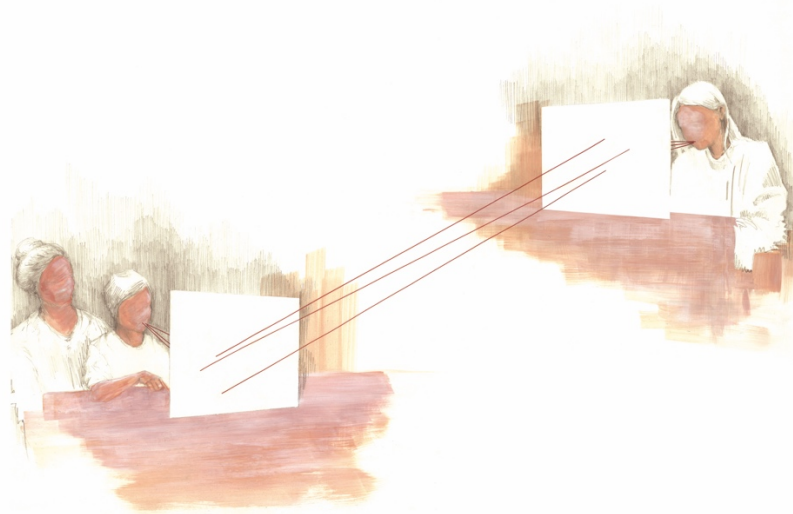# Guideline: Telepractice for speech-language pathology and audiology with children ≤ 12 years

(2023)

Van Eerdenbrugh, S., D'haenens, W., Leysen, H., Leclercq, A.-L., Vanden Bempt, F., Bouckaert, L., & Vanderauwera, J.

Version validated on 10/10/2023

Patient (client) input and consideration by the health provider (speech-language pathologist or audiologist)

Good medical practice guidelines provide directional support and guidance when making diagnostic or therapeutic decisions in family medicine. They summarise for the health provider what is scientifically the best policy for the average patient. There is also the context of the patient, who is an equal partner in making decisions. Therefore, the healt provider clarifies the patient's question through appropriate communication and provides information on all aspects of possible policy options. So, it may happen that health provider and patient together responsibly and reasoned make a different best choice. For practical reasons, this principle is not repeated every time in the guidelines but is explicitly mentioned here.

When quoting this guideline, use the following reference:

Van Eerdenbrugh, S., D'haenens, W., Leysen, H., Leclercq, A.-L., Vanden Bempt, F., Bouckaert, L., & Vanderauwera, J. (2023). Guideline : Telepractice for speech-language pathology and audiology with children ≤ 12 years. Collaboration between the Federal Government and the Evikey network, UCLouvain, ULiège, Artevelde College of Applied Sciences and Thomas More University of Applied Sciences.

The development of the guideline has been realised by a guideline development group consisting of:

- Guideline coordinator: dr. Sabine Van Eerdenbrugh (Thomas More), SLP-audiologist
- Methodological expert 1: Prof. dr. Jolijn Vanderauwera (UCLouvain), SLP-audiologist
- Methodological expert 2: dr. Sabine Van Eerdenbrugh (Thomas More), SLP-audiologist
- Methodological expert 3: Leen Bouckaert (Artevelde Hogeschool), occupational therapist
- Documentalist 1: dr. Heleen Leysen (Thomas More), SLP
- Documentalist 2: dr. Femke Vanden Bempt (UCLouvain), SLP
- Content expert SLP: Prof. dr. Anne-Lise Leclercq (ULiège), SLP
- Content expert audiology: dr. Wendy D'haenens (Thomas More), audiologist

To ensure quality during the process and a broad support to the clinical field, 14 **stakeholders** were involved in the process. For the composition of this group, a balance was sought between Dutch-speaking and French-speaking stakeholders. This group consisted of people with different perspectives to the topic of this guideline, including speech-language pathologists, audiologists, a paediatrician, a teacher, a CLB-employee, and parents and children who received telepractice.

A group of 5 **experts** was involved to review the decisions taken by the guideline development group and stakeholders, to review the methodological protocol, to evaluate the step from evidence to recommendation (including the degree of certainty). These experts have substantive research knowledge and expertise relevant to the topic or to the development of clinical guidelines.

- dr. Tom Van Daele, researcher at Thomas More (E-Health), psychologist
- dr. Kurt Eggers, researcher at Thomas More and UGent, SLP
- Prof. dr. Nicolas Verhaert, ENT-specialist, KU Leuven/UZ Leuven
- Nancy Durieux, methodological expert EBP, ULiège
- Sofie De Smet, general practitioner, Child & Family

For the duration of the project, this consortium was assisted by external experts as part of an **advisory board**. This board consisted of members from different organisations as listed below:

- FOD volksgezondheid – SPF Santé Publique
- RIZIV/INAMI
- Evikey Network
- Cebam –evaluation cell
- EBPracticenet – implementation cell
- KCE - Priorisation cell
- WOREL

- VVL
- UPLF

Acknowledgements

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Part V: Implementation

To support the development of the implementation plan, obstacles, benefits and facilitating factors identified from four sources were used: (1) input from the stakeholders on the implementation of tele-assessment and teletreatment, (2) findings from the literature about barriers and facilitators, (3) findings from the nominal groups, organized with the Dutch-speaking audiologists (N = 6) and French-speaking SLPs (N = 5), and (4) results from a survey that ran in January-February 2023, to which 87 French speaking SLPs and audiologists and 64 Dutch speaking SLPs and audiologists responded (completed surveys). These findings were brought together to identify the main barriers for telepractice use in the current Belgian health care context. The findings from the four sources indicated a data satisfaction. That is, the same findings were found in each of the sources.

Input from the stakeholders

During the stakeholder meetings, these obstacles and benefits were mentioned and discussed:

Obstacles

- During assessment: it is easy to miss a child's reasoning process (information about hand use during writing or calculating, lip movement during speech production, reading or calculating …) and it is more difficult to catch the non-verbal information (looking, pointing, …). It is more difficult to obtain an overall picture of the child (e.g. motor restlessness, nervousness …).
- Instructions are more difficult to give, the therapist cannot point or show. Oral instructions were given instead of gestures which promoted the oral language comprehension.
- Reading on a screen is different from reading on paper
- There is not a real substitute for face-to-face contact.
- An assessment is often performed at the start of the collaboration between therapist and client. At that time, it is essential to build up confidence in the child and to work on an emotional connection with the child. That is difficult to do when you are not with the child together in a room.
- During teletherapy it is difficult to use tangible materials. On the other hand, this also has benefits because certain behaviour is not possible, like pointing, and stimulates the child to use language.
- In some situations, two parents are present but only one is visible on the screen while the other parent (or other person) sits out of the view of the therapist. The therapist may not know this. S/he then cannot observe expressions of that parent. It is hard to interpret what is going on.
- Physical or communication disorders can make it difficult for a child to receive treatment via telepractice.
- A parent may not have the time to help the child.
- A parent or therapist may not know Zoom or Teams.
- Technological problems can result in a decreased motivation, in frustration and irritation of parents. The frustration and panic threshold lowered after an incidence of technology problems. When parents had technological problems, they panicked more easily in subsequent sessions. In those circumstances, the SLP or audiologist asked parents to log in sooner to gradually reduce the tension.
- Involving grandparents is difficult if the intervention is delivered via telepractice.

Benefits

- The assessment can be administered in a quiet environment.
- The client does not have to do the placement,
- Because the therapist is further away from the child, the child may be less nervous.
- Taking a test in a familiar setting is less stressful for some children.
- It is time-saving.
- Telepractice sessions are often easier to schedule in terms of timetable.

- Telepractice enhances transfer and gives the opportunity to observe the implementation of the therapy in the daily context. A child behaves differently at home which can be an advantage for the therapist, especially if the child shows difficult behaviour. It may be useful to help the parent and child dealing with the stimuli at home.
- If a parent forgot about a session, that the therapist can call him/her and possibly start the session after all, whereas in traditional practice, the session would have been cancelled.
- Families from other cultures can also access speech, language, swallowing or hearing care via telepractice whereas in some situations, they would not be able to attend treatment sessions in the traditional setting. There is no limitation on care.

