,0001$) et pour les flexions et modes verbaux pour lesquels les scores s'accroissent à compter de 42 mois ($p < 0,0001$). Le **tableau 5** rend compte de la répartition des participants (à chaque tranche d'âge) dans les trois zones identifiées par la technique de rééchantillonnage, en fonction des ICs à 95% du 10^e rang centile. On peut voir, par exemple, qu'un enfant de 36 mois qui aurait une LMÉ en mots de 2,5 se situerait dans la zone « difficulté », qu'un enfant du même âge ayant une LMÉ en mots de 3,0 serait dans la zone d'incertitude et qu'un troisième enfant de 36 mois ayant une LMÉ en mots de 3,5 se trouverait dans la zone correspondant au développement typique du langage. Une LMÉ de 2,8 et 3,1 exactement (bornes inférieure et

supérieure de l'IC) situerait le niveau de développement du langage de l'enfant dans la zone d'incertitude.

Globalement, entre 3,2% et 5,4% des participants se situent en deçà de la borne inférieure du 10^e rang centile dans l'une ou l'autre des variables langagières mesurées, à l'un ou l'autre des trois temps de mesure. Le pourcentage d'enfants qui, à 36 mois, se trouvent dans la zone d'incertitude pour l'habileté phonologique consistant à produire les syllabes des mots est élevé (23,4%) et chute dès l'âge de 42 mois (7,5%). Pour les autres variables langagières, les proportions relevées dans la zone d'incertitude et dans la zone de développement typique demeurent relativement stables dans le temps.

Discussion

Cet article a permis de présenter des indicateurs normatifs pour le vocabulaire réceptif et expressif, ainsi que pour les composantes phonologique et morphosyntaxique du langage expressif des enfants québécois unilingues francophones âgés de 3 à 4 ans. Ces indicateurs s'appliquent aux enfants ne présentant pas de conditions particulières pouvant être associées à des difficultés de langage et pour lesquels aucune difficulté langagière n'avait été dépistée à l'âge de 36 mois. La composition de l'échantillon à l'étude s'apparente à celle de la population générale sur le plan de la structure et de la composition familiales.

Tableau 4			
Résultats des analyses de comparaison du premier au troisième temps de mesure en fonction de l'âge des participants			
	ATS (dl)	p	Temps de mesure
Vocabulaire réceptif	150,42 (1,95)	< 0,0001	T1 < T2 < T3
Vocabulaire expressif	209,27 (1,98)	< 0,0001	T1 < T2 < T3
Phonologie			
Mots correctement produits	108,12 (1,93)	< 0,0001	T1 < T2 < T3
Consonnes correctement produites	97,78 (1,97)	< 0,0001	T1 < T2 < T3
Respect de la structure syllabique	62,67 (1,89)	< 0,0001	T1 < T2 < T3
Respect du nombre de syllabes	5,47 (1,93)	< 0,0001	T1 < (T2 = T3)
Morphosyntaxe			
Flexions verbales	11,43 (1,98)	< 0,0001	(T1 = T2) < T3
Modes	12,36 (1,99)	< 0,0001	(T1 = T2) < T3
Longueur moyenne des 50 énoncés en mots	41,52 (2,00)	< 0,0001	T1 < T2 < T3
Longueur moyenne des 50 énoncés en morphèmes	37,66 (2,0)	< 0,0001	T1 < T2 < T3

Note. ATS = ANOVA-type statistic (Noguchi, Gel, Brunner et Konietzschke, 2012).

Tableau 5										
Répartition des participants dans les trois regroupements d'habiletés langagières en fonction des intervalles de confiance à 95 % du 10^e rang centile à l'âge de 36, 42 et 48 mois										
	N	Difficulté			Zone d'incertitude			Développement typique		
		Score	n	%	Score	n	%	Score	n	%
Vocabulaire réceptif										
ÉVIP (score brut)										
36 mois	93	< 11,0	3	3,2	11,0–17,0	18	19,4	> 17,0	72	77,4
42 mois	90	< 18,8	4	4,4	18,8–28,0	12	13,3	> 28,0	74	82,2
48 mois	93	< 32,0	4	4,3	32,0–37,2	12	12,9	> 37,2	77	82,8
Vocabulaire expressif										
EOWPVT-2000 (score brut)										
36 mois	92	< 17,0	4	4,3	17,0–22,1	12	13,0	> 22,1	76	82,6
42 mois	92	< 25,0	4	4,3	25,0–31,0	12	13,0	> 31,0	76	82,6
48 mois	87	< 35,2	4	4,6	35,2–41,0	12	13,8	> 41,0	71	81,6

	N	Difficulté			Zone d'incertitude			Développement typique		
		Score	n	%	Score	n	%	Score	n	%
Phonologie										
Mots correctement produits (% moyen)										
36 mois	94	< 15,8	4	4,3	15,8–35,0	12	12,8	> 35,0	78	83,0
42 mois	93	< 30,0	4	4,3	30,0–47,5	13	14,0	> 47,5	76	81,7
48 mois	92	< 47,5	4	4,3	47,5–60,0	14	15,2	> 60,0	74	80,4
Consonnes correctement produites (% moyen)										
36 mois	94	< 55,6	4	4,3	55,6–70,0	12	12,8	> 70,0	78	83,0
42 mois	93	< 67,6	4	4,3	67,6–78,5	12	12,9	> 78,5	77	82,8
48 mois	92	< 77,3	5	5,4	77,3–83,3	11	12,0	> 83,3	76	82,6
Respect de la structure syllabique (% moyen)										
36 mois	94	< 67,2	4	4,3	67,2–74,2	13	13,8	> 74,2	77	81,9
42 mois	93	< 71,2	4	4,3	71,2–83,3	12	12,9	> 83,3	77	82,8
48 mois	92	< 83,3	3	3,3	83,3–89,2	13	14,1	> 89,2	76	82,6
Respect du nombre de syllabes (% moyen)										
36 mois	94	< 95,0	3	3,2	95,0–97,5	22	23,4	> 97,5	69	73,4
42 mois	93	< 97,5	3	3,2	97,5–100	7	7,5	100	83	89,2
48 mois	92	< 97,5	3	3,3	97,5–100	9	9,8	100	80	87,0
Morphosyntaxe										
Longueur moyenne des 50 énoncés en mots										
36 mois	89	< 2,8	4	4,5	2,8–3,1	11	12,4	> 3,1	74	83,1
42 mois	92	< 2,9	4	4,3	2,9–3,6	12	13,0	> 3,6	76	82,6
48 mois	88	< 3,3	3	3,4	3,3–3,8	13	14,8	> 3,8	72	81,8
Longueur moyenne des 50 énoncés en morphèmes										
36 mois	89	< 4,2	4	4,5	4,2–4,7	11	12,4	> 4,7	74	83,1
42 mois	92	< 3,8	4	4,3	3,8–5,2	12	13,0	> 5,2	76	82,6
48 mois	88	< 4,8	4	4,5	4,8–5,7	11	12,5	> 5,7	73	83,0

Note. IC = Intervalle de confiance; ÉVIP = Échelle de vocabulaire en images Peabody, Forme A (Dunn, Thériault-Whalen et Dunn, 1993); EOWPVT-2000 = Expressive One Word Picture Vocabulary Test – 2000 Edition (Gardner, 2000).

Les scores obtenus à chacune des mesures confirment une progression significative des compétences langagières des enfants entre l'âge de 3 et 4 ans. Les résultats suggèrent que les mesures langagières utilisées sont suffisamment sensibles pour pouvoir détecter l'évolution des habiletés

langagières des enfants de 36, 42 et 48 mois, ce qui confirme leur pertinence clinique. Sur le plan du vocabulaire réceptif, un écart est constaté dès l'âge de 42 mois entre les scores obtenus à l'ÉVIP par les participants de la présente étude et les normes originales publiées par les concepteurs

de l'outil (Dunn et al., 1993). À 48 mois, l'écart se creuse encore davantage pour atteindre l'ordre d'un écart-type, ce qui est compatible avec les résultats obtenus par Elin Thordardottir et al. (2010) auprès d'enfants québécois francophones un peu plus âgés (4,5 ans, 5 ans et 5,5 ans). Les résultats combinés de la présente étude et de celle d'Elin Thordardottir et al. tendent à confirmer que les enfants québécois francophones obtiennent des résultats supérieurs à ceux de l'échantillon de référence de l'ÉVIP, et ce, dès l'âge de 42 mois. Les normes sont toutefois conformes à celles de l'outil original à l'âge de 36 mois.

