Early Fitting of Amplification Best Practice Guidelines

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Moeller, 2000

- Significantly better language scores at age 5 are associated with early intervention

Sharma et al, 2002

- Auditory system maximally plastic in first 3.5 years. After age 7 plasticity is significantly reduced

Tomblin et al, 2014

- Speech and language outcomes are improved when hearing aids are fitted early and fitted well – OCHL study

Ching et al, 2017

- Children with amplification introduced at 24 months had poorer language at age 5 than children with amplification introduced at 3 months – LOCHI study
JCIH guidelines give a 1-3-6 benchmark

- Screening completed by 1 month
- Diagnosis by 3 months
- Early intervention by 6 months

Recommended programmes work towards 1-2-3 timeline
How early is early?

Screening: <1 week

Assessment started: 4-5 weeks

Assessment completed: 12-13 weeks

Hearing aid fitted: 16-17 weeks
When to recommend hearing aids?

BSA early intervention guidelines: ‘Bilateral permanent hearing loss of ≥40dBHL’

So not mild or unilateral?

- Children with UHL demonstrate worse oral language scores than those with normal hearing (Lieu et al, 2010)

- Children with a mild hearing loss who use hearing aids full time score higher on grammar and vocabulary measures than non-users (Walker et al, 2015)

- Early hearing aid provision improves speech and language outcomes, including mild hearing loss (Tomblin et al, 2014)
Stages of good early amplification

**Fitting**

- Audiogram Estimation
- HA Selection
- Prescription
- Verification

**Follow Up**

- Validation
- Ongoing Review
Audiogram Estimation

- Conductive overlay?
- Inconclusive traces?
- Nature of hearing loss?
- Confidence Intervals?
- Level of hearing loss?
- dBnHL to dBeHL conversion?

Information to inform management plan

- Peer review
- Clinician continuity
Which device do I consider?

- Power
- Programmes
- Safety
- Compatibility
Why use a prescription formula?

Ensures consistent audibility and improvement in long term speech outcomes

Leads to more comfortable listening and improved speech quality and intelligibility

Recommended by NHSP 2014 and BSA 2018
Which prescription do I use?

Most UK paediatric fittings will be to DSLv5

No significant difference in speech production, perception or language when compared to NAL-NL2
Verification

- Device centric measure of performance
- Performed in 2cc coupler in infants
- RECD to account for small ECV
lanyard helps hold tube in place

tip within 5mm of TM

marker ring at intertragal notch aids in tube depth and indicates movement

RECD - Single view

Guy’s and St Thomas’ NHS Foundation Trust
Middle Ear Effusion

RECD
Verification of frequency lowering

Ensure detection and discrimination of high frequency sounds /s/ and /sh/.

Higher frequencies are presented into a lower frequency region to become audible.

UWO published speech stimuli to accurately assess now included in BSA practice guidance (2018)
Verification of frequency lowering

Lower shoulde

/separatio must be over (3 octave) for discrimination/

/s/
Wearing hearing aids more than 10 hours per day results in greater language growth (Tomblin et al, 2015)

Full-time HA users demonstrated significantly higher scores on vocabulary and grammar measures compared with nonusers (Walker et al, 2015)
Validation

Person centric measure of success

Subjective
- Questionnaires
- Parental/Professional reporting

Objective
- SII
- Behavioural aided testing
- Aided auditory cortical testing
Subjective Feedback

Questionnaires
- LittlEARS
- PEACH
- TEACH

Patient interview
Speech Intelligibility Index

**Legend, Right (2cc)**

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<th>SII</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>55%</td>
<td>SCL V5.0 - 50 (81) dB - ISTS Signal</td>
</tr>
<tr>
<td>2</td>
<td>85%</td>
<td>SCL V5.0 - 65 (89) dB - ISTS Signal</td>
</tr>
<tr>
<td>3</td>
<td>83%</td>
<td>SCL V5.0 - 80 (93) dB - ISTS Signal</td>
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<tr>
<td>4</td>
<td>-</td>
<td>SCL V5.0 - 90 (N/A) dB - MPO Sign.</td>
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<td>5</td>
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Aided testing

<7 months
- Behavioural Observation Audiometry
- CAEP

>7 months
- Aided VRA (NBN)
- LING detection
- LING discrimination

>24 months
- McCormick Toy Test
- Manchester Picture Test
- UWO Plurals
- Phoneme Perception Test
Aided testing
Family-Centered Care is an approach to healthcare that recognizes the vital role that families play in audiological treatment and rehabilitation.
Beyond the first review

- Screening: <1 week
- Assessment started: 4-5 weeks
- Assessment complete: 12-13 weeks
- Hearing aid fitting: 16-17 weeks
- Hearing aid review: 20-22 weeks
- 1st behavioural testing: 30-32 weeks
- 3 monthly reviews
References


Moodie, ST. (2009). Clinician fit-to-DSL targets: Preliminary data from a network study, Audiology Online

References


UWO Paediatric Audiology Monitoring Protocol: https://www.dslio.com/?page_id=283
Thank you for listening

Any Questions?

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