

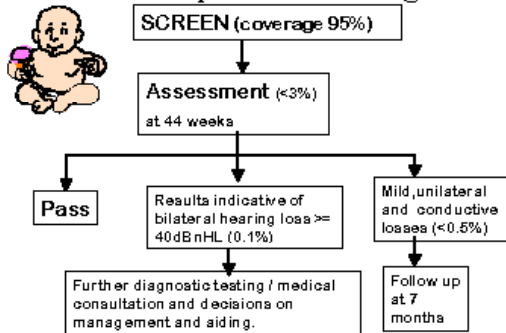
ABSTRACTS Presentations at the BACDA Study Day

Neonatal ABR
When and how to use it
John Stevens, Central Sheffield University Hospitals

Summary

- Limitations of click ABR
- Click ABR in screening
- Methods of assessment
- Typical examples
- Protocols
- Conductive component
- Predicting final outcome

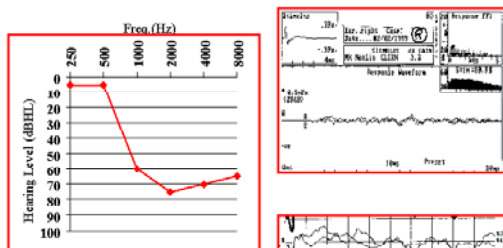
UNHS - simplified flow diagram



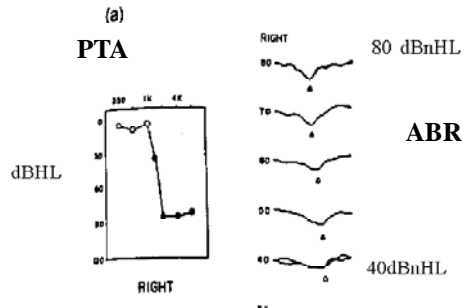
Limitations of click ABR as a test of hearing

- Tests only to brainstem level
- Only a region of normal or near normal cochlear and brainstem function above 1kHz is required to give a response.

Example in an adult with a SNHL where the TEOAE was not recordable and click ABR was absent at 90dBnHL



Example of click ABR threshold in presence of a SNHL (Picton 1978).



Click ABR in UNHS (1)

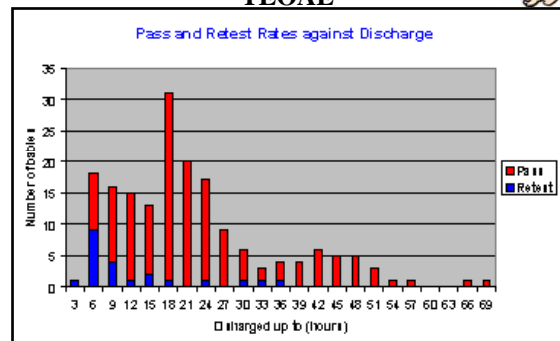
- The current consensus is that ABR should be used for long stay NICU babies in UNHS where an OAE screen will miss some cases.
- Clicks are still probably the best choice for screening, rather than tone pips, as the larger response gives rise to shorter screen times.

**Click ABR in UNHS (2)
Early discharge babies**

- Very early discharge babies have low OAE pass rates.
- AABR is the logical choice to screen these babies.



TEOAE



Initial Assessment

- Best at around 44 weeks gestational age.
- Practical interval after discharge.
- Allows time for further testing.
- Some temporarily raised thresholds will have resolved.

Methods of Hearing Assessment following a Neonatal Screen

- Click ABR
- Bone conduction ABR
- Frequency specific ABR
- OAE
- Behavioural observation audiometry
- Acoustic impedance



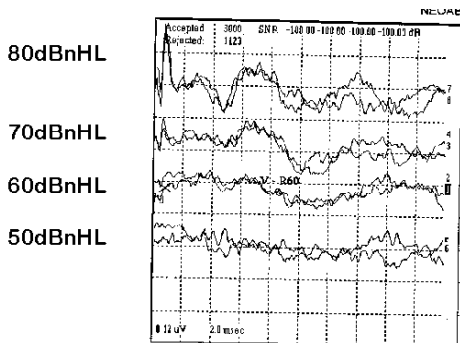
Frequency of testing

- For a typical district: (data from Chesterfield UNHS)
- Expect about 30 tests p.a for BC ABR
- Expect 5-10 p.a. where full assessment required (tone pip ABR etc).
- Small numbers, possible unexpected waveforms => Pool knowledge and expertise over several districts.

