



Guidelines

# A Practical Guideline to Capturing and Documenting the Real-Time Consequences of Fluctuating Hearing Loss in School-Age Children

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**Abstract:** Background: Fluctuating conductive hearing loss resulting from middle ear conditions, such as otitis media, is the most common cause of hearing loss in children, with Indigenous Peoples experiencing otitis media at a rate three times higher than non-Indigenous populations. Children with chronic hearing loss face increased educational, social, and economic challenges. However, treating and documenting fluctuating hearing loss remains difficult due to its sporadic and invisible nature, frequently leading to delayed or missed identification and inconsistent management. Methods: A comprehensive literature search was completed with a librarian, but few resources were located for this condition and population. Results: This practical guideline aims to improve the documentation and subsequent management of otitis media in school-aged children, with a focus on rural and Indigenous communities in Canada, where access to healthcare professionals may be limited. Conclusions: Despite efforts to raise awareness about otitis media in rural and Indigenous communities, there are still few accessible tools for caregivers to track the severity of fluctuating hearing loss. This guideline aims to help fill this gap.

**Keywords:** fluctuating; conductive; pediatric hearing loss; learning; otitis media; real-time; Indigenous



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## 1. Introduction

Otitis media (OM), an inflammation and/or excess of fluid within the middle ear, is a common cause of fluctuating hearing loss (FHL) in children. Most forms of OM cause temporary conductive hearing loss, but chronic cases can result in permanent, mixed hearing loss [1]. A cross-sectional study conducted in 2020 revealed that 80% of children under the age of four were affected by otitis media, with 22.5% of these children presenting with episodic OM-related hearing loss of 25–45 dB [2–4]. Children are particularly susceptible to OM due to the functional immaturity of their immune systems and Eustachian tubes, which are shorter, more horizontal, and prone to dysfunction compared to those of adults. In addition, nasopharyngeal bacteria proliferation can contribute to incidences of OM [1]. Otitis media also disproportionately impacts Indigenous Peoples at a rate three times higher than non-Indigenous populations, exacerbating existing systemic challenges [5]. And despite efforts to raise awareness about OM rates in Indigenous communities [6–10], there is still a lack of accessible tools for primary caregivers (i.e., family, educators) to document the frequency and severity of FHL, especially in school-aged children. And yet, without systematic and accurate documentation of FHL, the full consequences on academic, socio-emotional, and physical well-being cannot be realized.

### 1.1. Formation of the Guideline

The idea for this guideline came as the result of several conversations among audiologists (including authors A.O., K.J., and W.H.), speech-language pathologists (including author S.S.), researchers (all authors), individuals with diagnosed/aided hearing challenges (authors C.C., K.J., J.C.), and parents with children who have hearing challenges (authors K.J., J.C.). In this last case, a colleague's child was suffering from bilateral chronic OM. Repeated testing by several of the authors confirmed that this condition was causing the child's hearing to fluctuate with a conductive component between 0 and 30 dB HL over several months. This situation was extraordinary as this child had access to audiologists, daily if needed. A referral to an otolaryngologist was made, fluctuating hearing loss was confirmed, and a pathway for treatment was recommended. However, the parent noted the need to share with the child's educators, as well as the otolaryngologist and audiologist at subsequent appointments, the unfolding nature of the FHL so that accommodations could be made in the classroom. However, a search could not locate any tools or guidelines to assist the parent or primary caregiver to track this condition at home on a consistent basis. This guideline and its included recommendations are meant to fill this gap. Several specialists (including audiologists, otolaryngologists, and persons with Indigenous lived experience) were consulted to create this document. An otolaryngologist reviewed all content related to otitis media (OM) and hearing loss classifications. Particular attention was given to the distinctions between acute and chronic OM, as these are critical for understanding the varying impacts on hearing loss in Indigenous populations. This review ensures that the guideline reflects up-to-date medical knowledge and aligns with the standard care practices for managing OM in both clinical and community settings, thereby strengthening the clinical relevance of the document, particularly in relation to Indigenous health considerations.

The result of these conversations and efforts is a guideline that examines the impact of FHL on children and provides recommendations for families and educators on how to improve the documentation of FHL secondary to OM. It also discusses initiatives that target awareness and treatment pathways, with a focus on rural and Indigenous communities in Canada where consistent access to healthcare professionals may be limited and the impacts of FHL likely widespread [11–13].

### 1.2. Hearing Loss Consequences

#### 1.2.1. Permanent Hearing Loss

The consequences and impact of permanent hearing loss on learning and memory have been extensively researched and reported [14–29]. Hearing loss has significant long-term consequences on learning, retention, speech perception, and vocabulary development, even with early and adequate treatment (e.g., amplification). Beyond these challenges, hearing loss in early childhood is also linked to decreased social skills, poorer school performance, and impaired speech and language outcomes [2,18,30–35]. While early intervention, particularly before six months of age for those with congenital losses, helps mitigate many adverse effects [2,16,26,36–38], the long-term impact and consequences on social and emotional well-being [24,39,40] and employment prospects [41] are still measurable. The ramifications of permanent hearing loss on childhood development cannot be overstated; however, the extent to which these same consequences are present in children who experience fluctuating conductive hearing loss is less established.