Facilitating factors

- A parent should always be present to help the child and to give the therapist extra [non-verbal information] information.
- Building in physical activites for the children during the session (to promote compliance, to stimulate engagement)
- Make good agreements: clear communication and client well-being (e.g. physical contact, stimulating materials and activities) seem incredibly important.
- Courses and information on how to use and share materials in teletherapy could facilitate the implementation of telepractice. Young colleagues should receive coaching in how to deliver teletherapy during their course.

Findings from the literature

Systematic reviews and RCTs reported about obstacles, benefits and facilitating factors. A summary and synthesis of the evidence provide the essential information.

Summary of the literature

Armoiry, X., Sturt, J., Phelps, E. E., Walker, C. L., Court, R., Taggart, F., ... & Atherton, H. (2018). Digital clinical communication for families and caregivers of children or young people with short-or long-term conditions: rapid review. *Journal of Medical Internet Research*, *20*(1), e5. https://doi.org/10.2196/jmir.7999

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Grogan-Johnson, S., Schmidt, A. M., Schenker, J., Alvares, R., Rowan, L. E., & Taylor, J. (2013). A comparison of speech sound intervention delivered by telepractice and side-by-side service delivery models. *Communication Disorders Quarterly*, *34*(4), 210-220. https://doi.org/10.1177/1525740113484965

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Hodge, M. A., Sutherland, R., Jeng, K., Bale, G., Batta, P., Cambridge, A., ... & Silove, N. (2019). Literacy assessment through telepractice is comparable to face-to-face assessment in children with reading difficulties living in rural Australia. *Telemedicine and e-Health*, *25*(4), 279-287. https://doi.org/10.1089/tmj.2018.0049

Jacups, S. P., & Kinchin, I. (2021). A rapid review of evidence to inform an ear, nose and throat service delivery model in remote Australia. *Rural and Remote Health*, *21*(1). https://doi.org/10.22605/rrh5611

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McCarthy, M., Leigh, G., & Arthur-Kelly, M. (2019). Telepractice delivery of family-centred early intervention for children who are deaf or hard of hearing: A scoping review. *Journal of Telemedicine and Telecare*, *25*(4), 249-260. https://doi.org/10.1177/1357633x18755883

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Monica, S. D., Ramkumar, V., Krumm, M., Raman, N., Nagarajan, R., & Venkatesh, L. (2017). School entry level tele-hearing screening in a town in South India–Lessons learnt. *International Journal of Pediatric Otorhinolaryngology*, *92*, 130-135. https://doi.org/10.1016/j.ijporl.2016.11.021

Raman, N., Nagarajan, R., Venkatesh, L., Monica, D. S., Ramkumar, V., & Krumm, M. (2019). School-based language screening among primary school children using telepractice: A feasibility study from India. *International Journal of Speech-Language Pathology*, *21*(4), 425-434. https://doi.org/10.1080/17540507.2018.1493142

Sheikhtaheri, A., & Kermani, F. (2018). Telemedicine in Diagnosis, Treatment and Management of Diseases in Children. *eHealth*, 148-155. https://doi.org/10.29086/jisfteh.6.es1

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Tully, L., Case, L., Arthurs, N., Sorensen, J., Marcin, J. P., & O'Malley, G. (2021). Barriers and facilitators for implementing paediatric telemedicine: rapid review of user perspectives. *Frontiers in Pediatrics*, 180. https://doi.org/10.3389/fped.2021.630365

Waite, M. C., Theodoros, D. G., Russell, T. G., & Cahill, L. M. (2010a). Internet-based telehealth assessment of language using the CELF–4. *Language, Speech, and Hearing Services in Schools, 41*(4), 445-458. https://doi.org/10/1044/0161-1461(2009/08-0131)

The rapid review of Armoiry et al. (2018) described, assessed, and explored the feasibility and impact of digital communication between families or parents and therapists. One study in this review reported that the participants (parents of young children with Autism Spectrum Disorder) experienced some degree of frustration when using the videoconferencing program, including the audio or webcam not working or the Internet connection freezing. Another study did not report any technical problems.

The scoping review of Barr et al. (2019) investigated literature relating to the accessibility of services, ease of communication, and funding streams for children with hearing loss in rural areas of the U.S. and Canada. An interesting qualitative finding was that 17.1% of families did not have reliable internet access in their home and the main reason for this was rural living. The provision of consistent and reliable internet through satellite technology would influence access to both information and services for families in rural areas. Also, telepractice reduced travel for families and professionals, which provided a cost-benefit over traditional intervention. Telepractice is a reliable and valued method of service delivery that reduces travel and cost for both families and therapists. Telepractice improved access to services for children with hearing loss. Tele-assessment for hearing disorders was shown to be effective, which has the potential to aid early intervention and diagnosis.

The study of Blaiser et al. (2013) is a randomized controlled trial comparing teletreatment and traditional treatment for early intervention of children (average 18-19 months) with hearing problems (some with cochlear implants). A post-test self-report survey was administered to providers to obtain their perspectives on the strengths and challenges of teletreatment. Post-test data revealed that, compared with the onset of the study, providers who used video conferencing technology more in their personal life, felt more comfortable with coaching, and shifted the focus of interactions in sessions from parent-visitor interactions to parent-child interactions. Based on qualitative responses, providers appreciated the benefits of reduced travel time in serving families who live far away as well as avoiding exposure to an ill family member. The amount of time providing services to children was similar for both groups (59 minutes for traditional treatment and 51 minutes for teletreatment). Time spent preparing for visits and documentation/record keeping was almost identical for the two treatment groups (20 and 17 minutes for the traditional treatment group, and 19 and 22 minutes for the teletreatment group, respectively). Consequently, the cost of salaries and wages for providers to prepare, deliver, and document services was assumed to be the same for children in both treatment groups. For each child in the traditional treatment group, providers drove an average of 22 miles in each direction, requiring an extra 60 minutes of their time (valued at $55 per hour for salary and benefits) and a cost of $22 for driving expenses (valued at $0.50 per mile). Thus, each home visit cost an additional $77 in provider time and expenses as compared with a teletreatment visit. Additional costs for children in the teletreatment group included enhanced Internet service and software licensing fees ($60/month) for the provider, and for each family a computer, microphone, camera and monitor (one time cost of $1,000), enhanced Internet service and software costs ($60 per month per family), and their share of the technology specialist who was responsible for system set up, training parents and providers in using the equipment, and ongoing support ($50 per month per family). Using these figures, the estimated cost of providing services for a two-year period to 15 families (assumed to be the average caseload for a single provider) is less expensive in traditional treatment than in teletreatment services. However, if more frequent services were provided, teletreatment services have a growing financial advantage. If 3–4 visits were provided to each child each month (similar to what is reported in an ongoing study being conducted by the National Institutes of Health), the cost savings for providing services to 15 families using teletreatment instead of traditional treatment services would be $56,280 to $86,970 over a 24-month period. Such cost savings, taken together with the evidence that children in the teletreatment group make as good or better progress in receptive and expressive language, suggest that teletreatment should be seriously considered as a way of delivering

services to all 0–3-year-old children who are deaf or hard hearing. Post-test data revealed that, compared with the onset of the study, parents felt that teletreatment services were helpful in reducing the number of visits missed due to illness or bad weather and did not interfere with their relationships and interactions with providers.

Boisvert and Hall (2014) conducted a review of studies in which telehealth procedures were used in the training or coaching of parents with young children (aged 6 years and under) who were diagnosed with Autism Spectrum Disorder were reviewed. In one study, some dissatisfaction with the wireless headset and the need to stay within the range of the webcam was reported.