L'écart aux normes établies avec les données franco-canadiennes de l'ÉVIP (Dunn et al., 1993) peut s'expliquer par la pluralité du degré d'exposition au français de la population de référence du test original, composée d'enfants qui sont souvent bilingues (Elin Thordardottir et al., 2010; Godard et Labelle, 1995). Puisque les données indiquent que l'écart-type est plus grand à 36 mois qu'à 42 et 48 mois, il est possible que le résultat à 36 mois soit le reflet de l'importante variabilité interindividuelle observée dans le développement langagier des jeunes enfants (Bassano, 2000; Dale et Goodman, 2005; Trudeau, 2010). Cette variabilité, manifeste jusqu'à 3 ans, s'estompe graduellement lorsque l'enfant progresse vers la consolidation de ses acquis langagiers et s'approche d'un niveau de langage mature. Il est également plausible que les effets du degré d'exposition au français, qui constitue un élément distinctif entre la population d'enfants franco-canadiens et franco-québécois, ne se manifestent que lorsque le vocabulaire réceptif de l'enfant atteint une certaine taille.

Les résultats pour le vocabulaire expressif, mesuré avec l'EOWPVT-2000, suivent un patron similaire à ceux du vocabulaire réceptif. Ils montrent également une différence de scores d'environ un écart-type entre le présent échantillon et les normes de cette version de l'outil (Gardner, 2000), et ce, dès l'âge de 42 mois. Les normes originales de l'EOWPVT-2000 ne sont donc pas représentatives du niveau de développement des enfants québécois francophones. Les résultats obtenus avec l'ÉVIP et l'EOWPVT-2000 auprès des enfants québécois francophones demeurent néanmoins à valider par d'autres études. Il serait également pertinent d'évaluer des enfants plus jeunes, dès l'âge de 30 mois, pour vérifier si les normes franco-québécoises convergent ou non avec celles des outils originaux de l'ÉVIP et de l'EOWPVT-2000 lorsque les enfants sont âgés de moins de 3 ans.

Sur le plan de la phonologie, les résultats de la présente étude s'apparentent à ceux de MacLeod et al. (2014) pour

ce qui est de la proportion de consonnes correctement produites entre 3 et 4 ans. La proportion établie par MacLeod et al. est néanmoins légèrement supérieure, ce qui peut s'expliquer par l'étendue d'âge des enfants inclus dans cette étude (36-41 mois). Dans la présente étude, l'habileté à produire correctement un mot demeure en voie d'acquisition à l'âge de 48 mois. Ceci s'explique entre autres par les types de transformations phonologiques encore présentes à cet âge, tant sur le plan segmental (p. ex. antériorisation) que syllabique (p. ex. réduction de groupes consonantiques). Ce constat s'avère également cohérent avec les données indiquant que la production stable de toutes les consonnes se consolide ultérieurement, soit vers l'âge de 7 ans (Brousseau-Laprè et al., 2018).

La LMÉ, qu'elle soit calculée en mots ou en morphèmes, connaît une importante progression de l'âge de 36 à 48 mois. Ces résultats confirment que les habiletés morphosyntaxiques évoluent de façon significative au cours de cette période (Pariisse et Maillart, 2004). L'augmentation de la LMÉ en mots peut s'expliquer par l'accroissement de la taille du vocabulaire qui a typiquement lieu pendant cette même période, de façon concomitante à celle de la syntaxe (Bates et Goodman, 1999). Le nombre et la diversité des flexions verbales s'accroissent aussi considérablement entre 3 et 4 ans, ce qui contribue aussi à l'augmentation de la LMÉ en morphèmes.

D'autres chercheurs ont toutefois obtenu des résultats inférieurs pour la LMÉ d'enfants franco-québécois de 3 ans, soit une LMÉ en mots de 3,3 ($\bar{E}-T = 0,7$) et une LMÉ en morphèmes de 4,1 ($\bar{E}-T = 0,1$; Elin Thordardottir, 2015). Il est possible que cet écart soit attribuable au fait d'avoir inclus l'indicatif présent dans le calcul de la LMÉ en morphèmes. Cet ajout est justifié par le fait que la présente étude visait à dresser un portrait exhaustif des flexions verbales produites par les enfants. Dans un contexte de jeu standardisé semi-structuré (c.-à-d. le *Jeu de village*; Sylvestre et Morissette, 1989), l'indicatif présent s'avère fréquemment produit par les enfants puisque les échanges portent principalement sur le « ici et maintenant » (Pariisse et Morgenstern, 2012). Par ailleurs, les proportions d'occurrence des temps et modes verbaux étudiés s'arriment à la séquence d'acquisition des flexions verbales connue en français, c'est-à-dire que les temps et modes qui renvoient au « ici et maintenant » sont maîtrisés avant ceux qui font référence au passé ou au futur (Elin Thordardottir, 2005, 2016; Pariisse et Maillart, 2004; Pariisse et Morgenstern, 2012).

La technique statistique utilisée pour établir la présence de difficultés chez les enfants génère des scores conservateurs. La délimitation de trois zones de

performance permet d'attester avec confiance que les enfants dont les scores se situent dans la zone « difficulté » (entre 3,2% et 5,4% de l'échantillon) obtiennent effectivement des résultats plus faibles que la majorité des enfants du même âge. L'évaluation normative est nécessaire pour établir la présence de difficultés dans une habileté langagière. Complétée par une évaluation dynamique (Camilleri et Law, 2014) et une évaluation fonctionnelle (Bernicot, 2005; Chevrie-Muller et Narbona, 2007; Owens, 2014), l'évaluation normative du niveau de développement des différentes composantes du langage chez un enfant permettra de conclure ou non à la présence de difficultés langagières justifiant une intervention clinique.

D'autres études sont nécessaires afin de fournir des données normatives sur le développement des habiletés relatives à chacune des composantes du langage. Par exemple, établir des normes pour les patrons de transformations phonologiques, définir avec plus de précision les âges d'acquisition des déterminants et des accords en genre et en nombre, ou encore déterminer les âges d'acquisition associés à différents types de phrases, seraient des contributions importantes au développement des connaissances sur le développement du langage structurel.

Les indicateurs normatifs de la présente étude s'ajoutent à un corpus de connaissances qui constituent des points de repère indispensables, tant pour le travail clinique que celui en recherche. Lors de l'évaluation d'un enfant, il faut toutefois demeurer alerte pour s'assurer que ses caractéristiques correspondent bien à celles de l'échantillon de référence. Si tel est le cas, les résultats présentés dans la présente étude procurent des balises valides et fiables sur lesquelles appuyer la prise de décision clinique. Les seuils établis permettent de se prononcer avec confiance sur le niveau de développement du vocabulaire réceptif et expressif, ainsi que de la phonologie et de la morphosyntaxe expressives, des enfants québécois francophones âgés de 36 à 48 mois. Il est souhaité que les résultats de cette étude puissent soutenir le travail clinique et la recherche en orthophonie.

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Note des auteurs

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Déclaration

Les auteurs déclarent n'avoir aucun conflit d'intérêts, financiers ou autres.

Erratum

Titre : Indicateurs normatifs du développement du langage en français québécois à 36, 42 et 48 mois : résultats du projet ELLAN

Auteurs : Audette Sylvestre, Caroline Bouchard, Mélissa Di Sante, Catherine Julien, Vincent Martel-Sauvageau et Jean Leblond

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Dans cet article, les titres des lignes du tableau 2 présentant les données de l'ÉVIP et de l'EOWPVT étaient incorrects, ce qui compliquait l'interprétation des données. Pour chacune des tranches d'âge, les moyennes et les écart-types ont été calculés à partir des scores normalisés, tandis que les scores correspondant au 10^e rang centile ont été calculés à partir des scores bruts. Les titres des lignes du tableau 2 présentant les données de l'ÉVIP et de l'EOWPVT ont été corrigés dans le tableau ci-dessous et deux notes ont été ajoutées au bas du tableau.