#### 1.2.2. Fluctuating Hearing Loss

Fluctuating hearing loss (FHL) presents a unique challenge in the assessment of its impact on learning, memory, and attention due to its sporadic onset, varying duration, and fluctuating severity. Researchers have thus far approached FHL categorically, grouping children based on the frequency of FHL episodes [40,42,43]. For example, one paper [43] classified children into four groups: normal hearing (no bouts of otitis media-related FHL), minor (fewer than four episodes per year), middle (between four and nine episodes), and

severe (more than nine episodes). They found that children who had experienced any FHL had impaired speech perception in noise, with more serious impairments in those categorized in the severe group. It is also important to note that in the aforementioned studies [40,43], all children had normal hearing thresholds during assessments. A significant gap remains in the literature regarding the impact of FHL on learning, memory, and attention during an active bout or episode of otitis media.

Additional research indicates that children with hearing loss, including FHL, may exhibit delays in language development, working memory, and other cognitive domains [44–47]. These delays can significantly affect academic performance and social interactions [48–51]. And although accurate assessment and documentation of a FHL's fluctuating nature is crucial to understanding its impact on cognitive and social development, few tools or guidelines exist to support caregivers in these efforts.

### 1.3. Indigenous Populations

It is critical to acknowledge the increased rate of OM in Indigenous populations, who are an 'at-risk' and marginalized group [5,6,10,52]. Overcrowded living conditions, which contribute to the prevalence of OM, are more common among those who face systemic barriers [7,9,13]. Some research has investigated the potential pathways for this increased incidence ([5] for the inflammation hypothesis; [5] for adverse factors in rural and remote communities; [12,13] for the impact of poverty on OM in a Canadian context). Other studies have focused on pathways for increased awareness and subsequent treatment for susceptible Indigenous peoples [6,7,9,11,53]. In line with the Truth and Reconciliation Commission of Canada's Calls to Action, additional considerations must be taken into account if research is conducted within Indigenous communities. Relationships must be built on mutual trust and respect to ensure that knowledge acquisition is not invasive and unnecessary for the communities. The goal is for research to be conducted with, not on, Indigenous peoples [54–57]. This could be accomplished by having Indigenous healthcare workers serve as a conduit between Indigenous families and researchers [5].

And while the acute consequences of FHL on day-to-day functioning are not fully understood, its effects may contribute to several long-term outcomes. It is also reasonable to postulate that FHL and its impacts are experienced to a greater degree in vulnerable and/or isolated populations with higher rates of OM [6,7,9,10,33]. Therefore, methodical and valid documentation of repeated FHL episodes in school-aged children, who rely on listening and talking as their primary modes of educational instruction in formal academic settings [54], is needed to mitigate the impact of this sporadic disability.

### 1.4. Recommendations

#### 1.4.1. Primary Pathway for Documentation of Hearing Challenges

If hearing loss is suspected, a primary caregiver must arrange for a diagnostic hearing assessment with an audiologist or other medical professional as soon as possible to rule out permanent hearing loss. While FHL is typically temporary (e.g., due to a middle ear pathology), distinguishing it from permanent hearing loss requires a baseline audiogram completed by an audiologist or other medical professional. Permanent hearing loss necessitates a different treatment and follow-up process compared to FHL. For instance, a child with permanent hearing loss might be referred for genetic testing to identify the underlying cause.

Once a hearing loss is identified as fluctuating or conductive (i.e., due to an oscillating problem in the middle ear), a child may need a referral to an otolaryngologist for further consultation. The criteria for this referral include: (1) symptoms persist for 8–12 weeks, especially with speech delays or behavioral issues, (2) otologic abnormalities (e.g., recurrent otitis media or structural issues) are identified, (3) standard audiologic treatments fail, suggesting the need for medical or surgical options, and (4) the diagnosis is uncertain, or hearing loss worsens rapidly, requiring further diagnostic testing. This referral can be made by an audiologist, nurse practitioner, or physician based on the child's symptoms (e.g.,

ear drainage) and medical history (e.g., number of OM episodes in the past six months). Intervention, which may include surgery or medication, will ultimately be determined by a medical doctor. However, primary caregivers can support this process by accurately documenting a child's symptoms and behaviors and sharing these observations with everyone involved in a child's care and education.

#### 1.4.2. Secondary Pathway for Documentation of Hearing Challenges

Primary caregivers play a crucial role in documenting the symptoms and occurrences of fluctuating hearing loss (FHL) in children, while allied healthcare professionals primarily provide treatment recommendations. For this paper, primary caregivers are defined as individuals with repeated, consistent, and naturalistic interactions with a child suspected of or diagnosed with FHL. This includes the child's family members [53,54], teachers, and other support workers who have regular (e.g., daily or weekly) contact with the child and family [5,11]. Secondary caregivers, on the other hand, are those who have sporadic, intermittent, and possibly less frequent observations of the FHL. This group includes allied healthcare professionals, healthcare workers, audiologists, speech-language pathologists, family physicians, and ear-nose-throat physicians. An Indigenous or local healthcare worker as a primary caregiver and information conduit to secondary caregivers may be possible and/or beneficial in some communities.

