

# Pediatric Unilateral Hearing Loss

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# Definition

Any degree of permanent hearing loss in one ear  
(Pure-tone average (500, 1000, & 2000 Hz) > 15 dB)

+

Normal hearing in the opposite ear

# Statistics

- Permanent hearing loss
  - 3-4/1,000 births (Prieve & Stevens, 2000; Watkin & Baldwin, 2011)
- Permanent UHL varies depending on the definition of hearing loss
  - approximately 1 per 1000 infants based on newborn screening cohorts (Finitzo et al, 1998; Dalzell et al, 2000; Prieve & Stevens, 2000)
  - school-age children ~ 3% (30 per 1000) (Bess et al, 1998; Porter et al, 2016)
  - up to 14% (140 per 1000) in adolescents when a broader definition of low-frequency or high-frequency unilateral loss was applied (Shargorodsky et al, 2010).

# Statistics

- 1/3 of children with UHL fail at least 1 grade (Lieu 2004; Tharpe 2008)
- >1/5 have persistent academic or behavioral problems (Lieu 2004; Tharpe 2008; Lieu et al. 2012; Kuppler et al. 2013; Most 2004)
- 21% of children with UHL had amplification recommended within the first 3 months following confirmation of hearing loss, compared to 60% of those with mild bilateral hearing loss (Fitzpatrick et al, 2014)
- Inconsistent use of amplification by children with minimal loss with reports of use ranging from 50% to 70% (Davis et al, 2001; Reeve, 2005; Fitzpatrick et al, 2010)

# Known Challenges

- Understanding speech in complex listening environments
- Localizing where sound is coming from
- Speech and language outcomes (reviewed by Anne, Lieu, & Cohen, 2017)
  - Morphology (Davies et al., 2020)
  - Narrative skills (Young et al., 1997)
  - Verbal reasoning (Martinez-Cruz et al., 2009)
  - Early language development (Kishon-Rabin et al., 2015)
  - Phonological processing (Nassrallah et al., 2018)
  - Comprehension (Lie et al., 2010; Fischer & Lieu 2014; Griffin et al., 2019)
  - Nonword learning and categorization (Pittman)

# Known Challenges

- Listening-related fatigue (Bess et al., 2020)
- Listening effort (Oosthuizen et al., 2021)
- Social emotional skills (Borton et al., 2010 ; Laugen et al., 2017)
- Functional auditory skills, as per parent report (Corbin et al. 2021; Nassrallah et al., 2018)
- Quality of life (Borton et al., 2010; Roland et al., 2016)
- Intelligence (Purcell et al., 2016)

# Guidelines and Position Papers

INTERNATIONAL JOURNAL OF AUDIOLOGY  
<https://doi.org/10.1080/14992027.2019.1654620>



LSHSS

REVIEW ARTICLE

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Clinical Focus

## Consensus practice parameter: audiological assessment and management of unilateral hearing loss in children

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## Audiological Considerations for Managing Mild Bilateral or Unilateral Hearing Loss in Infants and Young Children

Marlene Bagatto<sup>a</sup>

## Comprehensive Audiological Management of Hearing Loss in Children, Including Mild and Unilateral Hearing Loss



Kathryn Wiseman, PhD<sup>a</sup>, Caitlin Sapp, PhD<sup>b</sup>, Elizabeth Walker, PhD<sup>b</sup>, Ryan McCreery, PhD<sup>a,\*</sup>

Nicole Corbin, 2022

INTERNATIONAL JOURNAL OF AUDIOLOGY  
2021, VOL. 60, NO. 3, 183–190  
<https://doi.org/10.1080/14992027.2020.1804080>



ORIGINAL ARTICLE

 OPEN ACCESS

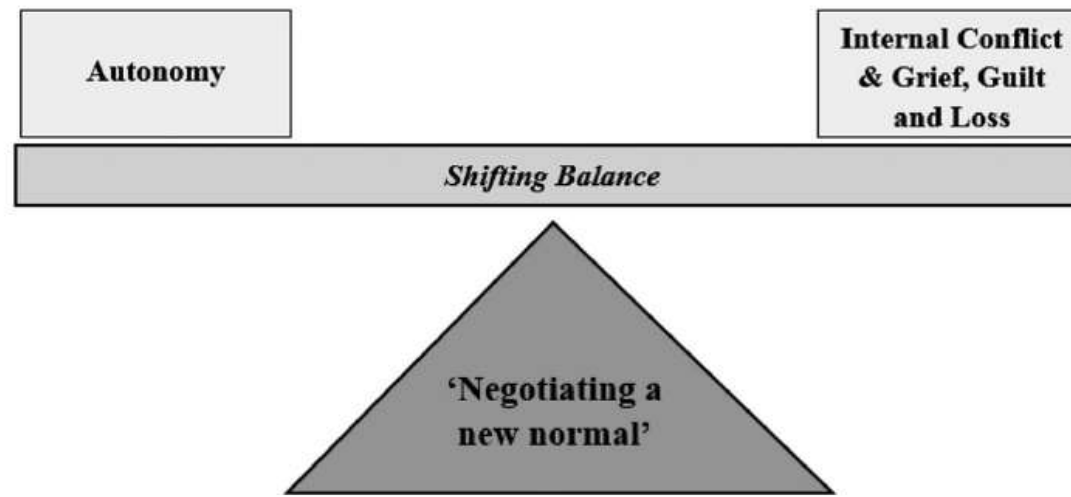


## Exploring how parents of children with unilateral hearing loss make habilitation decisions: a qualitative study

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**Figure 1.** Framework of family decision making on management of unilateral hearing loss in children: Decision making is a balance of internal conflict and autonomy centring on a process of 'negotiating a new normal'.

