


1  Changing Educational Services.

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3  Changing population
in countries were they have:

Universal Newborn Hearing Screening:
-Flanders (Belgium): 1998 (1999)
-The Netherlands: 2003-2006
-UK: 2002-2006

Early multidisciplinary support and guidance


Digital Hearing Aids (Paediatric Audiology)

Cochlear Implants


4  Early identification with earlier intervention
(< 6 months) can lead to:

- ◆ Better auditory performance (Yoshinago-Itano, 2000)
- ◆ A language development which is significant better than later identified children (Yoshinago-Itano, 2000)
- ◆ Better speech intelligibility
(Coulter & Thomson, 2000; Schauwers, 2002)
- ◆ Better parent attachment (Pressman, 1998; Lichtert 2001, 2003)
- ◆ Less social-emotional problems (Pressman, Pipp-Siegel, 1999)
- ◆ Higher reading level at age 10 (Yoshinago-Itano, 2000)

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6  Cochlear Implantation in deaf children can lead to:

- ◆ Better auditory performance
(Archbold , 1999; Robbins 2004; Kirk et al.)
- ◆ Better auditory memory
(De Raeve, 2002; Leybaert 2002; Pisoni, 2003)
- ◆ Better speech intelligibility, speech production
(Schauwers, 2002; Brown, 1999; Chin et al. 2004)
- ◆ Higher expressive and receptive language level
(Svirsky, 2003; Dettman, 2003, De Raeve, 2003, Stallins et al, 2004)
- ◆ Change their communication mode: sign to oral
(Archbold, 2002, ; Novak et al.2002)
- ◆ Equal number of social-emotional problems
(Viról, 2003)
- ◆ Higher reading level
(Vermeulen A, 2000; Willstedt-Svensson, 2003)

7  Growth in paediatric implantation
world-wide

8  Nucleus Worldwide Recipients Under 3

N=10,121 @ 11th January 2005

- 9 **Percentage of profoundly deaf children in the UK with cochlear implants, by age (as at 2000, and 2003)**
- 10 Percentage of profoundly deaf children < 6 y in KIDS-Hasselt (Belgium) with cochlear implants
De Raeve Leo, 2005.
- 11
- 12 Universal Neonatal Hearing Screening and Cochlear Implants are influencing (changing):
 The family
 Home guidance team/early intervention team
 Paediatric Audiology
 Communication mode
 Education and rehabilitation
 Outreach programmes
 ...
 Deaf community
- 13 **THE FAMILY :**
importance of parental involvement
 UNHS: parents don't expect a problem: bad news in a euphoric period
 "When emotions are high, cognition is low"
 Earlier diagnosis leads to earlier thinking about implantation
 Implantation may appear as a quick "fix"
 Family expectations after CI should be realistic
Sinninger (2002): "children from families who expect that cochlear implant surgery will provide an easy fast fix for deafness will not make good candidates"
 Parental stress during/after cochlear implantation
 Stress on 'parent-child interaction'
- 14 **Home guidance team/
EARLY INTERVENTION team**
 More knowledge on development of very young children
 Enable high quality parent - child interaction in first months of life for all children
 Empower parents of hearing impaired children to make informed choices regarding communication options
 Stress on parent-child interaction
 Multi-disciplinary approach: working close together with: parents, ToD, SLT, ENT-doctors, day-care centre, Foundations, Governmental organisations... CI-centre
- 15 **PAEDIATRIC AUDIOLOGY**
 The equipment
-insert phones
-special small bone conductor
-RECD measurement
-objective measurements: ABR, SSEP,...
-subjective measurements: AŞE,...
 Position of the child
 How do you test ?

- observation (reflex) audiometric
- visual response audiometric

- Making ear moulds (every month)
- Wearing hearing aids on clothes
- Choosing flexible hearing aids

16 PAEDIATRIC AUDIOLOGY

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18 COMMUNICATION MODE
and passive language (PPVT) of 13 CI-children
3 years after CI, Patricia Spencer, Gallaudet Univ. 2004.

19 COMMUNICATION MODE
 Not only the sensitive period for auditory/visual access to language, but also **early language experience** is crucial for first language acquisition (Rachel Mayberry, 2003)

- Mark Marschark (2002): deaf children with the highest literacy level at age 16 are those who had a good communication (spoken or signed) with their parents in early life.
- Growing popularity of signing for hearing children: less frustration by the limits of vocal output, cognitive development and spoken language development will proceed at a more rapid rate. So why should we refuse to sign to deaf kids.
(J. Berke, Baby Signing, 2002)

20 COMMUNICATION MODE

- But: **95% of the parents are normal hearing** and do not (want to) learn sign language very quickly,... So: let us start to communicate in their natural language (**‘spoken language’**) and let us ‘adapt’ it to deaf children.
- Should we support immigrant families to **speak their native language** instead of simplified English ?
- SIMCOM** can be a safe way to communicate with young deaf children. In the early months ‘communication’ is more important than language (Pat Spencer, 2004)
- Signed English systems were not successful, because the deaf child did only pick up the ‘limited’ visual language and did not hear all the words. Now children with cochlear implants can hear all words in a quiet environment.