Current literature supports the need for enhanced reciprocal dialogue between primary and secondary caregivers (i.e., Pathway 1 and Pathway 2) [17,29,50]. As stated above, a baseline hearing assessment is essential to rule out permanent hearing loss and provides a foundation to understand the degree and etiology of changes in a child's hearing. Once established, various tools can be used to document and monitor hearing-related outcomes. It is likely not practical or possible for a child in a remote or rural setting to see a clinician for every OM bout. In addition, sudden changes in a child's behavior, often misinterpreted as behavioral issues, can sometimes indicate episodic hearing loss [34]. Implementing documentation tools could help uncover otherwise concealed FHL.

Without consistent and reliable access to clinicians, alternative strategies are crucial to (1) increase reciprocal dialogue between primary and secondary caregivers, (2) document the real-time consequences of FHL, (3) gather informative, accurate data on representative populations, and (4) inform treatment approaches.

In the next section, we will discuss documentation tools that can be used in the secondary pathway to facilitate communication between primary and secondary caregivers.

## 2. Tools for Documentation

### 2.1. Ling-Madell-Hewitt (LMH) 10 Sound Check for Primary and Secondary Caregivers

If there is suspected hearing loss, an educator or guardian can perform an assessment such as the Ling-Madell-Hewitt (LMH) 10 Sound Check [58,59] which can be administered within the classroom (see Appendix A). This test utilizes speech sounds ranging from low to high frequencies and is a quick way to determine if a child is experiencing mild hearing difficulties. To further understand how the LMH 10 assesses hearing, it uses the "Speech Banana", which depicts the typical frequencies of conventional speech; this resource can be found online; and the link is available in the Supplementary Materials Section of this paper [60]. These evaluations are designed for real-life applications, are readily available, and are feasible to employ without extensive background knowledge and training. These tools must be administered in a quiet environment without visual cues to accurately assess what the child is hearing. If the LMH 10 is not feasible for environmental reasons (e.g., language spoken, access to printable materials), other options can be adapted to the child's environment.

### 2.2. Single-Case Experimental Designs (SCEDs) for Primary Caregivers

Another mode of tracking FHL is through single-case experimental designs (SCEDs). SCEDs are helpful and easy to implement as documentation for primary caregivers with

repeated and consistent access to a child’s behavior. The approach is particularly useful for studying FHL, as the condition’s frequency, duration, and severity are dynamic, with consequences that may be far-reaching regarding behavioral and cognitive performance and long-term outcomes [54]. SCEDs rank as high-quality evidence for treatment decision purposes in individual patients [61]. They present a lower risk (i.e., saying there are no FHL consequences when there are) compared to group-based studies utilizing a single time point. The inherent power of the design comes from repeated measures, and they are suited to investigate low-prevalence problems. However, there are several criteria that a primary stakeholder should consider when using a SCED to document FHL.

2.2.1. How to Select Hearing-Related Behavior or Medical Symptom to Document

Choose a hearing-related behavior and/or medical symptom that can be easily monitored and tested regularly (i.e., television volume levels, ability to repeat words without visual cues, or the LMH 10 performance described above; see Figures 1–3 for examples of medical, behavioral, and school-related outcomes; see Table 1 for examples of possible outcomes). These outcomes will be the critical information that secondary caregivers can use to understand the magnitude and trajectory of FHL and make informed treatment decisions. Applications for mobile devices exist to screen or test hearing (e.g., hearWHO by the World Health Organization), but caution must be exercised as most are not meant to be used with children.

Family: Medical Symptoms (place an X mark when the symptom is present and at what level)