Tableau 2						
Résultats à chacune des mesures langagières (moyenne et écart-type) et valeur du 10^e rang centile avec intervalle de confiance à 95% autour de cette valeur à 36, 42 et 48 mois						
	36 mois (N entre 89 et 98)		42 mois (N entre 90 et 95)		48 mois (N entre 87 et 93)	
	M	10 ^e rang centile	M	10 ^e rang centile	M	10 ^e rang centile
	(É-T)	IC (95%)	(É-T)	IC (95%)	(É-T)	IC (95%)
Vocabulaire réceptif						
ÉVIP	101,5 ^a (16,6)	14,0 ^b 11,0–17,0	107,7 ^a (13,5)	23,1 ^b 18,8–28,0	113,6 ^a (15,2)	34,0 ^b 32,0–37,2
Vocabulaire expressif						
EOWPVT-2000	100,5 ^a (16,0)	20,0 ^b 17,0–22,1	106,3 ^a (14,5)	28,3 ^b 25,0–31,0	110,8 ^a (12,8)	38,0 ^b 35,2–41,0
Phonologie						
Mots correctement produits (% moyen)	53,4 (21,1)	27,5 15,8–35,0	64,4 (19,5)	37,1 30,0–47,5	75,5 (17,1)	55,0 47,5–60,0
Consonnes correctement produites (% moyen)	78,4 (13,4)	63,3 55,6–70,0	84,3 (11,1)	71,8 67,6–78,5	89,3 (8,7)	79,9 77,3–83,3
Respect de la structure syllabique (% moyen)	85,2 (11,6)	69,5 67,2–74,2	90,0 (9,7)	79,9 71,2–83,3	94,2 (5,2)	86,4 83,3–89,2
Respect du nombre de syllabes (% moyen)	98,1 (10,3)	97,5 95,0–97,5	99,7 (1,1)	97,5 97,5–100	99,6 (1,2)	97,5 97,5–100
Morphosyntaxe						
Longueur moyenne des 50 énoncés en mots	3,8 (0,7)	2,8 2,8–3,1	4,3 (0,9)	3,2 2,9–3,6	4,6 (0,9)	3,5 3,3–3,8
Longueur moyenne des 50 énoncés en morphèmes	5,7 (1,1)	4,3 4,2–4,7	6,3 (1,4)	4,8 3,8–5,2	6,9 (1,3)	5,3 4,8–5,7

Note. IC = Intervalle de confiance; ÉVIP = Échelle de vocabulaire en images Peabody, Forme A (Dunn, Thériault-Whalen et Dunn, 1993); EOWPVT-2000 = Expressive One Word Picture Vocabulary Test – 2000 Edition (Gardner, 2000). ^aScore normalisé (moyenne et écart-type); ^bCalculé à partir des scores bruts.

Le tableau 5 contenait des données qui étaient incorrectes pour la longueur moyenne des 50 énoncés en morphèmes à 36 et à 48 mois, ce qui pouvait conduire à une erreur dans l'identification du groupe d'appartenance. Les valeurs ont été corrigées dans le tableau ci-dessous.

Tableau 5										
Répartition des participants dans les trois regroupements d'habiletés langagières en fonction des intervalles de confiance à 95 % du 10^e rang centile à l'âge de 36, 42 et 48 mois										
	N	Difficulté			Zone d'incertitude			Développement typique		
		Score	n	%	Score	n	%	Score	n	%
Vocabulaire réceptif										
ÉVIP (score brut)										
36 mois	93	< 11,0	3	3,2	11,0–17,0	18	19,4	> 17,0	72	77,4
42 mois	90	< 18,8	4	4,4	18,8–28,0	12	13,3	> 28,0	74	82,2
48 mois	93	< 32,0	4	4,3	32,0–37,2	12	12,9	> 37,2	77	82,8
Vocabulaire expressif										
EOWPVT-2000 (score brut)										
36 mois	92	< 17,0	4	4,3	17,0–22,1	12	13,0	> 22,1	76	82,6
42 mois	92	< 25,0	4	4,3	25,0–31,0	12	13,0	> 31,0	76	82,6
48 mois	87	< 35,2	4	4,6	35,2–41,0	12	13,8	> 41,0	71	81,6
Phonologie										
Mots correctement produits (% moyen)										
36 mois	94	< 15,8	4	4,3	15,8–35,0	12	12,8	> 35,0	78	83,0
42 mois	93	< 30,0	4	4,3	30,0–47,5	13	14,0	> 47,5	76	81,7
48 mois	92	< 47,5	4	4,3	47,5–60,0	14	15,2	> 60,0	74	80,4
Consonnes correctement produites (% moyen)										
36 mois	94	< 55,6	4	4,3	55,6–70,0	12	12,8	> 70,0	78	83,0
42 mois	93	< 67,6	4	4,3	67,6–78,5	12	12,9	> 78,5	77	82,8
48 mois	92	< 77,3	5	5,4	77,3–83,3	11	12,0	> 83,3	76	82,6
Respect de la structure syllabique (% moyen)										
36 mois	94	< 67,2	4	4,3	67,2–74,2	13	13,8	> 74,2	77	81,9
42 mois	93	< 71,2	4	4,3	71,2–83,3	12	12,9	> 83,3	77	82,8
48 mois	92	< 83,3	3	3,3	83,3–89,2	13	14,1	> 89,2	76	82,6

	Difficulté				Zone d'incertitude			Développement typique		
	<i>N</i>	Score	<i>n</i>	%	Score	<i>n</i>	%	Score	<i>n</i>	%
Morphosyntaxe										
Longueur moyenne des 50 énoncés en mots										
36 mois	89	< 2,8	4	4,5	2,8–3,1	11	12,4	> 3,1	74	83,1
42 mois	92	< 2,9	4	4,3	2,9–3,6	12	13,0	> 3,6	76	82,6
48 mois	88	< 3,3	3	3,4	3,3–3,8	13	14,8	> 3,8	72	81,8
Longueur moyenne des 50 énoncés en morphèmes										
36 mois	89	< 4,2	4	4,5	4,2–4,7	11	12,4	> 4,7	74	83,1
42 mois	92	< 3,8	4	4,3	3,8–5,2	12	13,0	> 5,2	76	82,6
48 mois	88	< 4,8	4	4,5	4,8–5,7	11	12,5	> 5,7	73	83,0

Note. IC = Intervalle de confiance; ÉVIP = Échelle de vocabulaire en images Peabody, Forme A (Dunn, Thériault-Whalen et Dunn, 1993); EOWPVT-2000 = Expressive One Word Picture Vocabulary Test – 2000 Edition (Gardner, 2000).

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Pandemic Planning for Hospital-Based Speech-Language Pathologists: Emerging Lessons from Coronavirus Disease



Plan de lutte contre les pandémies pour les orthophonistes travaillant en milieu hospitalier : les leçons émergeant de la pandémie de la maladie à coronavirus

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KEYWORDS

- PANDEMIC PLANNING
- SYSTEMS THINKING
- QUALITY IMPROVEMENT
- HOSPITAL SERVICES
- CORONAVIRUS DISEASE

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Abstract

Coronavirus Disease is a novel infectious agent, for which a global pandemic was declared in March 2020. Regulatory bodies representing Canadian speech-language pathologists recommended suspending non-essential services or converting to telepractice/virtual practice where appropriate. However, there is a lack of literature on surge or pandemic planning for speech-language pathologists working in hospital settings where face-to-face visits cannot be eliminated and are essential. This discussion aims to address this gap by providing a systems-thinking approach to pandemic planning for speech-language pathology services. This article uses the “Stuff, Staff, Space, and Systems” framework to promote workforce safety and stability in the context of complex hospital systems. Main areas that speech-language pathology leaders should review with their teams include equipment, environment, staff areas of expertise, opportunities that support both work and home life stressors, potential supports for mental health, factors that may alleviate moral distress, and processes within the speech-language pathology team and within interprofessional teams. Novel situations, such as that created by Coronavirus Disease, create situations that are challenging to individual clinicians, but also to broader teams and services. This challenge necessitates transparent communication and a systems-thinking approach to review speech-language pathologists’ complex work environments and protect teams’ physical and mental health.