The study of Campbell et al. (2020) identified the scope of literature describing telepractice of allied health services to rural children and identified the extent to which implementation of such intervention has been investigated. One study referred to implementation facilitators such as testing equipment, providing instructions, and having the child/parent/staff practice using equipment beforehand. More than half of the studies described actions taken by the authors to facilitate the implementation of telepractice or recommended actions to facilitate implementation. No studies measured the impact of these actions. The most common action taken was to provide information or training about equipment and procedures to facilitators, children, therapists or parents. Training recommendations included practicing with the technology, preparing parents to anticipate audio or video quality issues, developing a manual and short course and detailed easy-to-understand instructions for providers about how to use teletreatment most effectively. Two studies described providing education and feedback about the program to a broader range of stakeholders, such as a schoolboard and community, parents, parents, and schools. Recommendations pertaining to the equipment used in telepractice consultations included: pre-downloading software for clients; testing equipment; improving and monitoring connectivity; using quality equipment; and taking time to pre-arrange direct network access in schools.

Ellison et al. (2021) provided an overview of the literature regarding telepractice for children and adolescents with Autism Spectrum Disorders over the last decade with regards to the type, recipients, and outcomes of the services and provided a recent evidence base upon which therapists and researchers alike might base ongoing and future services and research. One study reported that telepractice assessment was a more cost-effective strategy compared with studies where these assessments were conducted in-home with parents.

The study of Furlong et al. (2021) investigated the nature and outcomes of studies examining instructional reading and spelling procedures delivered through telepractice to school-aged students. Technological issues during telepractice delivery were commonly encountered in studies including audio issues, audio latency, break-up, low voice volume, poor signal-to-noise ratio, echo, and issues with the visual clarity of the screen.

The study of Grogan-Johnson et al. (2013) compared the effects of a 5-week speech sound intervention delivered through traditional treatment sessions with teletreatment sessions in school-aged children with speech-sound disorders. Occasional technical difficulties and student-related issues were reported, including slipping of participants' headset, issues with internet connectivity, participants moving out the optimal camera angle and difficulty in manipulating the computer mouse.

The study of Grant et al. (2022) identified the attitudes and perspectives of allied health professionals (speech pathologists, occupational therapists, and physiotherapists) towards using telepractice for service delivery to children with developmental delays. Participants in six studies identified lack of self-efficacy related to poor confidence or inadequate training as a barrier to service delivery through telehealth. Adequate training, facilitating improved self-efficacy, was identified by three studies, resulting in easier use of telepractice as a

service delivery method. One study reported that only 27% of its participants had received training in telepractice. Three studies included in the review identified support and training as facilitators to the use of telepractice. One study reported that extra training builds up the therapist's confidence. Another study reported that 79% of respondents recommended further professional development and 66% recommended demonstrations by therapists to enable skills in telepractice to be developed. Participants in four studies reported beliefs that telepractice negatively impacted time management as they did not have time to implement a telepractice service. One study reported that organising and scheduling telepractice was thought to be a burden on already heavy workloads due to the preparation of materials and technology. Therapists in one study also believed that without sufficient support by their organisation, time and costs would fall to the individual therapist. Two further studies reported perceptions that school-based teletreatment sessions would have to be set up and supervised by a support person within the school and that this introduced logistical difficulties dependent on the priority the school placed on therapy. Four studies reported beliefs that telepractice positively impacted time management by reducing therapist travel time. Improved access for families was identified by allied health therapists in seven studies, reporting reduced (travel) time and reducing gaps in regional services as reasons. Two studies reported participant beliefs that telepractice would improve privacy for families. Seven studies reported belief of improvements to family-centred care. Telepractice was generally seen to be more convenient and less disruptive to child and family schedules than attending a physical appointment. Reasons included facilitating academic learning as the appointment was easier to fit around the school day, improved carer engagement and was flexible for families. It was also reported that children and parents were more relaxed in their own familiar environment. Families felt they were supported to implement therapy strategies at home when therapy took place in the home context. Importantly, it was perceived that families for whom attending physical appointments was inconvenient due to complexity of disability, responsibilities for other children or parent work could still access interventions.

The systematic review of Govender and Mars (2017) conducted a scoping review and content analysis of the use of telepractice services for children with hearing loss. One study provided Auditory-Visual therapy through Skype to children aged 6 months to 6.5 years. Participants in this study rated their satisfaction of audio and video quality as fair (39%), due to challenges with internet connectivity causing audio delays and sound difficulties.

The study of Hodge et al. (2019) determined whether literacy assessments can be administered reliably through tele-assessment compared with traditional assessment. As mentioned for the recommendation about the feasibility of tele-assessment, technical difficulties were reported on some occasions (likely to be due to insufficient bandwidth availability). This led to problems setting up the document camera, temporary screen freezing, the need to refresh the Coviu (health platform) connection or restart the browser. Although these difficulties caused slight delays in telepractice assessment, they did not prevent valid completion of the evaluation.

Jacups and Kinchin (2021) conducted a rapid literature review to investigate the characteristics of successful outreach service models to inform the development of a new sustainable, evidence-based service delivery model for ear, nose and throat services across Cape York, Australia. The study concluded that telepractice has become an increasingly viable solution addressing resource limitations, workforce shortages and geographical barriers that affect service delivery in rural areas.

Based on a review of existing reviews, Law et al. (2022) critically analysed the relevant literature related to intervention with children with communication disabilities drawing on the Capability-Opportunity-Motivation-Behaviour model. Training and technical support for families is necessary when implementing telepractice. Professionals must be familiar with the available technologies to engage with telepractice. There is a clear need for helping children to operate with technical equipment in telepractice sessions. The poor quality of technical equipment is perceived as a barrier to telepractice. One review mentioned the specific challenges that emerge

when children are not physically in the clinic room, such as the need to adapt therapy materials and their use. Reviews also suggested that therapists get a greater insight into the children's environment and additional health conditions during telepractice. Only one review refers to location and general household circumstances, stating that these aspects need to be considered when offering telepractice. Telepractice is seen very positively in light of the traditional physical barriers to service access, such as transportation difficulties (e.g., rural areas), work commitments and family constraints. It has also been suggested that telepractice offers opportunities for increased involvement of the child's cultural and community support networks (e.g., availability of an interpreter), which impacts the outcome of telepractice services positively.

A total of 23 peer-reviewed publications were included in the review of McCarthy et al. (2019) about telepractice delivery of family-centred intervention for children who are deaf or hard of hearing. Technical difficulties were frequently cited as challenges, including lack of high-speed broadband networks, unreliable internet connections, and limited Information Technology support. Finally, staff issues associated with increased preparation time and additional training were also identified as potential challenges. Telepractice was also reported to create an environment that promoted therapists' use of coaching techniques to support parents' mastery of new skills. Funding was identified as another challenge including the purchase and maintenance of technical infrastructure, and reimbursement practices that did not compensate for the use of telepractice. Telepractice was reported to eliminate the constraints of distance and travel. Families and local therapists were able to access specialist therapists through telepractice, irrespective of their individual locations. The ability to schedule sessions outside of standard work hours and/or the relative ease of rescheduling a telepractice session in comparison to a traditional intervention session was frequently reported as a benefit. Telepractice was also seen as providing greater flexibility in overcoming potential barriers to attendance, including weather conditions or family illnesses that may contraindicate travel. Another reported benefit was the reduction in time spent travelling to and from appointments. In many cases, the flexibility in scheduling and reduction in travel were argued to be associated with a reduction in the number of missed sessions, which was, in turn, argued to be associated with a reduction in the cost of service delivery. One final area of reported benefit was that telepractice promoted an enhanced level of family-centredness. Telepractice was argued to expand parental choice of provider, intervention approach and communication mode by improving access to a range of specialist therapists.