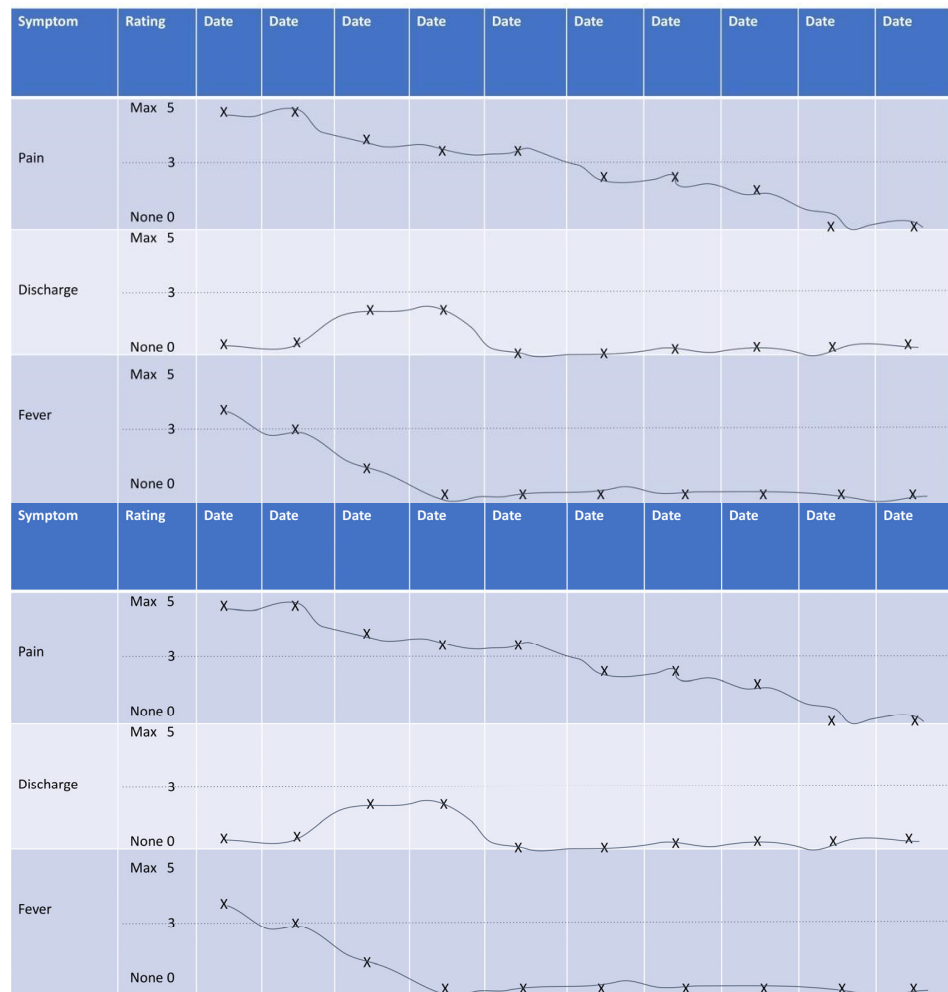


Figure 1. Example of documentation of medical symptoms from a parent of a child with FHL. To use, place an X when the symptom is present and at what level.

Family: Behavioural Symptoms (place an X mark when the symptom is present and at what level)

