Deaf Education: changed by cochlear implantation?

Or……..can deaf education keep up with scientists and surgeons….

Sue Archbold, PhD
The change in educational opportunities

• From this....

• To this.....

is huge....and was unforeseen
Deafness and education...

- The effect of deafness on language development is huge
- Educational attainments have traditionally been low..
- Led to great passion into how to overcome the effects of deafness
- But little evidence....
- And arguments – about how and where to educate deaf children

- To sign or not to sign....
While teachers were arguing........along came surgeons and scientists, .....providing access to hearing for the first time..
What has this to do with deaf education? Can deaf education keep up with the speed of change?

The changes have been led by other professions....... What is deaf education doing about it?
The landscape of deaf education has changed...

- New born hearing screening...
- Early intervention
- Cochlear implantation:
  - Early implantation
  - Bilateral implantation
  - Changing candidature
  - Complex children
  - Teenagers
  - Deaf children of deaf parents
- Other hearing and communication technologies
And it’s changed quickly, compared with the long history of deaf education......

• Most profoundly deaf children are now receiving implants... And early...and two...

• Profoundly deaf children can now hear in a way that was not previously possible......they are now acquiring spoken language through hearing
What do we know of the...

• Impact on communication skills and language?

• Impact on educational attainments?

• Impact on educational decisions?
Outcomes from early implantation

• Language growth comparable to that of hearing peers (Tait et al, 2007; Dettman, 2007; Ching, 2008; Ching 2012)

• Improved educational attainments (eg Archbold et al, 2008; Geers et al, 2010)

• Children with implants are doing better than their peers with hearing aids, but not as well as their hearing peers....(Stacey et al 2006; Thoutenhoofd, 2006; Vermeulen et al 2007; 2009)
Implants and Reading….

- Archbold et al 2008: children implanted under 42 months reading at age-appropriate level… BUT
- Geers et al, 2003: implanted before 5 years, tested at 8/9 had reading levels within the normal range.. BUT

- Geers (2008; 2011)
  - When tested again at 15/16 years of age – significant numbers had not progressed….HUGE VARIABILITY
  - Why?
It’s complicated... For example..

- Yoshinago-Itano 2012: Deaf children just beginning to develop pragmatic skills at 6: hearing child have half of skills at 3
- Important for higher order literacy skills...
- “.. The new developments ensure that their educational needs are even more diverse and complex” (Marschark)
Predictors of outcomes....

- Geers (2012): 112 children
  - Age at implantation
  - Generation of speech processor
  - Aided PTA thresholds
  - Non-verbal IQ

- Ching (2012): 450 children (70% HA 30% CI)

- Predictors (PLS -4, language measure):
  - Additional disability (30%): AN about 10%
  - Gender (guess which!)
  - Maternal education
  - Age at fitting for ci children
Predictors: management?

- Comparing oral/aural, AVT, total communication programmes – matched groups....
- No difference in outcomes....
- But: Family Participation (Moeller) and age at cochlear implantation is significant...
What about educational decisions? Special school or mainstream?

- Significantly more children with cochlear implants are going to mainstream schools (Archbold et al, 2002, IJA; Geers et al, 2011, Ear & Hearing)

- But…..what as they get older?

- What about the challenges of secondary education?
Asking teenagers with unilateral implants talking about life in school (The Ear Foundation educational study with RNID; www.earfoundation.org.uk)

- “I need one person at a time, just one person at a time not all the same time, whoo, over my head, I lose control. It is quite hard to work... other people talk too fast, then walk off” Mainstream student (14)

- “Group work is the biggest pain you could ever possibly imagine. Small group is all right but big group or class discussions they are the worst.” Mainstream student, (14)
What about communication mode?
To sign or not to sign.....

Those implanted young changing: Percentages using oral communication or sign communication implanted under three
Parents’ comments....

• “It was a very natural and child driven change to spoken language. He prefers spoken language both receptively and productively.’

• ‘We have not dictated the communication methods but have followed <child's name> lead … he tells us to speak not sign.’

• ‘The change was made because we followed our child's lead once spoken language began to develop.’
We then interviewed families

• They discussed a “communication journey”
• Different strategies may be used at different times
• Children’s needs changed over time
• Main goal was spoken language but a value of sign input too….
• But…arguments with teachers…
• “won’t someone let me communicate with my child?”
• Wheeler et al, CII, 2008
“The Communication Journey”

BEFORE

Most effective communication (oral or sign, gesture)

Development of Spoken Language supported by Audition

CI

Spoken Language established – increased interest in use of sign: SSE or BSL

Reduction of Sign/SSE

The Ear Foundation®
For parents... with deaf infant..

- Learning sign language is not easy
- Need to be relaxed communicators
- Managing the technology is not easy
- What can we do?
To acquire language a learner must have:

1. Exposure in quality and quantity
2. To an accessible language
3. While engaged in meaningful activity
4. With others who are already capable users of the language

Connie Mayer, York, Toronto
Therefore……what about sign language and sign bilingualism?

• Quality and quantity?
• With others who are capable users?
• It makes no sense……to introduce Sign Language as a “first” language to deaf infants in hearing families in a time of early fitting of hearing aids and cochlear implants…..
• Hearing parents are not going to be capable users… of SIGN LANGUAGE….. Soon enough
But......it also makes no sense to withdraw visual clues

- Human face-to-face communication is essentially audio-visual
- Visual input also includes gesture
- Speech reading predicts later reading skills in deaf and hearing children (Kyle & Campbell) and interact with speech processing skills for implant users (Roger et al, 2007)
- Woll on www.earfoundation.org.uk
Think about the role of speech reading... and visual clues... how?