Saira Hussain, Helen Pryce, Amy Neary & Amanda Hall (2021) Exploring how parents of children with unilateral hearing loss make habilitation decisions: a qualitative study, *International Journal of Audiology*, 60:3, 183-190, DOI: 10.1080/14992027.2020.1804080

# Hussain et al., 2021 Habilitation Decisions

- Summary
  - Parents continuously cycle through this process
    - Decisions about UHL are not linear
    - Product of iterative assessments of child's progress over time
  - Integrate information from:
    - Observations
    - Guidance of professionals
    - Child's opinions
  - This iterative assessment is shaped by the habilitation options they perceive to have been offered



Contents lists available at [ScienceDirect](#)

## International Journal of Pediatric Otorhinolaryngology

journal homepage: [www.elsevier.com/locate/ijporl](http://www.elsevier.com/locate/ijporl)



### Decision-making following identification of an infant's unilateral hearing loss: Parent and professional perspectives

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# Porter et al., 2021 Decision-Making

- Three main themes captured the decision-making process following early identification of UHL
  1. Motivation for decision making

# Porter et al., 2021 Decision-Making

## 1. Motivation for decision-making (regarding amplification)

- Two subthemes identified
  1. Parent-centered motivations
    - Seeking “normal”
    - Doing something

*“I think even though we don’t have any evidence for it, it’s like, well, can you do something or not do something? To aid a child, you’re actually making a positive step towards doing something for them. Whereas when you’re not aiding them, I feel like you’re maybe not giving them every opportunity.”*

# Porter et al., 2021 Decision-Making

## 1. Motivation for decision-making (regarding amplification)

- Two subthemes identified

1. Parent-centered motivations

- Seeking “normal”
- Doing something

2. Child-centered motivations

- Benefits of binaural hearing
- Age-appropriate language
- Listening and learning
- Social and emotional wellbeing

*“I worry about localisation of sound when she’s riding a bike ... and ... crossing a road.”*

*“... providing the best opportunity for our child to succeed in her speech and language development”.*

*“At school, you know, I didn’t want him to come home and say he couldn’t hear the teacher, or he couldn’t hear whoever because it wasn’t loud enough ... I don’t want him to get left behind.”*

*“... just want him to be a happy and confident kid”*

# Porter et al., 2021 Decision-Making

- Three main themes captured the decision-making process following early identification of UHL
  1. Motivation for decision making
  2. Limited evidence creates uncertainty

# Porter et al., 2021 Decision-Making

## 2. Limited evidence creates uncertainty

- Three subthemes
  1. Uncertainty about outcomes
  2. Uncertainty about options for management of UHL
  3. Uncertainty about timing of interventions



# Porter et al., 2021 Decision-Making

## 2. Limited evidence creates uncertainty

- Three subthemes

1. Uncertainty about outcomes

- *"It's hard because [parents] just want to know if everything is going to be, you know, normal ... and, I guess, research-wise it's really hard to say exactly what kind of outcomes they're going to ... like there's no kind of conclusive research to say they're going to have X, Y, and Z problems."*
- *"If there was concrete research to say either way ... what was a better option ... which was not ... 'cos I know outcomes are so variable. I don't feel like I have any answers for parents ... with a child with unilateral hearing loss."*

# Porter et al., 2021 Decision-Making

## 2. Limited evidence creates uncertainty

- Three subthemes

- 2. Uncertainty about options for management of UHL

- *“We don’t really have a clear recommendation for them, so we probably put a lot back on them and probably expect them to make a whole lot of sense out of information that probably wouldn’t make much sense to them” (C).*
    - *“I mean ... to be honest ... to be brutally honest, there has been no management plan ... Basically just to wait and see ... come back ... and hearing checks of the ear, or both ears, every six to twelve months”*

# Porter et al., 2021 Decision-Making

## 2. Limited evidence creates uncertainty

- Three subthemes

- 3. Uncertainty about timing of interventions

- *“If amplification is indicated, then I think it should be tried ... robustly” (C).*
    - *“... there is no way of knowing which children are going to have those difficulties later and those who manage well with other strategies” (C).*

# Porter et al., 2021 Decision-Making

- Three main themes captured the decision-making process following early identification of UHL
  1. Motivation for decision making
  2. Limited evidence creates uncertainty
  3. Available evidence builds certainty

# Porter et al., 2021 Decision-Making

## 3. Available evidence builds certainty

- Expert advice
  - Audiologist
  - ENT
  - Early intervention team
    - Speech-language pathologist, social worker
- Written resources
  - *“The research for bilateral hearing loss tells us that the earlier you start, the better. So, we figured that maybe it would be the same” (P).*
- Lived experience
  - Online support groups
  - Community
  - Parent to Parent

# Recommendations

- Shared decision-making is challenging in the case of UHL
- Avoid dichotomous approach
  - Consideration of bias and ethics
  - Consideration of an iterative approach
- Provide with critically evaluated, balanced information
- Assist with understanding potential outcomes
- Connect with other families
- Connect with other experts
- Be on the lookout for patient decision aids/shared decision-making aids

# Recommendations

- Audiologists, families, teachers, other professionals involved in the child's care
  - Tools to identify listening and/or speech-language concerns
- Become familiar with the developmental screening tools endorsed/used by pediatricians
- Early intervention services
- Additional intervention and caregiver coaching should be provided if needed to facilitate auditory, linguistic and cognitive development.