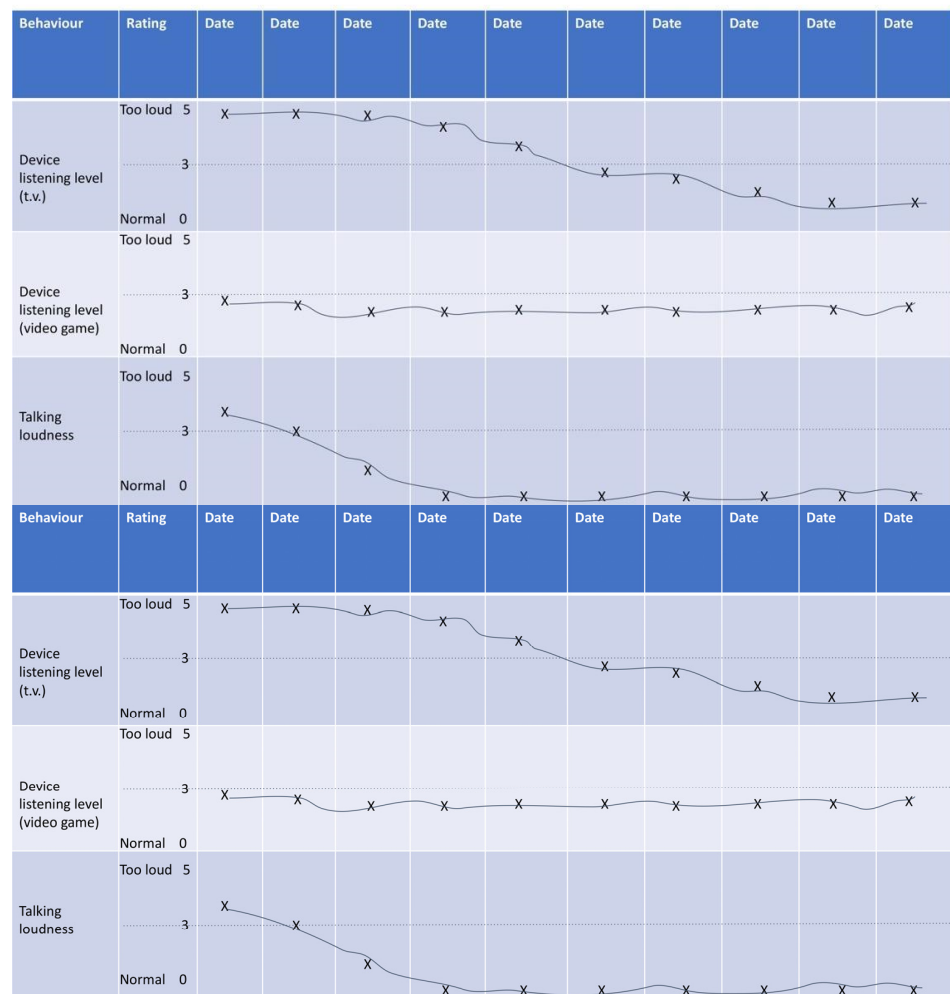
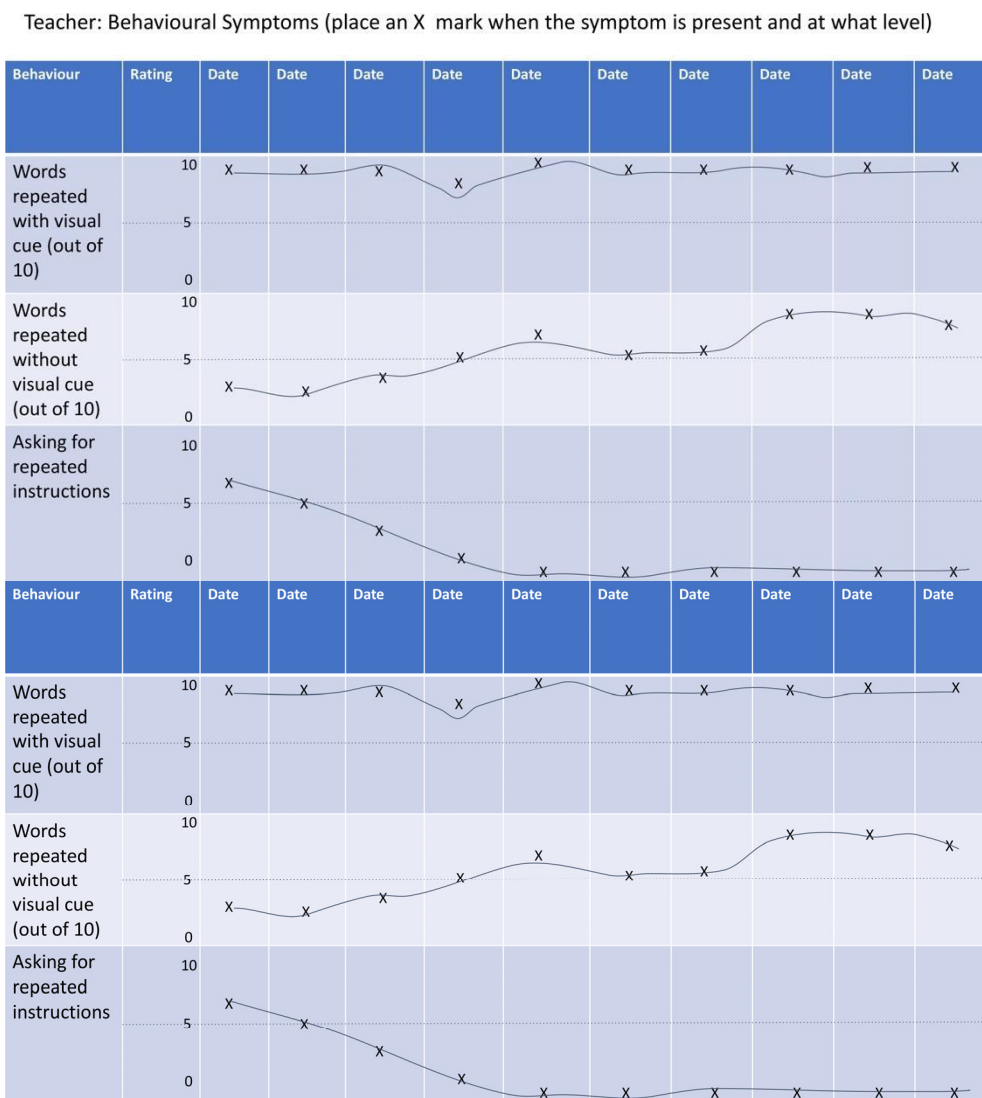


Figure 2. Example of documentation of behavioral symptoms from a parent of a child with FHL. To use, place an X when the symptom is present and at what level.

Table 1. Examples of Hearing-Related Outcomes to Measure in Home or School \*.

Outcomes
Acting out
Loud/soft talking (change in typical loudness)
Not following instructions
Behavioural outbursts
Asking for repeated instructions
Repetitions of words with visual cue (i.e., seeing the mouth)
Overly tired
Repetitions of words without visual cue (i.e., hide the mouth)
Misinterpreting instructions
Performance on dictated spelling tasks
Misunderstandings with peers
Performance in language comprehension
Ling 6 or 10 Sound Check
Performance on story retell
Detection of sounds/words
Complaints of pain/fever/popping sounds
Discrimination of sounds/words
Lethargy
Identification of sounds/words
Capacity of workload

\* Potential behavioral, cognitive, and academic outcomes that could be impacted by FHL and tracked via a SCED.



**Figure 3.** Example of documentation of behavioral symptoms from a teacher of a child with FHL. To use, place an X when the symptom is present and at what level.

