Hearing Aid Trial
Before Cochlear Implantation:
Just Pretending?

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acknowledgements

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HA vs CI

• **HA is the first option (non-invasive); CI is the second option**

• for children <2y act quickly and don’t lose time re neural plasticity and the child’s early communication and language development

• persons with a profound hearing loss (>80-90 dB) most likely will benefit more from CI than from acoustical hearing instruments

  Equivalent Hearing Loss for children with a CI is about 70 dB (Vermeulen, Snik et al 1997, Kiefer et al 2001)

• do not decide on statistical-prognostic data but rather on individual evidence

• ... first try hearing aid... it is “good practice” to run a HA trial before CI
question

• * Is the HA trial a “forced option”?  
• * Is the HA-trial then just a form of pretending?
case documentation
- 3 children -

Possible relevant aspects

• professional and parental expectations of the hearing aid trial
• duration of the trial
• criteria to evaluate effectiveness (age <2 years)
• evidence and/or positions regarding the consequences of cochlear implantation as an alternative option at a later age.

• hearing aid fitting... assumed to be optimal in all three cases
Case-1: Nick

• single child in the family
• regular pregnancy & birth
(1) infection with high fever at age 0;10
(2) hearing screening by pediatrician; parents… no HL suspected
(3) HL suspected by parents at age 2;3
(4) diagnostically confirmed by BERA at age 2;5… 75 dB R-ear and NR L-ear
(5) Audiometrical thresholds 70-80 dB R-ear and 110 dB L-ear; HA provision
(6) Recurrent infections of respiratory tract and middle ear; Nick developed sound awareness but no receptive/expressive spoken language skills
(7) confirmation of HL by BERA
(8) Consulting parents on CI; HA-trial continued for another 3 months.
Case-2: Dave

- third child in the family
- child#1 normal hearing
- child#2 late identified HL (age 2;3), asymmetrical 70/90 dB; 2 HA, very effective; attending regular school setting
- Dave: regular pregnancy & birth
  (1) Normal OAE’s at birth (IfAP project)
  (2) Normal development of listening behaviour at age 0;6 (administered with LittLEARS Parent Questionnaire; an IfAP project)
  (3) Parents suspect HL; confirmed by BERA... NR on both ears
  (4) littLEARS again. Result 0, i.e. no observable listening behaviours any more
  (5) HA fitted
Case-2: Dave (cntd)

(6) Parents expected similar development as with child#2; did not happen, instead no sound awareness, no receptive or expressive spoken language development at all. The issue „CI as an alternative“ raised several times to parents. Parents not convinced.

(7) Only low-frequency, tactile response in aided FF audiometry. LittleEARS at score=8, equivalent to 3 months dev.age. Parents want to start CI selection procedure.

(8) Recurrent ME problems prevent CI-surgery; it takes another 6 months before …

(9) Dave receives CI

This is a turning point in Dave’s development.

(10) LittleEARS score at age 2;10 confirms good development of listening skills in daily life.
Case-3: Nora

- fifth child in the family. Child#1 died (sudden death). Child#3 normal hearing, but CAPD, ADS and general perception deficits.
- no problems re pregnancy or birth. Development in the first year of life normal.

(1) Meningitis at age 0;9

(2) Parents are concerned about hearing; pediatricians and ENT „are not“. NO thorough diagnosis of hearing; „give your child some time to recover“

(3) Parents insist on audiological testing. Result (BERA)… no responses to sound at all

(4) Start of early intervention, including counselling re CI. Preoperative test protocol at CI-centre: confirmation of profound HL; no obliteration of L/R cochlea.

(5) Decision for CI

(6) 4-week trial of HA‘s, bridging the time between decision for CI and surgery date

(7) CI surgery at 2;4
## Discussion - 1

<table>
<thead>
<tr>
<th>Professional and Parental Expectations</th>
<th>Nick</th>
<th>Dave</th>
<th>Nora</th>
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</thead>
<tbody>
<tr>
<td>Diverse: mother &amp; therapist: CI; father, ENT, HAD continue trial with HA</td>
<td>Diverse: Professionals CI; parents HA</td>
<td>Consensus: All support CI</td>
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<tr>
<th>Duration of the Trial</th>
<th>Nick</th>
<th>Dave</th>
<th>Nora</th>
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<tr>
<td>Long: Affected by recurrent ME problems; still continuing; aided HL relatively good</td>
<td>Too long: Ineffectiveness of HA was clear for a long time; CI delayed by ME problems</td>
<td>Very short: Use the time interval waiting for surgery date… „you never know“</td>
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<th>Criteria to Evaluate Effectiveness</th>
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<tr>
<td>No consensus: Aided threshold levels vs spoken language development</td>
<td>Consensus: No spoken language development, no sound awareness, no listening skills (littIEARS), no good aided thresholds</td>
<td>Open Question: Time too short; no unexpected observations pointing to obvious auditory reactions</td>
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<tr>
<th>Cochlear Implantation as an Alternative Option at a Later Age</th>
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<th>Dave</th>
<th>Nora</th>
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<tbody>
<tr>
<td>YES: There is a basic stimulation of auditory pathways and auditory based skills</td>
<td>NO: No basic hearing, no auditory based developments</td>
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• three cases… three different HA-trials
• tuning to individual needs
• not pretending, but real trials

• as aided thresholds do have a limited prognostic value, we need more specific evaluation tools:

  … clinical procedures to test suprathreshold auditory skills in children <2 (f.i. auditory discrimination with VRA, like A§E/Antwerp)

  … normed and validated evaluation tools for preverbal development, like parent or professional questionnaires (littlears(1,2) for hearing; similar PQ's for early speech & communication).

(1)

AAST - Speech Recognition Threshold

HA - children

Coninx 2004, IfAP-Projekt „EHL“
Case Study

(2)
Nick,
L-ear
Nick,
R-ear