21 EDUCATION and REHABILITATION

- Special day care centre** for baby’s and toddlers with a hearing loss:
 - close to audio-technical support
 - to fit hearing aids/CI (quicker)
 - to work close together with the parents/CI-centre
 - to stimulate the communication of the child
 - to start with speech (hearing) therapy
 - where they can meet their peers (Deaf models ?)

22 EDUCATIONAL placement of early screened children with cochlear implants in Belgium
(n=30) Cora-CI, Belgium (2004)

23 EDUCATION and REHABILITATION

- have to adapt their way of working
(easier in oral schools than in TC/bilingual schools)
- growing number of children in preschool
- less children in primary/secondary school
- more mainstreamed children
- more staff moving to mainstreamed support service/outreach programme
- “auditory stimulation” :
 - audio-technical support (FM-systems)
 - during daily life

in music therapy
in hearing therapy
-holiday courses for (mainstreamed) peers

24 EDUCATION and REHABILITATION

-profoundly deaf children **can now hear** in a way that was not previously possible
-professionals have to **adapt their expectations** "some parents have to high expectations but some professionals have to low expectations"
-they have to be **flexible**
-**hearing (auditory) training** integrated in speech and language therapy is very important
-level of training depends on:
 age of the child, mental development, age of implantation, auditory capacity, duration of CI-use, communication mode, additional handicap, social background, character of the child

25 EDUCATION and REHABILITATION

Do these children need extra support (rehab) or not
?..... Yes

26 EDUCATION and REHABILITATION Influence of additional handicap on the Capacity of Auditory Performance (CAP), Leo De Raeve,Belgium, 2001

27 **The outcomes :**

heterogenous results are not only influenced by age, but also by...

The Cochlear Implant Device

-electrodes
-speech coding strategies
-stimulation rate

Fitting

-NRT (Neurale Respons Telemetry)
-fitting team

Medical aspects

-experienced surgion
-situation of the cochea (ossification,...)
-number of survived fibers in the cochlea

28 **The outcomes :**

heterogenous results are not only influenced by age, but also by...

The environment

-support services (multidisciplinary)
-poor family involvement, poor socio-economic environment or a multilingual environment have a negative influence

The child

-30-40% additional handicap:mental retardation/autistic behaviour
-communication mode: oral-total(simcom)-sign language
The choice you make depends on a lot of things: child, family, environment... and it's not necessary to choose one approach forever... Evaluate! But... You need communication with your child before and after CI. (Marschark & Spencer, 2003)
-learning profile: intelligence but especially the auditory, visual memory and rhythm play an important role (Pisoni, 2003)

29 OUTREACH PROGRAMME

Models of service delivery for educators....

◆ Specialist schools with high educational level: in-service training

- ◆ Educational outreach programmes such as in UK; published guidelines.
- ◆ HOPE-project: Habilitation Outreach for Professionals in Education (Cochlear America)
 - <http://www.cochlear.com/HOPE>
- ◆ Training packages for teachers - with Universities, the Ear Foundation, the Lehnhardt Foundation
 - The QESWHIC-project: Qualification of Educational Staff working with Hearing Impaired Children
 - <http://www.lehn-acad.net/>

30 **DEAF COMMUNITY**

- Profoundly deaf children can now hear in a way that was not previously possible... more of them are now acquiring spoken language through hearing
- More deaf children will be mainstreamed, not knowing sign language and/or Deaf culture
- So...the (D)deaf population will change
- And the Deaf Community should change too and maybe the Deaf Culture will change
- Only in that case, they can still play an important role:
 - Because a lot adolescents/adults are searching to meet peers
 - Because they will never be normal hearing persons
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31 Some “new” questions on the education of deaf children

- Do parents of deaf children (age 10 months) have enough objective multidisciplinary information ?
- Can we predict the results of a CI in this young population?
- How do we know the learning capacities of these very young deaf children?
- CI-children should they be mainstreamed immediately? Should they learn sign language?
- What will happen when these children reach their adolescence, looking for their identity?
- How do we keep our experience of educating deaf children?

So, still a lot of work to do.

32 **Thank you for your attention:**

Leo De Raeve