2.2.2. How to Select Non-Hearing-Related Behavior to Document

Choose a non-hearing-related behavior that can be easily monitored and tested regularly (i.e., written instructions, finger tapping, ability to sort objects into animals and non-animals) (see Table 2 for examples). These behaviors should not be impacted by the FHL hearing loss. However, documenting these non-hearing behaviors serves as a great ‘control’ measure for the secondary caregivers to rule out alternate diagnoses. For example, suppose a child shows the capacity to solve age-appropriate math problems when presented in a written format but struggles to complete math problems presented verbally; in that case, general ‘challenges with math’ can be ruled out. The difference between hearing the math problems vs. understanding the math problems is disentangled by separating the two modes of presentation. Together, the ‘control’ measures provide a rich context for secondary caregivers to make informed decisions about treatment pathways.

**Table 2.** Examples of Non-Hearing-Related Outcomes to Measure in Home or School \*.

Outcomes
Focus (i.e., attention)
Age-appropriate math problems

Table 2. Cont.

Outcomes
Simple motor tasks (i.e., finger tapping, jumping jacks, etc.)
Discrimination of objects/shapes (i.e., animal vs. non-animal)
Sorting of objects/shapes into categories

\* Potential behavioral, cognitive, and academic outcomes that would not be impacted by FHL and tracked via a SCED.

### 2.2.3. The Benefit of Frequent Documentation

Measure the behaviors repeatedly. Repeated measurements help determine the natural variability of the behavior when a child is experiencing fluctuations in hearing. Repeated measurements allow caregivers to observe the effects of FHL over time, thereby demonstrating a clear cause-and-effect relationship. By comparing behavior before, during, and after the FHL episode, healthcare providers can assess the direct impact of the FHL on the target behavior.

What is particularly useful about the SCED approach to documentation is that the charts can be easily generated (either by hand or via print), put into easily accessible areas (i.e., on a bedroom door, on the fridge, hanging on a locker, etc.), and take minimal time/effort to populate, all of which contribute to increased adherence to repeated measurements without a significant burden on the primary caregiver. Blank versions of Figures 1–3 are available in Appendix B for use.

### 2.3. Summary of Primary and Secondary Pathways

First, arrange for a full diagnostic hearing assessment with a medical professional (e.g., audiologist) as soon as possible. Once a hearing loss is confirmed to be fluctuating and conductive secondary to OM: (1) identify and list all the primary and secondary caregivers in a child’s life, (2) choose the documentation tool(s), (3) consistently measure and document the chosen behaviors, (4) share the documentation with all identified caregivers, and (5) implement the appropriate accommodations (Figure 4).

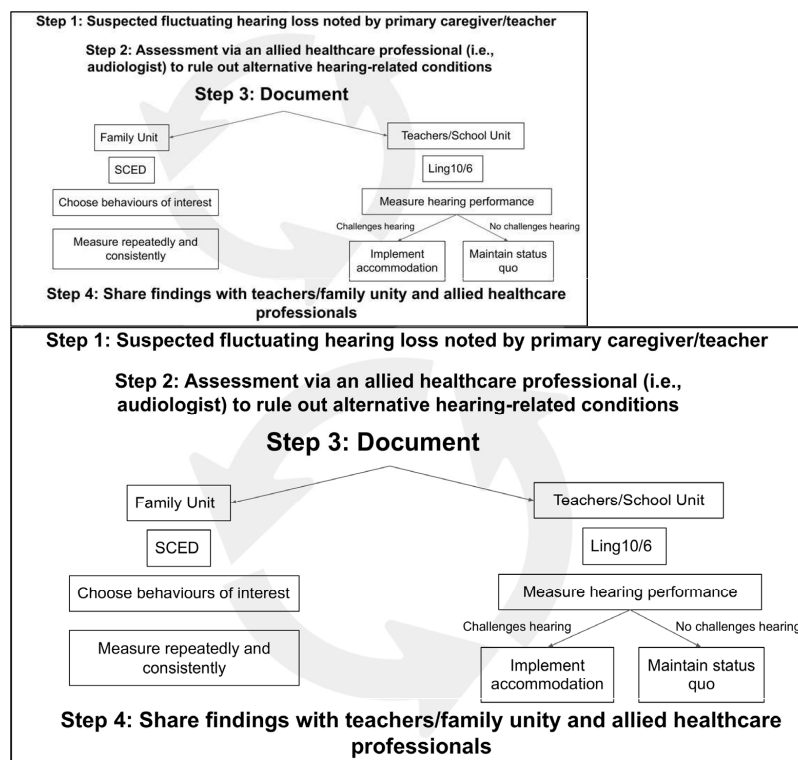


Figure 4. Schematic representation of the potential knowledge sharing between primary caregivers and allied healthcare professionals regarding fluctuating hearing loss.



### 3. Potential Impact of Secondary Pathways on Understanding FHL Consequences

Unlike permanent types of hearing loss, a common recommendation for FHL is a 'wait and see' approach, as the medical consequences associated with FHL often resolve on their own [1,62,63]. However, the literature on the academic, psychosocial, and emotional consequences associated with FHL suggests a need to implement some form of treatment, with the ultimate goal being to provide consistent, high-quality access to speech and language [33,58,64–69].