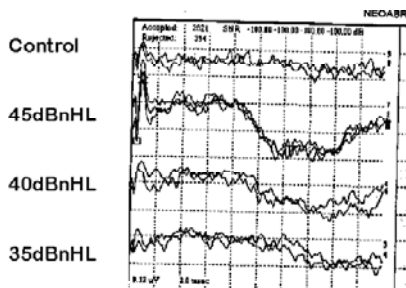
What happens in practice

- Baby at around 4 weeks of age who from UNHS has not passed OAE or ABR test if long stay NICU.
- Expect to have between 20 and 45 minutes with the baby in a state to carry out ABR
- Takes about 90 minutes to carry out electrophysiological testing and OAE so plan for two sessions

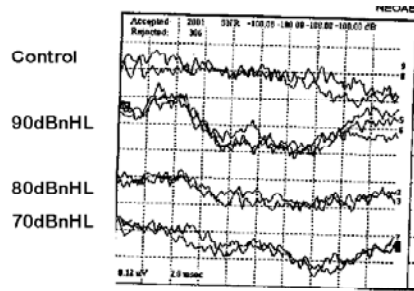
Example - Click AC ABR (0.12uV and 2ms per division)



Example - Click BC ABR (0.12uV and 2ms per division)



Example - Tone pip 1kHz (0.12uV and 2ms per division: 5 ms delay)



Example - outcome

	Right	Left
AC Click ABR	60	80
BC Click ABR	45	>55
Tone pip 1kHz	90	90
TEOAE	NRR	NRR
No time for Tympanometry or BOA.		

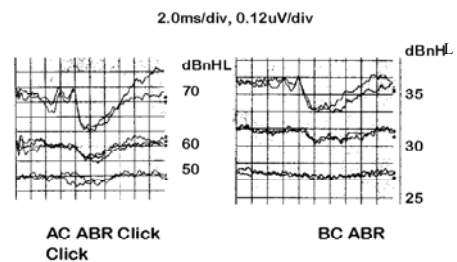
- Result discussed with doctor, repeat test at 8 weeks corrected age.

Example: - Unilateral left sided loss + conductive loss on right :

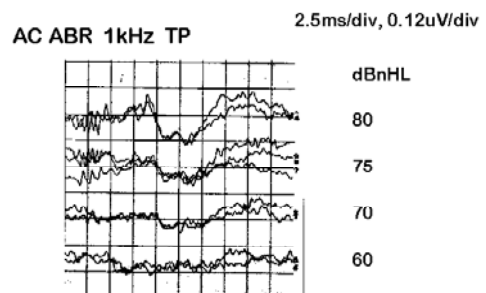
Left results

- No response at 80 dBnHL for AC ABR at 4 days, 4 weeks and 8 weeks.
- Response recorded above this level but may be a crossed response due to difficulties in masking (conductive loss on right).

Example: Unilateral + conductive : Right ABR Click results

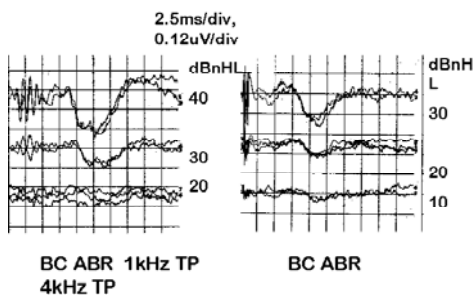


Example: Unilateral + conductive: Right results



ABR/ENLS

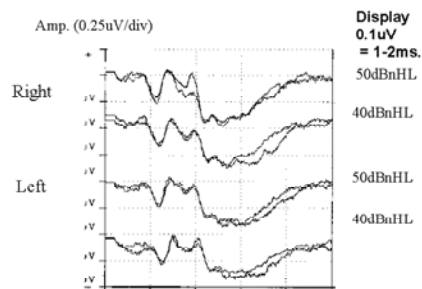
Example: Unilateral + conductive: Right ABR tone pip results



Outcome of testing

- Response present: High degree of correlation between the replications and a characteristic waveform
- No recordable response: Good recording conditions with no correlation and peak to peak amplitude below about 0.05µV.
- Recording conditions too poor to establish a result.