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Abrégé

La maladie à coronavirus est une nouvelle maladie infectieuse, pour laquelle une pandémie mondiale a été déclarée en mars 2020. Les organismes de réglementation qui représentent les orthophonistes du Canada ont recommandé de suspendre les services non essentiels ou d'offrir les services en télépratique lorsque cela s'avérait pertinent. Cependant, il y a un manque de littérature sur les plans de lutte contre les pandémies ou la planification en vue de période d'intensification adaptés aux services offerts par les orthophonistes travaillant en milieu hospitalier, milieu où les visites en personne ne peuvent être éliminées et s'avèrent essentielles. Le présent article vise à combler ce manque d'informations en proposant une approche systémique pour les plans de lutte contre les pandémies adaptés aux services offerts en orthophonie. Le cadre *Stuff, Staff, Space, and Systems* [matériel, personnel, espace et systèmes] est utilisé afin de favoriser la sécurité et la stabilité de la main-d'œuvre dans un contexte de systèmes hospitaliers complexes. Les principaux aspects que les responsables des services d'orthophonie devraient examiner avec leurs équipes sont l'équipement, l'environnement, les domaines d'expertise de chaque professionnel, les options de soutien face aux différentes sources de stress au travail et à la maison, les ressources potentielles de soutien en santé mentale, les facteurs susceptibles d'atténuer la détresse morale, ainsi que les processus au sein de l'équipe d'orthophonistes et des équipes multidisciplinaires. De nouvelles circonstances, comme celles provoquées par la pandémie de la maladie à coronavirus, créent des situations difficiles non seulement pour les cliniciens au plan individuel, mais également pour les équipes et les services. La présente situation difficile nécessite une communication transparente et une approche systémique pour examiner les environnements de travail complexes des orthophonistes et pour protéger la santé physique et mentale de ces équipes de professionnels.

Coronavirus Disease (COVID-19) is an infectious disease caused by a novel coronavirus, SARS-CoV-2, that arose in Wuhan, China, in December 2019 (World Health Organization, 2020a). COVID-19 was declared a pandemic on March 11, 2020, given the potential for spread and severity, paired with concerns related to governmental response (World Health Organization, 2020b). Like other jurisdictions, the Canadian government recognized COVID-19 as a serious threat to the health of individuals as well as to the capacity of healthcare resources (Government of Canada, 2020). Accordingly, the Canadian government worked in partnership with all levels of government to prepare and monitor transmission and healthcare resources given the constantly evolving local and global situation (Government of Canada, 2020).

In response to the pandemic, regulatory bodies representing Canadian speech-language pathologists (S-LPs) have recommended the suspension of non-essential services or the conversion to telepractice/virtual practice (i.e., Alberta College of Speech-Language Pathologists and Audiologists, 2020; College of Audiologists and Speech-Language Pathologists of Manitoba, 2020; College of Audiologists & Speech-Language Pathologists of Newfoundland and Labrador, 2020; College of Audiologists and Speech-Language Pathologists of Ontario, 2020; College of Speech and Hearing Health Professionals of British Columbia, 2020; Nova Scotia College of Audiologists and Speech-Language Pathologists, 2020; Ordre des orthophonistes et audiologistes du Québec, 2020; Saskatchewan Association of Speech-Language Pathologists and Audiologists, 2020). Although there is evidence supporting the provision of telepractice services in speech, language, and hearing professions (Molini-Avejonas et al., 2015), there is a paucity of peer-reviewed literature on pandemic planning for hospital-based S-LPs who cannot eliminate face-to-face care. Moreover, there is urgency for relevant guidance on pandemic planning given the potential for second wave caseload surges related to the viral pandemic.

As the pandemic continues to evolve internationally, further statements have been released to guide essential and emergent clinical care by S-LPs (i.e., American Speech-Language-Hearing Association, 2020; Fritz et al., 2020; Irish Association of Speech & Language Therapists, 2020; Kho et al., 2020; Miles et al., 2020; Royal College of Speech and Language Therapists, 2020; Speech Pathology Australia, 2020). These guidelines have provided much needed information on the appropriate use of personal protective equipment (PPE) and infection prevention and control strategies to reduce the risk of transmission to providers,

clients, patients, and visitors (Public Health Ontario, 2020). Also, these guidelines have provided suggestions for individual clinicians on higher risk procedures (e.g., flexible endoscopic evaluation of swallowing, tracheostomy care). These guidelines include conducting risk assessments prior to contact, triaging patients who require direct contact, physical distancing during patient care, modifying procedures for swallowing and communication assessments, and navigating ethical considerations when working outside providers' normal scope of practice.

However, there has to-date been a lack of information to guide speech-language pathology leaders on pandemic planning in the context of complex hospital systems with complex processes to promote workforce safety and stability. This need for systems-level thinking represents a shift from guidelines informing individual clinicians on their practices to those informing broader speech-language pathology services, similar to how a public health response to COVID-19 necessitates a critical shift away from *person-centred* care and towards *community-centred* care (Nacoti et al., 2020). This shift poses a critical challenge for S-LPs to systematically analyze processes and settings to maintain functioning of the speech-language pathology team (for both COVID-19 and non-COVID-19 care), and manage ethical concerns and moral distress that may arise with this shift in thinking.

The Scope of the Problem: Projections for COVID-19 in Canada

Just as Nacoti et al. (2020) advocated for improved coordination among decision-makers and public health and epidemiology professionals, the potential impact of COVID-19 on speech-language pathology practice must guide speech-language pathology pandemic plans. Quantifying the problem of COVID-19 for hospital-based S-LPs is a major challenge as it is unclear how COVID-19 will align or misalign to the disease course of currently profiled illnesses. Caseloads for any profession in the hospital system are strongly tied to overall hospital occupancy. Canada's occupancy rates are consistently high at approximately 91.6% of hospital beds occupied in 2019; on a global scale, this is third only to Ireland and Israel (Organisation for Economic Cooperation and Development, 2019). With such high baseline occupancy rates creating stressors for hospital services, it is difficult to estimate how COVID-19 cases will impact speech-language pathology caseloads.

Despite the challenges above, the use of quantitative data still has utility to anticipate the potential impact on caseload by illustrating the projected impact of COVID-19

on Canadian hospital resource utilization. **Table 1** summarizes projected daily hospital and intensive care unit (ICU) admissions at the anticipated “second wave” peak in January 2021, as well as approximate daily admissions in the April–May 2020 peak. It should also be noted that national data may not accurately represent more localized epidemic rates, and as such, should be used with caution. Second wave cases may also differ from estimates related to different public health measures between first and second wave and interaction with influenza season.

Although COVID-19 surge planning is front-of-mind when preparing during pandemics, speech-language pathology services should also be aware of the potential surges in non-COVID illnesses related to restrictions and delays on non-urgent care (Tseng, 2020a). This could include impacts on individuals with chronic disease and medical frailty (Heckman et al., 2020), cancers (Saini et al., 2020), and cardiovascular emergencies (Tam, 2020), and the potential implications for speech-language pathology caseloads. Although the disease course for COVID-19 is not yet fully understood, post-acute needs may also impact hospital-based speech-language pathology caseloads by way of the need for rehabilitation (Brugliera et al., 2020; Carda et al., 2020) and the ability of post-acute discharge locations to appropriately care for individuals who have survived COVID-19 (Grabowski & Joynt Maddox, 2020).

Ethics

Individual clinicians can be at risk for moral injury and stress during pandemic times. The role of speech-language pathology leaders is to mitigate this risk by identifying potential sources of ethical concerns within their teams, preparing teams for anticipated moral dilemmas (Greenberg et al., 2020), and ensuring policies and processes are in place to reduce a sense of isolation for individual clinicians in their decision making. Types of ethical concerns for speech-language pathology teams may

broadly be grouped into challenges in balancing risk to the clinician with the wish to provide the best care possible and the desire to provide high quality care when resources or policies inhibit providing the best care possible.