Numerous studies suggest that the family unit typically provides children with their first introduction to speech and sound [68,70–72]. If a child can hear various words and phrases, they will have a greater opportunity to establish a robust lexicon [43,66,67,70–74]. Opportunities that encourage vocabulary acquisition include reading bedtime stories and engaging in conversations around the table. The quality of the phrases children hear is more important than the number of words because incorrect terms must be retaught [33,65–68]. Children with FHL may miss these listening and learning opportunities if changes are not promptly implemented.

The Bachelor Institute of Indigenous Tertiary Education has developed the Families as First Teachers (FaFT) program, which provides tools for families to use when their children (0–3 years) have episodic hearing loss. These resources are geared toward remote locations where clinicians are not readily available and follow a play-centered approach that families can seamlessly implement into daily activities [54].

#### *Supports for Children with FHL*

In classrooms, high noise levels can make it difficult for children to hear speech over the surrounding noise. For children with FHL, their ability to hear the teacher's voice over environmental noise may vary daily. The signal-to-noise ratio (SNR) is the difference between the desired signal (e.g., teacher's voice) and background sounds (e.g., ventilation fan). Improving the SNR for children with FHL can also help significantly reduce listening fatigue. Listening effort refers to the cognitive resources required to understand auditory information, especially in challenging listening environments [69]. This concept is often associated with situations where background noise, poor acoustics, or hearing impairments make it difficult to comprehend speech, requiring the listener to allocate additional mental effort to process and interpret the auditory input. Listening effort is not just about hearing the sounds but involves actively focusing, processing, and understanding the spoken message, often leading to cognitive fatigue when sustained over time. Soundfield systems (i.e., FM systems) are examples of technologies that educators can use to improve sound quality for all children, those with and without FHL [6,18,25,65]. In Canada, several schools have piloted and advocated for schoolwide soundfield systems because of their widespread benefits for students and teachers [75]. Universal soundfield systems may also eliminate the families' obligation to purchase hearing instruments, which can be costly.

Classroom accommodations for students with FHL should be similar to those for students with permanent hearing loss. Strategies include pre-teaching, prioritized seating, minimizing background noise, providing text or visual materials to complement instruction, and frequent check-ins to ensure understanding [69]. Teachers should monitor the child's progress relative to these accommodations to determine their effectiveness.

Some audiology clinics have loaner programs where children can borrow non-surgical bone conduction devices (BCDs). These technologies are advantageous because they can also be used outside the classroom, such as at home or in recreational facilities. BCDs also lend themselves to further documentation via single-case experimental designs (SCEDs), allowing primary caregivers to monitor hearing and behavioral changes with and without the device. This approach provides a more accurate picture of the potential benefits being realized.

#### 4. Summary

Middle ear infections are prevalent in young children [3], and a common sequela of this condition is fluctuating hearing loss (FHL). Despite the temporary nature of FHL, it can have lasting impacts on developmental outcomes, including auditory and language development [2,6,33–35,43,74,76,77]. Children with FHL face increased educational and psychosocial challenges due to the variable nature of the condition, which often goes unnoticed. While much of the existing literature on FHL focuses on post-episodic outcomes, there is a need for real-time strategies and recommendations for managing FHL as it occurs.

Establishing a collaborative dialogue between primary and secondary caregivers is essential for identifying and managing FHL in real time. Primary caregivers are responsible for documenting changes in hearing that can then be used by secondary caregivers (e.g., educators, healthcare providers) to develop timely and effective treatment strategies. Although hearing loss may be temporary, timely intervention is critical as the effects can sometimes become permanent [1,6,10,12].

Children in marginalized communities, particularly those in rural and Indigenous settings, are disproportionately affected by FHL secondary to otitis media (OM) and are often undertreated for hearing loss [6,7,9,10,12,54,68,78]. The recommendations in this guideline are designed to be practical and accessible, with a specific focus on rural and Indigenous communities, helping to bridge the gap in care and ensuring that documentation practices are inclusive and widely applicable.

#### 5. Study Limitations and Future Directions

This guideline has been developed based on peer-reviewed literature and our team's perspectives/inputs (including those we have consulted): audiologists, academics with HL, parents of children with FHL, an Indigenous social worker, and an otolaryngologist. The recommendations should be supplemented with professional guidance and care. In addition, every family's setting and experience are unique. We welcome feedback from users and readers to improve future iterations of this guide so it can be applicable to all situations.

#### 6. Conclusions

Ongoing, consistent monitoring of FHL is the foundational step in understanding the full extent and impact of this condition on children [2,64,77,78]. However, there remains a need for more representative and inclusive studies on FHL, especially those that focus on rural and Indigenous communities. Expanding the research base will provide a clearer understanding of FHL, helping to develop more effective support systems.