The study of McGill et al. (2019) reviewed peer-reviewed articles investigating live-stream, video telepractice treatment methodologies for stuttering. One study reported that telepractice sessions were less personable than traditional treatment sessions, and they could not develop personalized transfer activities, despite also reporting that the telepractice sessions allowed easier transfer to natural environment using participants' families. Another study reported that the quality of audio and visual components was 'acceptable for most sessions according to the therapists, despite occasional lapses in video. Parents also reported overall satisfaction using the webcam. One study reported that according to therapists, technical quality was rated as moderately good with most criticisms related to image quality. One parent reported a preference for hybrid treatment, stating that, while telepractice was convenient, direct contact with the therapist was important.

The study of Molini-Avejonas et al. (2015) provided a systematic review on telehealth applications within the domain of speech, language and hearing sciences. One study discussed professional opinion regarding the use of strategies to facilitate communication through telepractice. The families had better access to and positive experience with the technologies for speech-language pathology service delivery than expected by the SLPs. The main barriers cited were the need of more data to improve the software used, the acceptance for a new health care delivery format, internet speed and other technological limitations. Results in most studies in the domain of hearing (93.9%) indicated a benefit of telepractice with regard to improved access to care. The cost-effectiveness was reported by 21.2% of the studies. Most studies in the domain of language reported ease of access as the greatest gain from the use of telepractice. Telepractice allows users who have no SLPs in their area or who are bedridden and have limited mobility to benefit from speech-language therapy. All studies in the domain of speech

suggest that telepractice is more cost-effective than traditional delivery. The studies in the domain of voice also mentioned cost-effectiveness as a positive result: telepractice reduced costs by decreasing the need for clients to travel to access health services, decreasing the space needed to store voice samples, and permitting the internet-based transmission of samples for analysis. The studies in the domain of swallowing presented as their main finding improved access to care and professionals. Improved access to care was the main benefit mentioned in the studies (80.6%). The use of telepractice can reduce clients' driving time, make health care more accessible for clients who live in communities with few specialists, and can promote client-centred care. Increased use of telepractice also allows providers to reach more clients. In both rural and urban areas, telepractice can be used for screening and for providing routine health care services, thus reserving limited traditional appointment time for those who need to be seen in person. It is important to point out that 25.24% of the studies did not mention barriers to the implementation of telepractice.

The study of Monica et al. (2017) assessed the feasibility of telescreening in a small town in India. To do so, authors compared traditional hearing screening at school to those obtained by telescreening. The authors reported technical issues (connectivity) in their study.

The study of Raman et al. (2019) explored the feasibility of conducting school-based language screening using telepractice to expand its scope for providing speech-language pathology services in India. Technical factors influenced telelanguage screening: (1) slight lag in audio output, but this had no major effects on the assessment procedure and (2) disruption of the internet connection in 7 of the 15 sessions leading to a delay of 5-10 minutes. This decreased the motivation of one child. They also reported a delay in picture transition across slides, which increased time for screening completion with 15 minutes and difficulty for facilitator and child to follow instruction from the remote SLP due to noise level in testing room. The authors reported on three occasions low speech volume and intelligibility in children, such that the remote SLP could not hear or understand the responses. The facilitator had to repeat the responses.

The study of Sutherland et al. (2017) determined whether, within an existing service, a web-based telehealth application using consumer grade, commercially available computer equipment could be used to provide a formal language assessment that is 1) feasible, 2) reliable and 3) well-tolerated by participants and their families. All tele-assessments were completed: no assessments were discontinued after technological or other difficulties. The audio quality during the tele-assessments was good (74%), acceptable in 22% and poor in one assessment. The average audio rating for Hub 1 (location 1) was 1.88 (mode = 2, range 1–2), for Hub 2 (location 2) it was 1.43 (mode=2, range 0–2) and for Hub 3 (location 3) 1.75 (mode=2, range 1–2). The visual quality during tele-assessments was good in 83% of assessments. No assessments were rated as 'poor'. The average visual quality rating for Hub 1 was 1.88 (mode=2, range 1–2), for Hub 2 was 1.71 (mode=2, range 1–2) and for Hub 3, 1.88 (mode=2, range 1–2).

Sutherland et al. (2018) examined the nature and outcomes of studies examining tele-assessment and/or teletreatment in Autism Spectrum Disorders. One study looked specifically at the costs associated with home-based teletraining compared with traditional training sessions and centre based teletraining and found that overall costs were lowest for the home teletraining group.

Sheikhtaheri and Kermani (2018) reviewed and introduced different telepaediatric services and the consequences of using this type of services and providing an overview of systematic reviews conducted in this domain. One study (a randomized controlled trial with deaf children) reported that telepractice services increased cost savings.

The review of Tully et al. (2021) outlines the implementation issues for incorporating telepractice to paediatric services generally, or how users perceive these issues. Qualitative findings include that ICT illiteracy sometimes resulted in tasks being completed manually by those not proficient with the software. Issues with the usability and complexity of the technical platforms for facilitating telepractice were widespread across studies. The quality, reliability and proficiency of therapists in using telepractice were major factors in determining its acceptance and uptake among therapists and some families. Participants discussed connectivity issues reducing their use of telepractice, with long setup times, audio-visual issues, and background fears of something going wrong constantly affecting the quality of a session. Some therapists described feeling embarrassed by these issues, which were often beyond their control. This issue was not unique to older studies, with the issue observed in studies published up to 2018. Other therapists noted that confidence with the technology grew with increased use and experience of telepractice. From the perspective of the therapists, the technology was easy to use. One study reported all therapists to be competent with independent use of telepractice following training on the use of the equipment. Other barriers were related to the perception that therapists were being tested or monitored, or that it would increase the potential for having their decisions questioned. If providers suspected that the use of telepractice would be onerous, complex or that the technology would be unreliable, they were less likely to use it. According to one study telepractice was widely reported to be additional work on a practical level. In particular its implementation tended to involve excess paperwork or administrative tasks. Insufficient therapists with capacity to engage with clients through telepractice was a problem encountered by others, which prevented the use of the service. For children with chronic illnesses, it was reported that telepractice was viewed by families as offering the potential to streamline access to multidisciplinary care and to reduce the risk of cancellation of appointments due to illness. One study reported that families expressed feeling that telepractice would allow for reassurance and reduced anxiety about a child's condition between in-person hospital visits, and could also allow for more logical/efficient scheduling for health care. One example was a screening/triage system to assess the need for a traditional consultation, and therefore increasing the value of traditional health care among participants who found their telepractice platform to work well. Improved communication between families and clinical staff was reported, in addition to allowance for genuine further education. The implementation of telepractice was also described by some to facilitate strengthening of relationships between therapists and other disciplines, and where calm and supporting communication was used for telesupport between sites, this facilitated acceptance of this service. Quantitatively, time/distance spent travelling to appointments, perceived cost of in-person appointments, familiarity with telemedicine, and number of missed work hours were all significantly correlated with positive attitudes to telepractice. Time-savings were cited across more studies than any other beneficial factor (eight studies). One additional study found that most respondents thought that time-saving was moderately or very important (88%).

The study of Waite et al. (2010a) examined the validity and reliability of a tele-assessment for childhood language disorders on the four core components of a standardized language assessment (CELF-4 Australian version – subtests). Technical issues during tele-assessment referred to the equipment size (headphones too big), the internet connection (distortion), and the touch screen could at times not be recorded. Furthermore, practical issues were reported during tele-assessment: lightning issues (overexposure in video recordings) and positioning issues of participant (difficult to see responses in the pictures of the subtest Following Directions) and reduced intelligibility (low speech volume and intelligibility).

Synthesis of the evidence

Obstacles:

- Obstacles may be encountered. It is known, however, that obstacles often don't present themselves.
- The therapist may be concerned about children's participation and family privacy (sharing their daily lives). It is known that these are usually not experienced by parents.
- Other barriers for telepractice are:
  - low internet connectivity

- o additional preparation time for the therapist (e.g. adaptation of treatment materials)
- o the need to develop personalised activities
- o the position of a child (e.g. poor lighting, movements outside the camera angle)
- o the inability to help a child (e.g. computer mouse or headset problems)
- o the need for additional technological training for the child, family and therapist
- o the logistical planning for treatment at school (e.g. support staff needed for set-up and supervision).