Guidance from professional bodies is to minimize exposure to reduce risk of transmission by deferring less urgent visits (i.e., Alberta College of Speech-Language Pathologists and Audiologists, 2020; College of Audiologists and Speech-Language Pathologists of Manitoba, 2020; College of Audiologists & Speech-Language Pathologists of Newfoundland and Labrador, 2020; College of Audiologists and Speech-Language Pathologists of Ontario, 2020; College of Speech and Hearing Health Professionals of British Columbia, 2020; Nova Scotia College of Audiologists and Speech-Language Pathologists, 2020; Ordre des orthophonistes et audiologistes du Québec, 2020; Saskatchewan Association of Speech-Language Pathologists and Audiologists, 2020). This can cause anxiety for hospital-based S-LPs if individuals are forced to decide on who should/should not receive care for concerns such as upgrading diet textures or high-level communication concerns. Fears of risk to the clinician can also be amplified by inconsistency in messaging regarding PPE use between different institutions and agencies, as well as shortages in PPE. Balancing personal risk with wanting to give the best care possible can also manifest as ethical concerns or moral distress when staff are redeployed to work outside their usual scope of practice. Greenberg et al. (2020) reported that staff may feel they are putting patients or coworkers at risk because of their own inexperience or indecision. Strategies to support redeployed team members must also acknowledge the ethical and psychosocial concerns that may arise for these individual clinicians, as is mentioned in the Staff section to follow.

A clear area of distress for healthcare providers across professions is the desire to give the best care possible

Table 1		
Projected and Approximate Number of Patients With Coronavirus Disease Requiring Hospital Resources in Canada		
	April–May approximate daily admissions peak	January 2021 projection
Total hospitalizations	3000	15516.83 [9476.94, 23523.8]
Total intensive care unit admissions	500	3728.53 [2239.47, 5688.24]

Note. Data for approximate cases of Coronavirus Disease in first wave from the Public Health Agency of Canada (2020), projections data for January 2021 from the Institute for Health Metrics and Evaluation (2020). Values in square brackets indicate the 95% confidence interval for each projection. Data retrieved November 25, 2020.

when resources are limited during pandemic times. Within the speech-language pathology scope, some of these decisions that teams may wish to discuss before concerns arise include who should/should not access instrumental assessment and how to prioritize patients within caseloads. Additionally, staff should be supported if the plan of care reflects a shortage in equipment or resources. For example, clinicians may be unable to conduct instrumental assessments due to increased processing time for endoscopes or reduced access to videofluoroscopy assessment suites for individuals with suspected/confirmed COVID-19, resulting in situations where staff feel unable to provide the best care possible and need to rely on clinical assessments alone. Similarly, clinicians may benefit from additional support in situations where equipment or medication shortages are the reason for non-delivery of an intervention. This example is analogous to the work of Greenberg et al. (2020), in which they describe the scenario as being made to decide which of two equally sick patients receives a specific intervention, knowing that one is not expected to survive, due to shortages of equipment. In these cases, team members need to be supported in how to approach their clinical decision-making as the focus of care shifts from curative to more solely comfort based.

The shift from person-centred care to community-based care may also raise ethical concerns for clinicians, given that the person-centred approach is embraced by many clinicians and institutions when considering the continuum of body function and structure, activity, and participation in the context of personal and environmental factors (World Health Organization, 2002). On a local level in many jurisdictions, the COVID-19 pandemic has created restrictions to visits from family caregivers with the aim of limiting transmission of COVID-19. This could create ethical concerns or moral distress for staff who see psychosocial impacts of visitor restrictions on their patients. Also, this may potentially impact the sense of giving the best care possible due to an inability to conduct face-to-face education and teaching regarding swallowing or communication disorders. This is especially the case within vulnerable populations such as those approaching end-of-life, individuals with cognitive impairment, individuals who experience communication barriers, patients experiencing serious or critical illness, and individuals with mental health concerns.

Across the variety of ethical concerns that may arise during pandemic times, staff need to be supported to voice and discuss issues that may cause moral distress. As such, recommendations on how to support staff are discussed in the forthcoming Staff section.

Scope

This discussion aims to address gaps in the speech-language pathology literature base related to pandemic planning in the healthcare sector and to act as a model for the use of a quality improvement mindset to guide emergency plans. The aim of this article is to also provide preliminary recommendations for speech-language pathology teams planning for future waves of COVID-19 or other surges in care related to infectious diseases by providing systems-level recommendations to augment the works of Namasivayam-MacDonald and Riquelme (2020), Kho et al. (2020), and Fritz et al. (2020) by incorporating factors from the complex environments in which hospital-based S-LPs work.

Method

The author for this article is a practice leader for speech-language pathology and clinician with experience in long-term care, rehabilitation and complex continuing care, training in quality improvement/patient safety, and a background in practice-based research. The Stuff, Staff, Space, and Systems framework used for this article is based on the work of Christian et al. (2008) and later modified by Arya et al. (2020) for application in COVID-19. Downar and Seccareccia (2010) employed this framework to systematically describe recommendations for pandemic planning for intensive care and palliative care. The Stuff, Staff, Space, and Systems framework also aligns with quality improvement as it provides a brainstorming guide to identify potential systems-level contributors to a quality problem—in this case, challenges related to a global pandemic.

This is similar to the use of cause-and-effect diagrams, otherwise known as fishbone or Ishikawa diagrams, which is an essential quality improvement tool used to examine areas that may contribute to a quality problem in order to identify potential areas for improvement (Harel et al., 2016; Institute for Healthcare Improvement, 2017). Although cause-and-effect diagrams are a mainstay in quality improvement processes, this specific framework was not selected for this article given its main aim of identifying contributors to a specific existing problem to generate hypotheses for solutions, rather than identifying possible future areas requiring review as needed for pandemic planning. An exhaustive search of the literature was not completed to identify a specific framework given the aim of this article—modelling quality improvement and systems thinking. Moreover, given the dearth of literature on the topic in speech-language pathology and the arrival of the second wave of COVID-19 cases in Canada, there is an urgent need to expedite pandemic guidelines.

Recommendations and items for review within the framework were initially drafted in detail in March 2020 by the author based on (a) collaboration with a clinical S-LP with experience in acute care, intensive care, and long-term care, (b) observations from clinical experiences during the first wave of COVID-19 cases in Canada, and (c) institutional practices regarding COVID-19 planning. Draft recommendations were shared with four clinical S-LPs on March 24, 2020. These individuals represent a range of experience across hospital-based settings, including acute care, intensive care, rehabilitation, and long-term care, and were identified through the author's professional network. Written comments were collected until saturation (i.e., when no additional items were identified) in June 2020. The aim of this process was to identify key areas for consideration with clinical examples to elucidate points, rather than generate an exhaustive list of all possible details, pieces of equipment, etc.

Comments were integrated into revisions by the author and detailed review of the article in its entirety was conducted by a clinical S-LP, a mental health clinician/researcher, and a master's of public health candidate with clinical experience in occupational therapy and long-term care. The author identified non-S-LP participants from her professional network and engaged them to obtain perspectives from an interprofessional lens given the mental health and public health issues identified through the initial brainstorming process. Revisions and review were conducted to ensure accurate representation of comments and feedback and concluded July 25, 2020.

The goal of this process was to quickly identify recommendations for pandemic planning. However, the timeliness of the processes for gathering clinician input and document review were modulated by clinicians' primary responsibilities, including clinical caseloads and academic priorities. Research ethics review was not required because the study met criteria for exemption for such a review based on institutional process for confirming that the project was deemed improvement in quality and not human subject research.

Understanding the Problem: A Systematic Approach

S-LPs work in systems with complex processes, complex relationships, and variable physical environments. This inter-reliance between the S-LP and hospital systems necessitates consideration of the larger healthcare environment when pandemic planning. As with understanding a patient's swallowing or communication disorder, understanding the system in which a speech-language pathology service works may be more thoroughly and efficiently tackled through a well thought out

assessment. Similar to a clinical assessment, a systems assessment requires a plan and a framework to proactively assess potential problems before they arise and to help to plan for future events. In the case of COVID-19, this means taking a systems view of the speech-language pathology service with the dual lens of infection transmission and patient surges as potential challenges. This article is not intended to be all-inclusive nor to tackle all potential issues related to pandemic planning for S-LPs. Instead, this article acts as a guide on how to apply systems-thinking related to surge and pandemic planning by focusing on common issues that may be generalized to multiple speech-language pathology teams, acknowledging that individual teams must identify how their issues diverge from others and why (Mohta & Sampathkumar, 2020).