When primary caregivers actively monitor a child's hearing, they become better equipped to advocate for the necessary resources to support that child's learning, speech, and language development. This is particularly crucial for populations in remote areas, where access to professional services is often limited. The tools we recommend are accessible, easy to use, and empower primary caregivers to take an active role in the documentation process, thus facilitating the knowledge transmission between caregivers and professionals.

While these recommendations are not exhaustive, they aim to foster a collaborative dialogue between families, educators, and healthcare professionals. By working together, we can better understand the far-reaching effects of OM and implement more personalized and effective management strategies for FHL in children.

**Supplementary Materials:** The following supporting information can be downloaded at <https://ohns.ucsf.edu/audiology/education/peds> (accessed on 27 November 2024): SpeechBanna; [https://bit.ly/3j7svLU\\_LMH10SoundTest](https://bit.ly/3j7svLU_LMH10SoundTest) (accessed on 27 November 2024).

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A.V.O., S.A.S., W.H. and J.C.; visualization, C.C., K.J. and J.C.; supervision, J.C. and W.H.; project administration, A.V.O. All authors have read and agreed to the published version of the manuscript.

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**Conflicts of Interest:** The authors declare no conflicts of interest.

**Appendix A**

**The LMH 10 Sound Screening Test**  
Ling, Madell, Hewitt - Low Mid High Frequency


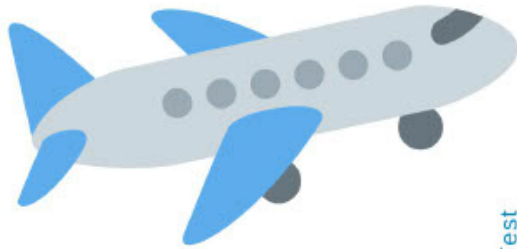
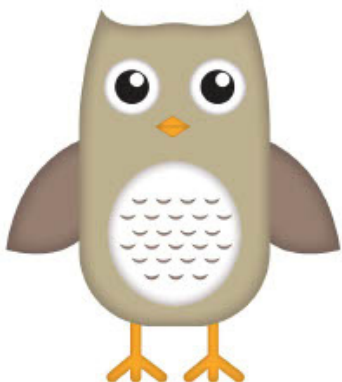


Child: \_\_\_\_\_ Tester: \_\_\_\_\_ Date: \_\_\_\_\_

	Right Technology	Left Technology	Binaural	Remote Mic System		
a						
u						
i						
f						
s						
m						
n						
h						
z						
dʒ						

© Listen With Lynn

**Figure A1.** Blank Worksheet for the LMH 10 Sound Screening Test.

LMH  
10 SOUND  
TEST  
CARDS

 <p>mm mm mm</p> <p style="text-align: right;">LMH Test ©Listen With Lynn</p>	 <p>aa aa aa</p> <p style="text-align: right;">LMH Test ©Listen With Lynn</p>
 <p>oo oo oo</p> <p style="text-align: right;">LMH Test ©Listen With Lynn</p>	 <p>ee ee ee</p> <p style="text-align: right;">LMH Test ©Listen With Lynn</p>
 <p>sh sh sh</p> <p style="text-align: right;">LMH Test ©Listen With Lynn</p>	

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Figure A2. Cont.

 <p>SS SS SS</p> <p>LMH Test ©Listen With Lynn</p>	 <p>nn nn nn</p> <p>LMH Test ©Listen With Lynn</p>
 <p>ZZ ZZ ZZ</p> <p>LMH Test ©Listen With Lynn</p>	 <p>jj jj jj</p> <p>LMH Test ©Listen With Lynn</p>
 <p>hh hh hh</p> <p>LMH Test ©Listen With Lynn</p>	<p>nothing</p> <p>LMH Test ©Listen With Lynn</p>

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Figure A2. Flashcards for LMH 10 administration.

**Appendix B**

Primary Unit: Medical Symptoms (place an X mark when the symptom is present and at what level)

Symptom	Rating	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date
	Max 5										
	3										
	None 0										
	Max 5										
	3										
	None 0										
	Max 5										
	3										
	None 0										

**Figure A3.** A blank version of Figure 1, for documentation of medical symptoms from a parent of a child with FHL. To use place an X when the symptom is present and at what level.

Primary Unit: Personal/Behavioural Symptoms (place an X mark when the symptom is present and at what level)

Behaviour	Rating	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date
	Max 5										
	3										
	None 0										
	Max 5										
	3										
	None 0										
	Max 5										
	3										
	None 0										

**Figure A4.** Blank lank version of Figure 2, for documentation of behavioral symptoms from a parent of a child with FHL. To use place an X when the symptom is present and at what level.

Teacher: Personal/Behavioural Symptoms (place an X mark when the symptom is present and at what level)

Behaviour	Rating	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date
	Max 5										
	3										
	None 0										
	Max 5										
	3										
	None 0										
	Max 5										
	3										
	None 0										

Figure A5. Blank version of Figure 3, for documentation of behavioral symptoms from a teacher of a child with FHL. To use place an X when the symptom is present and at what level.

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