Facilitators:

- Frequent use of video conferencing technology increases the therapist's confidence.
- A training in telepractice increases therapists' confidence and self-efficacy.
- Offering technical support to the family increases a child's and family's familiarity with telepractice.

Benefits:

- it reduces travel time and costs for the family.
- it can gain time of therapists if they replace home visits (no travel time).
- it offers many possibilities to upskill the therapist's therapeutic knowledge and abilities.
- it can improve family-centred care because families get a lot of support to implement treatment strategies at home. Teletreatment easily allows transfer of learned skills to the natural environment through family participation.
- it provides better access to audiological and speech therapy services for children, including access to specialised therapists.
- it enlarges families' choice in therapist and approach to intervention.
- clients attend more sessions with telepractice because there are fewer barriers to attendance than with traditional intervention.
- planning a teletreatment session is easier for the family than planning a traditional treatment session.
- it stimulates support and involvement of the child's network (parents, siblings, ...).

If telepractice is a targeted choice, many of the obstacles listed above won't emerge as the SLP or audiologist anticipate them before initiating teletreatment.

Findings from the nominal groups

Table 1 and Table 2 present the barriers identified by the members of the nominal groups. A priority (most important barriers) and popularity (most frequently indicated barrier) index were given for each barrier. The barriers were grouped in overarching themes.

The largest barrier for tele-assessment, for the SLPs and audiologists, is the lack of adjusted norms and tools to perform a tele-assessment. It is also the most frequently identified barrier for both. An equally frequently identified barrier for SLPs is the unavailability of an adapted videoconference platform and computer in the clients' home.

The largest barrier for teletreatment, for audiologists, is the lack of ability to adjust the behaviour of the child and parents emotionally and physically. For SLPs, the largest barrier is the instability of the internet connection and the lack of image and sound quality. The most frequently reported barriers for the audiologists are the increased fatigue because of telepractice and the lack of ability to adjust the behaviour of the child and parents emotionally and physically. The most frequently reported barriers for the SLPs are the instability of the internet connection, the lack of image and sound quality, the unavailability of an adapted videoconference platform and computer in the clients' home and the lack of mastery of the digital tools by the therapist, the parents and the child.

The most frequently indicated and the most urgent facilitators by audiologists are short knowledge clips, brochure and infographic for client and therapist, for example, to connect hearing aids with the smartphone. Other frequently indicated facilitators by audiologists are the availability of resources and telepractice courses for students and for audiologists in the field. The most frequently indicated facilitators by the SLPs are a clear legal framework for the use of tele-assessment and the availability of a free, simple and secure video conferencing platform. The most urgent and the most indicated facilitators by SLPs are the availability of assessment tools that are validated and adapted for use in telepractice.

Table 1 : Barriers as identified by the SLPs (N = 5) and audiologists (N = 6) - tele-assessment

RESOURCES	SLP or AUD	Priority index°	Popularity index°
Unavailability of assessment tools that are adapted to videoconference administration	SLP	14	4
No possibility of using specific equipment required for certain types of evaluation	SLP	3	1
Time consuming aspect of adapting and/or designing the assessment session and/or materials	SLP	0	0
Unavailability of standardized and normed assessment tools for use in telepractice (e.g. for the classical audiological test battery and classical REM measurements)	AUD	29	6
INTERACTION			
Concern about the therapeutic alliance	SLP	7	3
Need for physical contact for certain types of assessments	SLP	5	1
Loss of information about the child's overall functioning and interactions	SLP	2	1
Concern about encountering difficulties in conducting a joint multidisciplinary assessment when needed	SLP	1	1
Telepractice requires more management of the child's attention	SLP	1	1
Fear of a lack of flexibility and spontaneity during the session	SLP	0	0
More difficult to provide personal guidance from the therapist	AUD	16	5
Motivation of audiologist and client	AUD	4	3
TECHNOLOGY AND DIGITAL TOOLS			
Instability of the internet connection, lack of image and sound quality	SLP	13	3
Unavailability of an adapted videoconference platform and computer in the clients' home	SLP	12	4
Lack of mastery of the digital tools by the therapist, the parents, and the child	SLP	3	2
Lack of technological knowledge of parents (and expectation that an adult must be present) *	AUD	15	4
The expectation to have specific software and hardware (client & therapist) (e.g., smartphones, camera,…)-	AUD	8	5
Instability of the internet connection	AUD	1	1
Lack of digital uniformity among firms	AUD	0	0
CLIENT'S ENVIRONMENT			
Non-optimal environmental conditions for the child	SLP	4	1
Telepractice requires an adapted involvement of the parents	SLP	1	1
Reliable diagnosis depends on environmental factors in children younger than 7 years (e.g., environmental noise, objective reactions of parent)	AUD	16	5
(Lack of technological knowledge of parents and) expectation that an adult must be present*	AUD	15	4
THERAPIST'S SKILLS			
Lack of practice and training in telepractice for the therapist	SLP	0	0
LEGAL FRAMEWORK			
Fear for cybersecurity and confidentiality	SLP	5	1
Lack of an appropriate legal framework and lack of guidelines	SLP	4	1
Lack of reimbursement	AUD	1	1

*This item is listed twice because its content covers two major topics; italic = identified by audiologists; ° because the number of participants differed, the total score of the indexes should not be compared between the two groups (e.g., score 16 is not the same for the SLPs as for the audiologists).

Table 2 : Barriers as identified by the SLPs (N = 5) and audiologists (N = 6) - teletreatment

RESOURCES	SLP or AUD	Priority index°	Popularity index°
Time-consuming aspect of adapting and designing the therapy session and the resources	SLP	5	2
Limitation of the rehabilitation resources that can be used	SLP	0	0
Lack of resources	*AUD*	*15*	*5*
INTERACTION			
Fear of a lack of flexibility and spontaneity during the session	SLP	8	3
Fear of a relational distance and a reduced human contact	SLP	8	2
Impossibility of physical contact with the client	SLP	4	1
Limitation of quality and types of feedback and instructions for clients and/or parents	SLP	2	1
Telepractice requires more management of the child's attention	SLP	0	0
Concern about difficulties in coordinating the various stakeholders in a multidisciplinary therapy program	SLP	0	0
Lack of ability to emotionally and physically adjust the behaviour of the child and parents	*AUD*	*28*	*6*
TECHNOLOGY AND DIGITAL TOOLS			
Instability of the internet connection, lack of image and sound quality	SLP	14	3
Unavailability of an adapted videoconference platform and computer in the clients' home	SLP	12	3
Lack of mastery of the digital tools by the therapist, the parents and the child	SLP	6	3
Negative attitude towards the use of digital tools	SLP	0	0
Lack of technological knowledge among parents	*AUD*	*8*	*3*
Instability of internet connection	*AUD*	*0*	*0*
Negative attitude of parents towards telepractice	*AUD*	*0*	*0*
CLIENT'S ENVIRONMENT			
Non-optimal environmental conditions for the child	SLP	2	2
Telepractice requires a greater involvement of the parent	SLP	0	0
Success of therapy depends on environmental factors (not suitable for every family)	*AUD*	*18*	*5*
THERAPIST'S SKILLS			
Lack of practice and training in telepractice for the therapist	SLP	3	2
Telepractice increases therapist fatigability	SLP	0	0
Telepractice increases therapist fatigability	*AUD*	*11*	*6*
Being unprepared for this way of delivering therapy	*AUD*	*9*	*4*
LEGAL FRAMEWORK			
Lack of an appropriate legal framework and lack of guidelines	SLP	6	2
Concern about cybersecurity and confidentiality	SLP	5	1
Concern about cybersecurity and confidentiality	*AUD*	*1*	*1*

Italic = identified by audiologists; ° because the number of participants differed, the total score of the indexes should not be compared between the two groups (e.g., score 16 is not the same for the SLPs as for the audiologists).