Given the lack of speech-language pathology-specific publications on frameworks to guide pandemic planning, this analysis is conducted using the Stuff, Staff, Space, and Systems framework of Downar and Seccareccia (2010), based on Christian et al. (2008) and modified by Arya et al. (2020). Main recommendations and items that require consideration when pandemic planning for speech-language pathology services are highlighted in **Table 2**.

Stuff

The Stuff of a clinical S-LP service during a pandemic requires consideration for what is involved in direct patient care, what is necessary for direct patient care, how materials and supplies are maintained and cleaned, and how materials and supplies are sourced. Individual clinical interactions are best conducted with the use of single patient use/disposable items where possible, and with cleaning of all equipment that is shared between patients (Speech Pathology Australia, 2020). When planning for a service, this must be extended to consideration of what the process is for obtaining and cleaning equipment. It is also appropriate to determine what resources may be in short supply or difficult to obtain for the purpose of ordering/stockpiling adequate amounts of these resources (Sprung et al., 2010). The following process is proposed for identifying equipment and material needs during a pandemic:

1. Identify all necessary equipment and all equipment components required for the service. Examples include computers used for instrumental assessments, equipment used for food stimuli preparation, and food stimuli. This list should include equipment that has historically been necessary as well as equipment that is newly needed due to pandemic/surge circumstances (e.g., specific PPE).
2. Determine which scenarios require shared equipment

and situations in which single-use items can be substituted; for example, low- versus high-tech augmentative and alternative communication tools.

3. Determine supply of items—existing stock versus needed stock—and consider which items require replenishing or new ordering and which items may require stockpiling due to changes in supply or delivery.
4. Ensure role clarity by identifying the individuals responsible for ordering/monitoring/maintaining items

to ensure an adequate supply is maintained as much as possible.

5. Review processes for on-going ordering/monitoring/maintaining single-use supplies and shared equipment.
6. Identify how these processes may differ from routine practice during pandemic times, for example, how changes in delivery models or supply may impact food stimuli availability/procurement or possible enhanced cleaning needs.

Table 2			
Recommendations and Considerations for Speech-Language Pathology Service Pandemic Planning			
Stuff	Staff	Space	Systems
Suggestions			
<ul style="list-style-type: none"> • Determine procedures requiring single-use versus shared materials • Identify “stuff” that may be impacted by changes in delivery/availability • Determine supplies that may need to be stockpiled; both new and existing materials/equipment • Review processes for ordering single-use supplies • Review processes for maintaining shared equipment • Routinely review guidelines on personal protective equipment with infection prevention and control colleagues 	<ul style="list-style-type: none"> • Review roster of available team members • Limit cross coverage between affected and unaffected areas • Advocate for additional staffing when extra spaces are created to accommodate anticipated occupancy surges • Review technical skills of team members • Encourage staff to seek help and rely on other team members • Support staff learning needs • Advocate for supports for personal challenges of team members • Create forums for staff to reflect and share experiences • Communicate proactively to help staff sort large amounts of information, and to ensure trust and transparency • Advocate for transparent and routine communication from institutional and systems-level leadership 	<ul style="list-style-type: none"> • Consult with other departments on use of shared spaces • Review cleaning practices for spaces • Allow for extra time between uses to allow for adequate cleaning and falling/ventilation of droplets. • Review transportation practices for patients • Conduct assessments/interventions at bedside when able • Promote physical distancing within spaces • Schedule use of spaces to ensure limits to transmission • Consider use of unorthodox spaces • Consider universal masking in shared spaces 	<ul style="list-style-type: none"> • Defer/reschedule non-essential/emergent visits • Transition to virtual care where able • Determine high risk procedures • Review screening and triaging practices • Review management practices for situations where access to testing/instrumental assessment is limited • Collaborate with other members of the interprofessional team to meet higher than usual needs • Discuss role blurring and role clarity with interprofessional team members when areas of practice overlap

Table 2 (Continued)			
Recommendations and Considerations for Speech-Language Pathology Service Pandemic Planning			
Stuff	Staff	Space	Systems
Items for Consideration			
Assessment equipment and materials (clinical and instrumental) Therapy materials and supplies <ul style="list-style-type: none"> • Communication tools/materials • Food • Thickening agent Personal Protective Equipment	Staffing model <ul style="list-style-type: none"> • Models of care and cross coverage • Redeployment • Staffing shortages • Relief staff Technical skills/expertise of staff <ul style="list-style-type: none"> • Intensive care • Palliative care • Counselling/goals of care • Technical support for staff working outside their usual roles Mental health and moral distress <ul style="list-style-type: none"> • Personal challenges • Medico-legal • Mental health/moral injury • Intra-team communication and roles 	Clinical <ul style="list-style-type: none"> • Therapy rooms • Instrumental assessment suites Non-clinical <ul style="list-style-type: none"> • Storage space • Administrative space 	Within-service care practices <ul style="list-style-type: none"> • Trigger symptoms • Risks to providers • Patient flow • Communication with substitute decision makers Collaborations with other professionals <ul style="list-style-type: none"> • Daily care needs (e.g., feeding) • Availability of items for assessments and management (e.g., foods, modified diet textures) • Team meetings

It is important to consider not just the Stuff directly used by S-LPs, but also the items that may be used for therapeutic purposes that an S-LP recommends; for example, thickening agent or how possible changes in patient food delivery models may impact items available on texture-modified diets.

Ongoing dialogue with local infection prevention and control colleagues is recommended given the constantly evolving nature of infectious diseases during pandemics, particularly in the case of novel infectious agents such as COVID-19. In the case of COVID-19, dialogue around speech-language pathology procedures that are considered aerosol-generating is particularly vital (American Speech-Language-Hearing Association, 2020; Dysphagia Research Society, 2020; Fritz et al., 2020; Kho et al., 2020; Miles et al., 2020; Namasivayam-MacDonald & Riquelme, 2020;

Royal College of Speech and Language Therapists, 2020). Similarly, routine and transparent review of PPE practices in collaboration with infection prevention and control professionals around PPE use may be appropriate for the most up-to-date evidence on transmission risks. The role of the speech-language pathology service in the case of preparation for PPE use is being aware of potential issues of availability; knowing where PPE can be obtained; knowing how to appropriately select, wear, and remove PPE; identifying any service education needs related to appropriate use or point-of-care risk assessments (Interorganizational Group for Speech-Language Pathology and Audiology, 2010); advocating for adequate access to PPE; and considering the impact of PPE use on clinical interactions—assessments, conversations, therapeutic relationships, and counselling.

Staff

Preparation regarding speech-language pathology staffing in a pandemic aims to ensure safety of the workforce, maximize the human resource capacity of the workforce, and maintain quality patient care for both pandemic-related cases as well as usual disease processes that result in hospitalization.

Staffing Models

Usual S-LP clinical coverage models, communication practices between speech-language pathology services and leadership or management with regards to staffing, and reporting structures may impede or facilitate staffing solutions (e.g., in the case of department versus program versus hybrid management organizations). Cohorting of patients and staff, and dedicated teams may be beneficial in limiting transmission for infectious organisms (Liu, 2020; National Health Service England, 2020; Ontario Agency for Health Protection and Promotion [Public Health Ontario], Provincial Infectious Diseases Advisory Committee, 2020; Siegel et al., 2007), and as such, it is prudent for speech-language pathology teams to limit cross coverage and avoid unnecessary travel between affected and non-affected areas to reduce transmission and exposure risk to staff. However, this must also be weighed against limitations due to staffing numbers and the need for relief staff to alleviate pressures related to worker fatigue and staff reductions (e.g., illness). To this end, an inventory of all speech-language pathology staff members as well as their specific skill sets is appropriate, particularly given the impact of absenteeism, illness, and closure of childcare facilities (Sprung et al., 2010). The creation of extra spaces to accommodate anticipated occupancy surges may also necessitate advocacy for additional staffing.

Technical Skill Set

Team members' levels of expertise in different areas are important when considering staffing/coverage models and redeployment. It is prudent to acknowledge that there may be staff members who are required to work outside their usual area of expertise and that these staff members need to be provided with clinical support or supervision (Sprung et al., 2010). One obvious area of expertise is the care of patients requiring critical or intensive care. The acuity and complexity of medical care needs paired with the pace at which medical needs evolve in this patient group requires specific knowledge. It has also been suggested that a "core group" with this skillset or a group more specifically trained in high-consequence infectious diseases may be beneficial for not only clinical care, but also acting as champions for others within the service (Mohta & Sampathkumar, 2020).