- Children with cochlear implants:
  - Are very varied......
  - Had a period with no auditory stimulation
  - Receive a degraded signal
  - Have difficulties in challenging listening conditions and need visual clues...

- So....

- Is it Speech reading...
- OR Sign and Speech
- OR Sign Language?
Sign bilingualism and cochlear implants were introduced at the same time... But:

- “Hearing screening and cochlear implantation: an unexpected perspective.” (Knoors & Marschark, 2012)

- “....strong indications that deaf children with hearing parents in bilingual settings are less proficient in sign language than we had expected or wished. Moreover, we are seeing a larger group of children being proficient in spoken language than either of us expected in 1993.”

- Concerns re the lack of empirical evidence in the support of sign bilingualism settings in language and literacy outcomes. (Mayer, 2009)
Those still thinking about sign bilingualism in education need to rethink.... Growing interest in TOTAL COMMUNICATION

• “...continue to be learners for whom the auditory channel must be supported by visual input (speech reading or signed support) for language to be acquired. Or they may need this visual support at certain stages of their development (eg before ci) or in poor listening conditions.....” (Mayer, 2012)

• A new look at Total Communication (Knoors & Marschark, 2012; Linda Spencer; Mayer, 2012)

• Providing a range of communication needs for different children and for the same children at different times...
What do young people say? Are you deaf or hearing?

- “Sometimes deaf, sometimes hearing…”
- “Deaf, but I can hear with my implant…”

The young people had a flexible view of themselves and their deafness. It’s a new world........ (Wheeler et al 2007; Moog et al, 2011)

- “I speak with hearing friends and sign with deaf”

They are being deaf differently...... Do we know what to do about it....
Educational Issues: young peoples’ view...

- Cochlear Implant
  - Implant helps understanding in classroom (76%)
  - Sign support is as important as CI (7%)

- Need visual clues – but may be different to those previously provided for profoundly deaf
- Use of note-takers rather than signed support
- Electronic captioning
- Pre-class preparation
- Address the acoustics in the classroom
- Teaching styles
So there remain educational challenges after implantation….

- Implants may appear to work too well!
- Why?
- Speech intelligibility is NOT the same as linguistic ability
- When they go to mainstream schools because they talk normally it may be assumed that all is well……
- “The mainstream teachers don’t know – because she sounds OK and doesn’t cause a problem…..”
- Particularly at high school…..
But….children with implants still have a hearing loss….

- … we know the effect of mild or moderate hearing loss on education (eg Most, 2005; Noh & Park, 2012)

- Even deafened adults with bilateral implants have difficulty in reverberation (Seeber et al, 2011)…..

- And the issues are subtle..........they mishear, and misunderstand… and the language may remain delayed
On the other hand…. Some children do not do as well as predicted….why?

• Up to 40%……have another difficulty: which we may not know before we implant them…. (NDCS report, 2012)

• After implantation it may become apparent that there is another learning or cognitive difficulty…..How do we educate them?

• What about complex children?
For complex children, education emerged as a major issue in our study...

- Most parents felt that special schools could not combine both meeting their learning needs and providing good management of the implant system.

- Little teacher of the deaf input in special schools.

- Parents commented on the difficulty of providing a good listening environment when other children were very noisy, lots of technical equipment, and the need for clean surfaces. Muller et al, CII, 2012.
Parents’ Views..

• “Our son had implant at brilliant centre, and was sent to school with little knowledge... we have been fighting for an education which will help him to develop his CI use best” (Archbold & Wheeler, submitted)
The long-term management of cochlear implants

- Is not in the cochlear implant clinic
- It is at home and school
- This is NOT new...
- “Teachers are responsible for the long-term management of children with implants” Geers and Moog, 1991
- Some evidence we are not (eg Brewster, 2006; Huttenen, 2011)
- Even after over 20 years....
In today’s world.....of accountability

• Deaf education must prove its value and contribution to long term outcomes from cochlear implantation

• All deaf children will have a teacher....what difference do they make to families and children....

• Is deaf education “fit for purpose” –
Deaf education .... Fit for purpose?

- In the UK, government data continue to show the deaf children are underperforming...

- Do we know what the diverse needs of deaf children are today, and how to meet them?
Deaf education: changed by cochlear implantation? YES:

• Acquisition of spoken language through hearing
• Greater use of spoken language which is intelligible to family and peers
• Literacy improved
• Greater numbers in mainstream education
• Management of complex technology in the mainstream class
• A new flexibility of identity and communication choice for deaf children and their parents
But.... Before you say it...

- The evidence I have shown is out of date...
- The young people I have talked about had old technology, had one implant, and implanted later than now...
- What about today’s children as young people and adults?
Deaf education: is it providing....

• Flexibility in educational provision over time and for different children
• Support for a more diverse population, with more subtle and changing communication needs
• Effective, up to date support in mainstream education
• Use of specialist teaching assistants
• The skills to monitor subtle changes in progress over time to identify other difficulties
• Address the technological and acoustic demands
• Peer-group support for their psycho-social needs
What can we do? Many initiatives…

- Web based courses: education on-line
- Sounding Board for teachers…
- Resources …..
- Virtual conferences
- Deaf Education : Changed by Cochlear Implantation?
- Yes…but not enough..

www.earfoundation.org.uk