Findings from the survey

Table 3 presents the findings from the survey.

Table 3 : Overview of the main barriers found in the survey

Barriers	Tele-assessment				Teletreatment			
	French-speaking respondents N = 87		Dutch-speaking respondents N = 64		French-speaking respondents N= 87		Dutch-speaking respondents N = 64	
	Median (%)	Rank	Median (%)	Rank	Median (%)	Rank	Median (%)	Rank
Resources	8 (74,2%)	1	7 (71,5%)	3	6 (64,4%)	4	6 (61,3%)	4
Interaction	7 (71,3%)	2	7 (71,9%)	2	6 (64,9%)	3	7 (68,8%)	1
Accuracy of diagnosis or effectiveness of therapy	7 (69,6%)	3	8 (77,8%)	1	5 (56,4%)	5	6,5 (64,8%)	2
Technology	7 (68,2%)	4	6 (63,2%)	5	6 (65,1%)	1	6 (58,9%)	5
Home situation of client	6 (66,8%)	5	6,5 (64,4%)	4	6 (65%)	2	6 (62,3%)	3
Lack of knowledge	5 (53,4%)	6	5 (49,7%)	7	5 (52,4%)	6	5 (47,7%)	6
Legal framework	3 (46,1%)	7	5 (56,6%)	6	2 (38,3%)	8	4 (44,6%)	7

Note. Minimum possible score = 1, maximum possible score = 9. For tele-assessment the barrier 'reliability of diagnosis' was rated, whereas for teletreatment the barrier ' effectiveness of therapy' was rated; The percentage was calculated by the total amount of scores divided by the maximum possible score. For the French-speaking respondents: divided by (87*9(as this was the maximum score) = 783; for the Dutch-speaking respondents: divided by (64*9)=576.

The use of telepractice should not be limited to circumstances where it is obvious that telepractice is the most optimal solution to guarantee continuation of care, for example when parents are not able to visit the SLP or audiologist or when a child is chronically ill. It should also be offered as an alternative to traditional care delivery when it is possible the best option for the child, family or therapist, for example when compliance to treatment is higher in a telepractice setting or when families express the preference for telepractice.

Implementation plan

Therapists in Belgium identify many barriers that limit their capability and opportunities to implement telepractice. To help therapists implement telepractice, an implementation plan was constructed. This plan aims at achieving more use of telepractice in the daily practice.

The Implementation Research Logic Model was used as the framework for this implementation plan. This model consists of four main factors: (1) Determinants (= context-specific barriers and facilitators), (2) implementation strategies working through (3) mechanisms of action to change the context or behaviour of those within the context and (4) implementation outcomes (Smith et al., 2020). To formulate the determinants, the Consolidation Framework for Implementation Research (CFIR version 2.0) was used.

Tabel 4 lists the determinants, implementation strategies, mechanisms of action and outcomes for the implementation study that is being conducted upon release of this guideline. The determinants are formulated according to the steps proposed by Smith et al. (2020). They are based on the information collected for this guideline and their prioritisation will be discussed with a group of therapists. The implementation strategies are suggestions taken from the list of Expert Recommendations for Implementing Change (ERIC, Powell et al., 2015). Further specification of the implementation strategies will be necessary and will be established through discussion with the group of therapists. Most mechanisms of action for the implementation strategies will be determined with the group of therapists. A few suggestions were added to the table. Finally, the outcomes are formulated according to the taxonomy of Proctor et al. (2011).

Tabel 4 : Implementation according to CFIR (version 2.0)

Determinants			Implementation strategies@	Mechanisms$	Outcomes	
	CFIR code°	Barrier or facilitator			Implementation outcome (measurement)	Outcome level
Innovation domain (I)	Innovation Complexity (F)	Uncertainty over need for adaptation test equipment for telepractice[1,3,4]	Create a learning collaborative Promote adaptability Develop a formal implementation blueprint Conduct ongoing training Conduct cyclical small tests of change	Clarity about the need to adapt test equipment will lead to better understanding of the accuracy of tele-assessment	Acceptability (survey)	Implementation outcome (therapist)
		Limitations of telepractice when observing[1,2,3,4]		Being aware of the limitations of telepractice will lead to knowing whether or not telepractice is feasible	Feasibility (survey or qualitative interview)	Service outcome (therapist)
		Factors not or difficult to control[1,3,4]		Trained therapists will be more self-confident in knowing when they can offer telepractice as an alternative to traditional practice which will probably lead to more sustainable use of telepractice	Adoption, Penetration, Sustainability (survey or qualitative interview)	Service outcome (therapist)
Outer setting domain (II)	Policies and laws (E)	Lack of clarity on videoconferencing systems complying with European privacy laws[3,4]	Build a coalition Alter incentive/allowance structures Involve executive boards	Secured software will convince therapists that telepractice is a viable alternative to traditional practice	Acceptability (survey)	Implementation outcome (therapist)
	Policies and laws (E) & Funding (F)	Lack of clarity on legal framework telepractice[3,4]		Clear & updated overviews about regulation will convince therapists that telepractice is a viable alternative to traditional practice	Acceptability (survey)	Implementation outcome (therapist)
Inner setting domain (III)	Culture, Recipient centredness (D2)	Fear of lower-quality therapeutic alliance[1,2,3,4]	Identify and prepare "champions" Assess for readiness and identify barriers and facilitators Recruit, designate and train for leadership	Sharing best practices (knowledge clip, infographic, …) will lead to reducing the fear that telepractice leads to a therapeutic relationship of lower quality	Adoption, Penetration, Sustainability (survey or qualitative interview)	Service outcome (therapist)
	Available resources, resources & equipment (J3)	Limited supply of therapy and play materials for telepractice[3,4]	Access new funding Change physical structure and equipment Fund and contract for clinical innovation		Adoption, Penetration, Sustainability (survey or qualitative interview)	Service outcome (therapist)
	Available resources, funding (J1)	Additional preparation time/cost of converting material for telepractice[1,2,3,4]			Adoption, Penetration, Sustainability (survey or qualitative interview)	Service outcome (therapist)

° Consult the CFIR (version 2.0, 2022) for definition of CFIR codes; # poor quality of video and audio is included; § Individuals domain = when determinant involves clients (child and/or parent); inner setting domain = when determinant involves therapists; @ implementation strategies as suggested by ERIC – strategies with scores >30% are included. Percentages reflect the proportion of panelists endorsing a strategy as being a "top seven" strategy for that barrier; $ Only a few suggestions are given, the group of therapists will co-create these with the research team;
[1] Input from stakeholders; [2] Evidence in the literature; [3] finding from the nominal groups; [4] finding from the survey.

Determinants			Implementation strategies[@]	Mechanisms[$]	Outcomes	
Inner setting domain (III)	Access to knowledge and information (K)	Lack of knowledge to convert material for telepractice use[3,4]	Capture and share local knowledge Create a learning collaborative Conduct educational meetings Conduct ongoing training Develop educational materials Distribute educational materials	Sharing best practices (knowledge clip, infographic, …) and training (face-to-face, podcast, …) will support therapists in creating or using existing materials adapted to telepractice which will lead to an increased acceptability of telepractice as an alternative for traditional practice	Adoption	Implementation outcome (therapist)
	Access to knowledge and information (K)	Lack of knowledge to deploy material for telepractice use[3,4]			Adoption	Implementation outcome (therapist)
	Structural characteristics, Information technology infrastructure (A2)	Difficult (non)verbal communication during telepractice[1,2,3,4]	Assess for readiness and identify barriers and facilitators Change physical structure and equipment		Feasibility (survey or qualitative interview)	Service outcome (therapist)
	Structural characteristics, Physical infrastructure (A1)	Unfeasibility of telepractice for certain diagnostic and therapeutic applications[1,2,3,4]			Feasibility (survey or qualitative interview)	Service outcome (therapist)
Inner setting domain (III) & Individuals domain (IV)[§]	Structural characteristics, Information technology infrastructure (A2) & Need (A)	Minimum digital skills (therapist, parent, child) for telepractice[1,2,3,4]	Assess for readiness and identify barriers and facilitators Change physical structure and equipment Conduct local needs assessment Involve clients/consumers and family members Obtain and use clients/consumers and family feedback Prepare clients/consumers to be active participants	Providing extra training resources (knowledge clips, …) will decrease the time a therapist spends explaining how to use videoconferencing software and increase the possibility of adopting telepractce as a viable alternative to traditional practice	Adoption (survey)	Service outcome (therapist & client)
	Structural characteristics, Information technology infrastructure (A2) & Innovation recipients (I)	Minimum quality internet connection for telepractice[#1,2,3,4]			Adoption (survey)	Service outcome (therapist & client)
Inner setting domain (III) & Individuals domain-Characteristics (IV)[§]	Structural characteristics, Information technology infrastructure (A2) & Innovation recipients (I)	Minimum required ICT devices (hardware) for telepractice[#3,4]			Adoption (survey)	Service outcome (therapist & client)