Pandemic surge circumstances raise the possibility of needs outpacing resources, resulting in individuals not being able to receive life-prolonging treatments who would require palliative care (Arya et al., 2020; Downar & Seccareccia, 2010). There is also recognition that there is a high degree of mortality with COVID-19, and given the crucial role S-LPs play in palliative care (Kelly et al., 2016; Pollens, 2004; Speech-Language & Audiology Canada, 2016), it is expected that this skillset will similarly be essential for the care of individuals with COVID-19 (Irish Association of Speech & Language Therapists, 2020). It should also be noted that invasive life-prolonging treatments may not be consistent with the goals of care for an individual and that palliative care approaches for symptom management can be concurrent with life-prolonging therapies (World Health Organization, n.d.). Just as there needs to be a plan for ICU-level expertise within the speech-language pathology team, there also needs to be acknowledgment that the human resource capacity for those with palliative care expertise may be taxed by pandemic surge situations (Ontario Palliative Care Network, 2020; Radbruch et al., 2020). This necessitates training and support to all providers to build palliative care capacity and provide compassionate care, dignity, and to reduce social isolation and caregiver distress (Ontario Palliative Care Network, 2020; Radbruch et al., 2020). Regardless of whether a given patient receives a more life-prolonging versus palliative approach to care, a review of staff members' comfort and skills in counselling patients and substitute decision-makers during stressful times and ability to discuss goals of care with teams and/or patients and substitute decision-makers (e.g., related to dysphagia) is certainly appropriate.

Mental Health and Moral Distress

When considering issues that impact workforce capacity and workforce safety, it is imperative to consider both physical and psychological safety for team members. Both surge and pandemic circumstances certainly raise the possibility of anxiety amongst team members. In the case of COVID-19, Lai et al. (2020) reported a high level of mental health concerns amongst healthcare workers in affected institutions, including a high degree of reported symptoms of depression (50.4% of those surveyed), anxiety (44.6%), insomnia (34.0%), and distress (71.5%). It is suggested that healthcare providers be offered support, such as peer counselling, and routine contact with social support networks (Radbruch et al., 2020). Radbruch et al. (2020) suggested that self-monitoring and pacing of duties/responsibilities, and reliance on teams should be facilitated given the potential for a higher than normal level of exposure to dying, death, suffering and breathlessness, and social isolation.

Shanafelt et al. (2020) interviewed hospital staff on their concerns related to COVID-19 and found eight main sources of anxiety: (a) access to appropriate personal protective equipment, (b) the potential for exposure to COVID-19 and infecting family at home, (c) rapid access to testing following COVID-19 symptoms and possible workplace transmission, (d) uncertainty related to organizational support for personal and family needs during the pandemic, (e) childcare challenges related to care facility closures and working hours, (f) practical personal needs given working hours (e.g., food, housing, transportation), (g) ability to work competently if redeployed into a new area of work, and (h) lack of timely information and communication. This situation is similar to areas of distress related to the severe acute respiratory syndrome detailed by Maunder et al. (2008), which include distress related to quarantine, the need to provide care or treatment to affected colleagues, infection, family health, job stress, interpersonal isolation, and perceived stigma. Shanafelt et al. (2020) distilled their eight main concerns into five types of requests from staff: hear me, protect me, prepare me, support me, and care for me. This is further evidence that a systematic approach to surge and pandemic planning may help to alleviate some sources of anxiety and stress for workers—namely those related to preparation and protection via workplace procedures related to testing and PPE. The work of Shanafelt et al. (2020) also highlights the importance of organizational support for non-work challenges related to childcare, obtaining essential products like groceries or medications, or housing.

Staff may also feel the need for organizational support to aid in protection from a legal perspective for those required to work outside their normal areas of expertise (Sprung et al., 2010). Isolation and stress related to workplace transmission/the need to treat coworkers also highlight the importance of a team approach to pandemic planning to ensure that all voices are heard and that team members feel that communication is open and timely. Shanafelt et al. (2020) recognize that trust and open communication need to happen multi-directionally rather than solely top-down, and remind leaders that healthcare workers often may not ask for help, and thus should be encouraged to seek help and rely on team members when needed. This is particularly true for individuals redeployed to new areas of work. Mohta and Sampathkumar (2020) similarly advocated for trust and transparency amongst teams and advised that centralized communication within a service can be beneficial in helping team members to prioritize large amounts of incoming information. Trust and transparency are also paramount at an organizational level to ensure consistent messaging across interprofessional teams and programs, and to ensure

that all members of an institution feel adequately informed and supported. There is opportunity here for all clinicians and leaders to advocate to organizational leadership teams for clear and frequent communication. Plans that allow for flexibility and contingency plans, including plans for succession or transfer of command may also help to build team resilience and foster a sense of trust and preparedness (Maunder et al., 2008; Schmidt, 2020).

It is important to note that stress and anxiety are distinct from moral injury, which is also likely to occur in the context of COVID-19 (Greenberg et al., 2020). Moral injury can be described as being knowledgeable of required care needs but being unable to meet these needs due to external controls, prompting providers to feel that they are in jeopardy of violating their moral or ethical code (Dean et al., 2019; Greenberg et al., 2020). Dean et al. (2019) further distinguished between moral injury and burnout by suggesting that burnout implies inadequate resilience on the level of an individual practitioner while moral injury is a challenge due to the structure and systems of the healthcare setting in which individuals work. As such, systems-level approaches may help to alleviate the potential of moral injury by better supporting and preparing members of a speech-language pathology service, as may some of the strategies outlined in the Systems section. Greenberg et al. (2020) posited that a forum for staff to safely discuss emotional and social challenges involved in caring for patients may be helpful, and that other structures, such as peer support programs, should be made available to raise awareness of moral injuries and barriers to mental health. They further suggest reflection to learn from challenging situations after crises have resolved to shift the narrative from one of trauma to one of meaning and learning.

Space

Space challenges during surge or pandemic times are related to infection control/transmission potential, availability of space, and efficient utilization of space. Some key considerations for spaces used by speech-language pathology services are:

- Who are the users of the space and who needs to be involved in consultations regarding the space?
- Are there nonstandard protocols that must be adhered to (e.g., enhanced cleaning, transportation practices, etc.)?

There must be diligent communication across departments as scenarios evolve to continually adapt processes and protocols. An example within the speech-language pathology scope is consultation with radiology

departments for videofluoroscopy use, including discussions on how to optimize space utilization for patients with and without COVID-19 infections. Across different types of clinical space, strategies to consider include:

- Conduct assessments/interventions virtually when able or at bedside rather than in shared spaces to reduce transportation across an institution (Sprung et al., 2010).
- Clean spaces between uses by different patients and plan for increased downtime between uses to allow for adequate cleaning and falling/ventilation of droplets.
- Allow for adequate physical distance between patients when they are using the same space (e.g., if group therapy continues for patients unaffected by COVID-19). Schedule patients with additional infection prevention and control precautions at the end of a block to allow for enhanced cleaning.

Spaces used for administrative purposes by S-LPs should also be discussed when planning for infectious pandemics. It is common for S-LPs to share office space. As such, consideration of the size of spaces for the purpose of adequate physical distance must be considered to maintain worker safety, to reduce the risk of transmission between workers, and to reduce the potential for multiple workers being unavailable for service due to exposures. Some strategies to consider include:

- Allow for extra space between workstations (e.g., leaving alternate workstations empty).
- Coordinate start times or schedules between staff to allow for sub-maximum capacity within office space.
- Explore with other hospital stakeholders the option of utilization of spaces that would not be in use during a pandemic (e.g., board rooms, auditoriums).
- Explore options for virtual work to allow for some elements of work to be done off-site.
- Review universal masking practices for staff in shared spaces.

Systems

Central to the speech-language pathology team's ability to adapt to surge and pandemic circumstances is the ability to adapt existing processes and evolve new ones to meet changes in service needs. Teams should consider both processes within the service as well as those requiring collaboration with other members of the interprofessional team.