Example of ABR screen result



Example: - Unilateral +conductive: Right ear ABR thresholds in dBnHL

	4 days	4 weeks
8 weeks		
AC Click ABR	70	60?50
BC Click ABR		36
AC Tone pip 1kHz		70
BC tone pip 1kHz		30

Summary

- Carry out click AC ABR and obtain accurate thresholds.
- Do click BC ABR if AC threshold above pass level
- Tone pip ABR, 1kHz first, difficult to do more than two frequencies.
- Repeat OAE test.
- Consider tympanometry and BOA



Click ABR and other

UNHS protocols

Download from :

unhs.org.uk

Replications

- At least two replications at the lowest level at which a response was obtained. A third replication should be carried out if there is any uncertainty in the result.
- If the results at this level are not absolutely unambiguous, a further pair of recordings should be obtained at a level 10 dB higher to limit any possible error to 10dB.

Conductive component

- Bone conduction ABR
- Wave V latency measures
- Tympanometry



Location of bone Vibrator

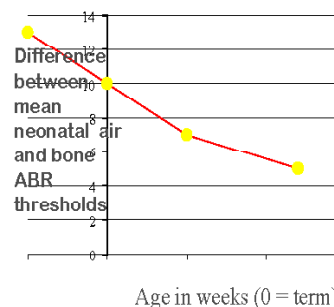
- Mastoid preferred as 30dB more sensitive than forehead.

Applied Force

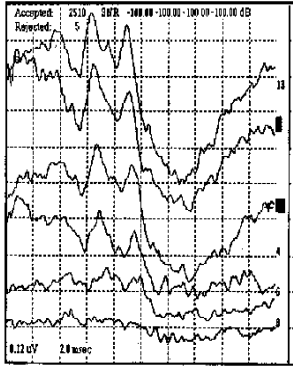
- Not critical as long as a firm pressure used.

Calibration of click BC stimulus level

Graph shows dB to add to the stimulus value relative to adult psycho-acoustic threshold .



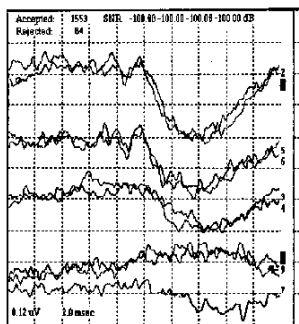
Neonatal Click AC ABR in a conductive loss (KH Jan01)



(0.12 µV and 2ms / div)

- 80 dBnHL
- 75 dBnHL
- 70 dBnHL
- 65 dBnHL
- 60 dBnHL
- 55 dBnHL

Neonatal Click BC ABR in a conductive loss (KH Jan01)



(0.12 µV and 2ms / div)

- 30 dBnHL
- 25 dBnHL
- 20 dBnHL
- Control (20 dBnHL)
- 15 dBnHL

Masking

- Studies indicate inter aural attenuation of 20 to 30dB
- Probably no need to mask below 30dBnHL.

Predicting final outcome

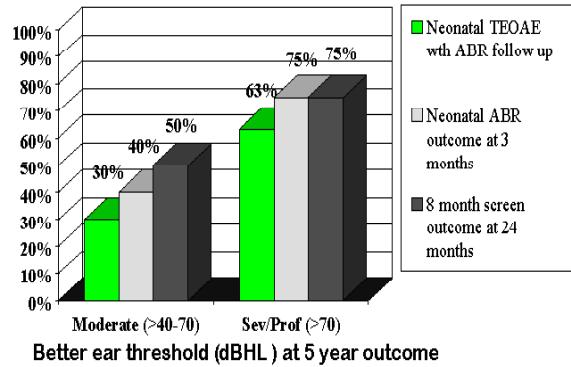


What is the relationship of ABR to PTA on follow up ?

- Limited data in literature. Click ABR only.
- Comparison confounded by acquired hearing loss and transient conductive loss.