[°] Consult the CFIR (version 2.0, 2022) for definition of CFIR codes; [#] poor quality of video and audio is included; [§] Individuals domain = when determinant involves clients (child and/or parent); inner setting domain = when determinant involves therapists; [@] implementation strategies as suggested by ERIC – strategies with scores >30% are included. Percentages reflect the proportion of panelists endorsing a strategy as being a "top seven" strategy for that barrier; [$] Only a few suggestions are given, the group of therapists will co-create these with the research team; [1] Input from stakeholders; [2] Evidence in the literature; [3] finding from the nominal groups; [4] finding from the survey.

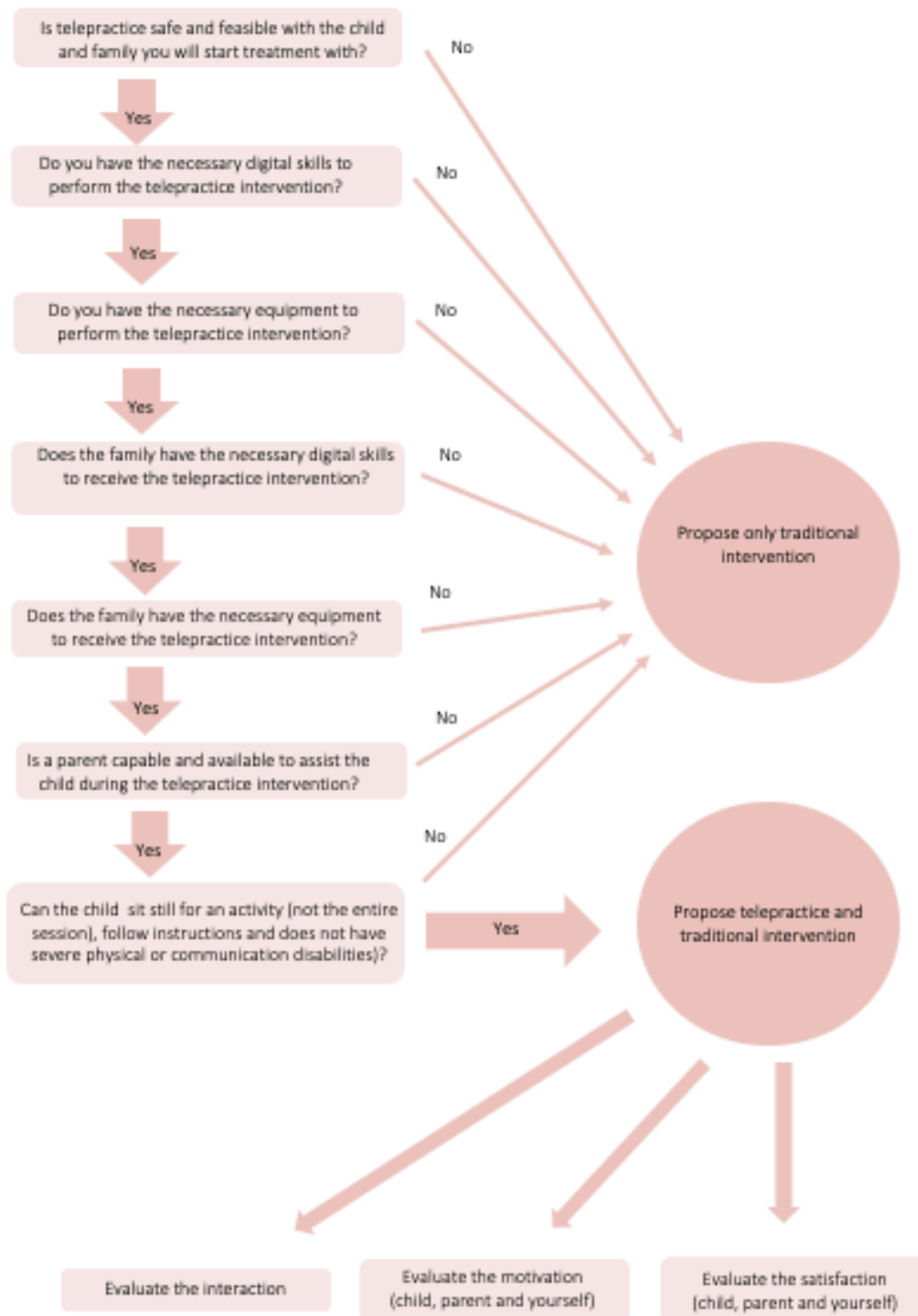| Determinants			Implementation strategies[@]	Mechanisms[$]	Outcomes	
Inner setting domain (III) & Individuals domain, Roles (if obstacle) and Characteristics (if facilitator) (IV)[§]	Culture, Recipient centredness (D2) & Innovation recipients (I, if obstacle) and Implementation facilitators (D, if facilitator)	Parents' presence or absence during telepractice is both barrier and facilitator[1,2,3,4]	Identify and prepare "champions" Assess for readiness and identify barriers and facilitators Recruit, designate and train for leadership Change physical structure and equipment	Sharing best practices (knowledge clip, infographic, …) will support therapists in how to deal best with parents to increase the chance on success	Appropriateness, Feasibility (if obstacle), Adoption, Penetration, Sustainability (if facilitator)	Service outcome (therapist & client)
Inner setting domain (III) & Individuals domain, Characteristics (IV)[§]	Culture, Recipient centredness (D2) & Innovation recipients (I)	Distractors in child's environment during telepractice[1,3,4]	Conduct local needs assessment Involve clients/consumers and family members Obtain and use clients/consumers and family feedback Prepare clients/consumers to be active participants	Sharing best practices (knowledge clip, infographic, …) will support therapists in how to deal best with distractors to increase the chance on success	Adoption, Penetration, Sustainability (survey or qualitative interview)	Service outcome (therapist & client)

° Consult the CFIR (version 2.0, 2022) for definition of CFIR codes; # poor quality of video and audio is included; § Individuals domain = when determinant involves clients (child and/or parent); inner setting domain = when determinant involves therapists; [@] implementation strategies as suggested by ERIC – strategies with scores >30% are included. Percentages reflect the proportion of panelists endorsing a strategy as being a "top seven" strategy for that barrier; [$] Only a few suggestions are given, the group of therapists will co-create these with the research team; [1] Input from stakeholders; [2] Evidence in the literature; [3] finding from the nominal groups; [4] finding from the survey.