Within-Service Care Practices

It is prudent for speech-language pathology teams to defer or reschedule non-essential/emergent visits or convert to virtual practice to limit risks related to face-to-face contact (Irish Association of Speech & Language Therapists, 2020; Royal College of Speech and Language Therapists, 2020; Sprung et al., 2010). Risk factors for non-delivery of service would need to include considerations for screening and triaging, with careful thought towards medical history and collaboration with interprofessional colleagues (Fritz et al., 2020; Speech Pathology Australia, 2020). Review of screening and triaging practices for visits that are deemed to be urgent or essential would assist team members by providing guidelines that are objective, ethical, transparent, and equitable, particularly when care resources are overcome by care needs (Sprung et al., 2010). The same screening and triaging strategies to reduce transmission risks and protect staff may help clinicians decide how resources are utilized amongst patients. It is important to note that while some speech-language pathology guideline documents interchange the use of screening and triaging, this discussion will refer to screening as the collection and review of information about an individual patient for the purpose of determining appropriateness for assessment, while triaging will refer to reviewing patients across a caseload for the purpose of prioritization. It may be beneficial to gradually alter triage criteria to transition from surge or pandemic phase triaging to routine prioritization (Sprung et al., 2010). This may be challenging given the unknown course of novel diseases, such as COVID-19, and thus may require routine review to maximize the right number of patients receiving the right care at the right time.

Process mapping is a useful strategy in healthcare quality improvement projects (Antonacci et al., 2018; National Health Service Institute for Innovation and Improvement, 2005). Teams may wish to use process mapping strategies to review the steps in screening/triaging processes to identify key factors influencing clinical decisions. Within the face-to-face visits that are deemed urgent or essential, teams should a priori determine which procedures they deem to be high risk and ensure that there is adequate training and access to equipment for these procedures (Fritz et al., 2020; Speech Pathology Australia, 2020; Sprung et al., 2010). Factors to consider when creating or adapting speech-language pathology service screening and triaging plans include:

- Readiness for assessment (e.g., level of alertness, respiratory status).
- Risk to patient if assessment or intervention is not done, including current risks and future risk of deterioration

or negative sequelae. It should also be noted that risk includes psychosocial risk by way of impact on quality of life. Teams may wish to consider the use of trigger symptoms that would prompt definitive and clear face-to-face assessments (Schmidt, 2020). Examples of trigger symptoms within the speech-language pathology scope of practice might include signs and symptoms of aspiration or sequelae of aspiration, or an inability to communicate needs and wants.

- Risk to provider with respect to transmission and how these risks might change over time. For example, if there is higher risk related to aerosol-generating procedures, such as high flow oxygen and the team plans to step this down over the next 24 hours, weighing the risk of delaying a swallowing intervention for that 24 hour period.
- Impact of and impact on patient flow between ward and ICU, transfer to other facilities or discharge home. In particular, assessments or interventions that may expedite discharge from hospital or ICU or outpatient visits that may prevent admission should have high priority (Royal College of Speech and Language Therapists, 2020). It should also be noted that COVID status may influence ability to discharge to external facilities, and thus may impact caseload (Grabowski & Joynt Maddox, 2020; Ontario Agency for Health Protection and Promotion [Public Health Ontario], Provincial Infectious Diseases Advisory Committee, 2020).
- How the sequence of patients seen or how caseloads are divided may impact risk of transmission and PPE conservation (e.g., “batching” those with COVID positive status).
- Likelihood of a change in swallow or communication status given progression of medical status in the case of re-referrals.
- Impact of consultation on decision-making if findings may influence goals of care discussions.

Factors that apply to the caseload should be reviewed routinely given the likelihood of quickly evolving medical status and can be applied across visit types (e.g., swallowing versus communication, clinical assessment versus instrumental assessment). Clear, objective, and transparent screening factors that are established before stressful situations occur can potentially alleviate distress related to perceived lack of preparation (Shanafelt et al., 2020; Sprung et al., 2010). In addition to reducing risk of exposure,

screening guidelines may help individual clinicians feel that their screening/triaging decisions are supported by well-thought-out team discussions and may reduce the sense of urgency by reducing decision making at the times of stress.

The ability to perform instrumental assessments that would usually be clinically indicated may also change under pandemic circumstances. In the case of dysphagia, instrumental assessments may be limited or unavailable due to reprocessing of endoscopes or institutional practices limiting transportation within the facility or limiting access to assessment suites for persons with suspected/confirmed COVID-19 infections. In these situations, it is prudent for speech-language pathology teams to consider how they might alter their management plans when instrumental assessments are unavailable. It is possible that this may result in unnecessarily conservative therapeutic recommendations. Teams should consider how recommendations may change for both in-hospital management plans and how clinicians advocate for follow-up services upon discharge from the hospital.

Pandemic-related precautions and local surges of cases may also impact patient flow and care capacity within organizations and to discharge destinations. This may actualize as delays to discharge from ICUs or from hospital due to lack of appropriate care spaces, and as such, speech-language pathology teams should consider how caseload management may need to be adjusted to accommodate localized fluxes in patient numbers. In the case of discharge destinations, it is also notable that community-based care for patients discharged home or to residential settings may be provided by external S-LPs (e.g., private practitioners, agencies). This may create gaps in care when speech-language pathology agencies temporarily close due to an inability to transition to virtual care and when there are restrictions to visiting for purposes that institutions deem “non-essential.” In these situations, it is possible that hospital-based speech-language pathology services may need to liaise with local area community care coordinators regarding availability of services and may also need to consider these gaps in care when discharge planning.

Speech-language pathology teams should also be aware of how practices for communicating with decision-makers may change, particularly in light of potential restrictions to visitors (Ontario Agency for Health Protection and Promotion [Public Health Ontario], Provincial Infectious Diseases Advisory Committee, 2020). This might include changes in practice for discussions of goals of care, diet education, communication strategies and partner training, and feeding strategy education.

Collaborations With Other Professionals

Given the complexity of hospital environments, it is also prudent for speech-language pathology teams to consider interactions within larger interprofessional teams when planning for surges and pandemics. Central issues in interprofessional team functioning which impact S-LPs are those of *capacity* and *role clarity* (Sims et al., 2015; Suter et al., 2009). Different than usual capacity can impact the team at large via increased patient load or reduction in care being given by visitors when restrictions are placed to reduce transmission risks. For speech-language pathology services, this may impact how teams monitor and screen patients and influences daily care needs such as feeding. Capacity can also be different during surge or pandemic situations when supply chains are impacted. For example, speech-language pathology teams may need to work with food service providers to review how changes in food delivery practices may influence the ability to acquire test trays or items for swallowing assessments, but also how there may be changes in availability of items for patients receiving modified diet textures. Teams may thus need to devise new models of working to ensure that these changes do not negatively impact the quality of care.

Discussions of role clarity are important for interprofessional teams to consider how to effectively and efficiently deliver care, particularly when surges create scenarios where needs outpace resources and when transmission risks during pandemics may necessitate fewer face-to-face visits from members of the interprofessional team. One example is discussions with dietitian colleagues to determine how best to collaborate on diet education to patients to minimize exposure to team members. Similarly, interprofessional teams may also collaborate on how they may adapt practices related to team rounds or family meetings and may consider virtual means of these gatherings.

“Much like an individual person has little immunity to SARS-Co-V, the modern healthcare system has never ‘experienced’ a disruption like this before. Not even SARS, MERS, Ebola, H1N1” (Tseng, 2020b). When anxiety can result from novel, unknown circumstances, a systematic approach to speech-language pathology service preparation may alleviate stressors by promoting trust, transparency, and open communication. Despite the best of preparations, inexperience with novel situations certainly continues to raise the potential for anxiety and moral injury.

Conclusion

Pandemics and surges create situations that are challenging to individual clinicians, but also to broader teams

and services, especially when dealing with previously unknown diseases. Novel situations, such as the one created by COVID-19, prompt clinicians and services to share experiences and to foster a culture of learning. This is particularly the case within speech-language pathology, as the dearth of literature on quality improvement and systems thinking relative to other professions forces a broader look to other disciplines to guide planning and modification of policies/practices for crisis management. In addition to providing guidance to speech-language pathology leaders and teams, this article acts as a call to both clinicians and researchers to collaborate to bridge the gap in quality improvement thinking within the field. In situations of pandemics or surges, speech-language pathology leaders and teams are urged to protect the workforce in their physical health but also mental health through transparent communication and systematic planning.

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