Figure 1 : Decision tree for offering telepractice and traditional assessment, parent training or treatment

Is telepractice safe and feasible with the child and family you will start treatment with? — No
Yes ↓

Do you have the necessary digital skills to perform the telepractice intervention? — No
Yes ↓

Do you have the necessary equipment to perform the telepractice intervention? — No
Yes ↓

Does the family have the necessary digital skills to receive the telepractice intervention? — No
Yes ↓

Does the family have the necessary equipment to receive the telepractice intervention? — No
Yes ↓

Is a parent capable and available to assist the child during the telepractice intervention? — No
Yes ↓

Can the child sit still for an activity (not the entire session), follow instructions and does not have severe physical or communication disabilities)? — Yes →

Propose only traditional intervention

Propose telepractice and traditional intervention

Evaluate the interaction

Evaluate the motivation (child, parent and yourself)

Evaluate the satisfaction (child, parent and yourself)

Part VI: Evaluation

It is necessary to evaluate how telepractice is implemented in the daily practice. We therefore suggest the following evaluation criteria to evaluate if telepractice is implemented:

1. The number of downloads on the website EBPracticeNet (https://ebpnet.be/)/WOREL), (https://www.ebp-guidelines.be/home) and Thomas More (https://thomasmore.be/en/telelogopedie-teleaudiologie) (N). This outcome gives insight in the acceptance and adoption of this new treatment delivery format.
2. The number of times that the pseudo code is added to the intervention by SLPs and audiologists (RIZIV, 14/04/2022). More specific information will be deducted from the other codes that precedes the pseudocode (assessment, treatment, parent training, disorder). This outcome gives insight in the penetration and sustainability of this new treatment delivery format.
3. Ask a number of SLPs and audiologists to record the number of times they used telepractice over a period of time, e.g.,
   (a) Tele-assessment, teletraining (parents, early intervention) or teletreatment (with child)?
   (b) Preference of family, preference of therapist or choice between two (equal) options?
   (c) Reason why telepractice is (not) chosen – checklist : sickness, distance, other…
   (d) Disorder
   This outcome gives insight in the appropriateness of this new treatment delivery format.

These evaluation criteria were approved by the stakeholders with a consensus of ≥70%.

Validation

The centre of Evidence-Based Medicine (Cebam, 2023) has reviewed and approved this guideline and its development. The Evikey network provided support during the development process. This did not affect the content of the guideline.

Financial support

The development of this guideline was financed by the Federal Department of Health, Food Chain Safety and Environment. This, however, did not have any impact on the content of the guideline.

Conflict of interest

The stakeholders and guideline development group have no conflict of interest in the development of the guideline about telepractice. A summary can be found in the Appendix.

Systematic future updates

This guideline will be systematically updated with recent literature findings every five years. The methodology of this guideline (research strategy, selection criteria, appraisal procedure, …) will be followed. Thomas More and Université Catholic de Louvain are responsible for the five-yearly updates.

Translation

The translation of the guideline is done from English to French and Dutch. The final text is evaluated by the members of the guideline development group.

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Appendix. Conflict of interest

Name	Role	Employer(s)/organisation	Function(s)	Declared COI
Ada Vanderauwera	Stakeholder (Focus implementation)	NA	Child	None
Ann Goeleven	Stakeholder (Focus implementation)	UZ Leuven	Director speech-language pathology and audiology	None
		KULeuven	Lecturer	None
Cécile Beaulen	Stakeholder (Focus implementation)	Aide et Soins à Domicile	Family support	None
Eline Van Eerdenbrugh	Stakeholder (Focus implementation)	Art Academia Heist-op-den-Berg	Teacher	None
Erwin Derks	Stakeholder (Focus implementation)	Kohesi	SLP	None
Françoise Stegen	Stakeholder (Focus implementation), Advisory Board	Self-employed	SLP	None
		Union Professionelle des Logopèdes Francophones (UPLF)	Former president	None
Katrien Kenens	Stakeholder (Focus implementation)	VCLB Leuven	Allied health professional	None
		Praxis P	Coordinator learning disorders tertiary education	None
Liesbeth Van den Eynden	Stakeholder (Focus implementation)	Thomas More University of Applied Sciences	Lecturer	None
		Self-employed	SLP	None
Lieselot Van Deun	Stakeholder (Focus implementation)	UZ Leuven	Audiologist	Professional relationship with Cochlear Ltd
Renke Sevenants	Stakeholder (Focus implementation)	Thomas More University of Applied Sciences	Lecturer	None
		Group praktice Logo+ (Berchem)	SLP	None
Severine De Lange	Stakeholder (Focus implementation)	Experienced-inspired school De Sterrebloem in Deinze	Teacher grade 3-4 Care teacher grade 1-2	None
Tessa Goetghebuer	Stakeholder (Focus implementation)	Office de la Naissance & de l'Enfance (ONE)	General practitioner	None
		CHU Saint Pierre	Clinical director	None
Yentl D'haenens	Stakeholder (Focus implementation)	NA	Child	None
Caroline Strouwen	Advisory board	Cebam, Belgian Centre for Evidence-Based Medicine	Coordinator Team Evaluation	None
		UHasselt, faculty of revalidation sciences and physiotherapy	Lecturer	None
Deborah Seys	Advisory board	Cebam, Belgian Centre for Evidence-Based Medicine	Employee Team Evaluation	None
		KULeuven	Post doc researcher	None
Hanne Cloetens	Advisory board	WOREL	Scientific employee	None
		Wijkgezondheidscentrum De Bruggen VZW	General practitioner	None
Jef Adriaenssens	Advisory Board	KCE, Knowledge Centre	HSR expert	None
Lies Grypdonck	Advisory board	RIZIV-INAMI	Physician in effective care	None
Meike Horn	Advisory board	Federal Department of Health, Food Chain Safety and Environment	Employee	None
Pascale Jonckheere	Advisory board	KCE, Knowledge Centre	Medical expert	None
Ronny Boey	Advisory board	Vlaamse Vereniging Logopedisten (VVL)/Scienti-L	President	None
		CIOOS	President	
		UAntwerpen	Post-doc researcher	
		EBPracticeNet/EviKey	Advisory Board member	
		RIZIV Insurance Committee	Board member	

Name	Role	Employer(s)/organisation	Function(s)	Declared COI
Saphia Mokrane	Advisory board	WOREL	Employee	None
		ULB, Département de Médecine Générale	Lecturer, developer of clinical guidelines	None
Thomas Janssens	Advisory board	EBPracticeNet	Employee	None
		KULeuven	Voluntary scientific employee	None
Wim Dunford	Advisory board	RIZIV-INAMI	Member of boards and commissions related to health care	None
Kurt Eggers	Stakeholder (Focus Methodology)	Thomas More University of Applied Sciences	Professor	None
		University Gent	Lecturer	None
Nancy Durieux	Stakeholder (Focus Methodology)	Université de Liège, Faculté de psychology, logopédie et des sciences de l'éducation	Professor Assistant	None
Nicola Verhaert	Stakeholder (Focus Methodology)	UZ Leuven	Director of Department Nose-Ear-Throat	None
		KULeuven	Lecturer	None
		FWO Flanders	Senior clinical investigator	None
Sofie De Smet	Stakeholder (Focus Methodology)	Self-employed	General practitioner	None
		Kind en Gezin	Consulting physician	None
Tom Van Daele	Stakeholder (Focus Methodology)	Thomas More University of Applied Sciences	Researcher & lecturer	None
		The Human Link	Author (self-employed)	None
Anne-Lise Leclercq	Guideline development group	Université de Liège	Professor Assistant	None
Femke Vanden Bempt	Guideline development group	UC Louvain	Documentalist	None
		KULeuven	PhD student	None
Heleen Leysen	Guideline development group	Thomas More University of Applied Sciences	Researcher & lecturer	None
Jolijn Vanderauwera	Guideline development group	UC Louvain	Professor assistant	None
Leen Bouckaert	Guideline development group	Artevelde University of Applied Sciences	Lecturer & researcher	None
Sabine Van Eerdenbrugh	Guideline development group	Thomas More University of Applied Sciences	Researcher, lecturer, coordinator bachelor theses	None
Wendy D'haenens	Guideline development group	Thomas More University of Applied Sciences	Researcher, lecturer	None