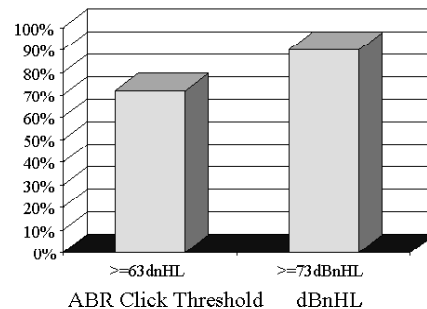


AQUIRED LOSS: Sheffield Study - High Risk: Proportion of cases failing screens for moderate and severe / profound impairment. No change on further ascertainment (Parker 1999)



Positive Predictive Value of Neonatal Click ABR threshold (Provisional data from Sheffield Study)

Positive Predictive Value of Neonatal Click ABR threshold
(Provisional data from Sheffield Study)



Conclusions



- Click ABR is the main initial diagnostic method for assessment following NHS but its ability to predict final audiometric outcome still needs to be treated with caution.
- Bone conduction ABR appears to be an effective method for estimating the conductive component up to the limits of stimulation levels available.



- Test time is always limited and care is needed to establish a protocol to make best use of this time.
- Results must be accurate and repeatable and strategies followed such that major errors do not occur.
- Skills and knowledge are enhanced by pooling over districts and by the use of internal and external audit to ensure the quality of testing.

***The Pros and Cons of Digital Hearing Aids
for Children***
Josephine Marriage, Cambridge University

While there is nothing inherently superior about a digital over an analogue signal, digital technology offers greater flexibility in how sounds can be processed to make them more accessible to the impaired cochlea. Digital processing is also cheaper to produce, requires fewer different hearing aid models and allows changes in prescription within the same hearing aid over time. All of these benefits mean that traditional analogue instruments are already being phased out. Audiology professionals therefore need to know what features of signal processing are important for improving a child's access to speech information. The type of technology used to provide a specific aspect of signal processing, whether digital, programmable analogue or true analogue, is less relevant than what an individual hearing aid does.

This presentation focuses on some of the benefits of signal-processing strategies that hearing aids offer. The fundamental reason for exploring these is that the impaired cochlea is no longer as effective in frequency and intensity analysis as the normal hearing cochlea. To maximise the hearing capacity for complex sounds (typically speech) it is not enough to just make the sounds louder. Research information explaining which hearing aid strategies should be a priority for children, with clinical examples of changes in performance in speech discrimination, will be given.

The broad conclusions are that:

Professionals prescribing amplification must move away from linear amplification strategies if they are to optimise a child's speech accessibility.

No hearing aid can completely offset the limitations imposed by the damage in the cochlea.

The best method of improving the signal to noise ratio for a child continues to be by using a radio aid FM system.

Improving the hearing aid prescription is only part of a larger process to allow a child to fulfil their potential

Josephine Marriage PhD
Research Associate
Department of Experimental Psychology
University of Cambridge
Downing St

Cambridge

New developments in Paediatric Cochlear Implants
Lise Henderson
Manchester Cochlear Implant Programme

Abstract:

To give an overview of future developments in number of areas.

Changes in referral criteria and the impact this has on the service.

Technical developments of both the internal and external components of the cochlear implant system.

Future areas or research - bimodal studies, bilateral implants, totally implantable devices.



Radio Aids & Other Assistive Devices

Richard Vaughan, Technology Development Officer



What is a Radio Aid?

There are many different situations in which deaf children may find it difficult to listen. Three main reasons for this are:

- unwanted background noise
- reverberation (sounds echoing around the room)
- the distance between the person who is speaking and the child

A radio aid is intended to help overcome these problems. For example if a child is wearing a correctly working radio aid, a teacher standing at the far end of a noisy classroom should sound as if they are standing directly in front of the child.

A radio aid consists of a transmitter, worn by a teacher for example, and a receiver worn by the child.

Who can a radio aid help?

If a child gets some degree of benefit from their hearing aid/s they may find a radio aid useful. This is because a radio aid will work with the child's hearing aid/s to make it easier for them to concentrate on the sounds they wish to hear.

Radio aids are also recommended for those who have:

- *a cochlear imp/ant,*
- *bone conduction hearing aids*
- *bone anchored hearing aid/s and*
- *frequency transposition aid/s*

In a small number of cases a radio aid can be useful for those who do not use hearing aids.

ADDS

Connecting a Radio Aid

Hearing aids - using direct audio input (DAI)

- In most cases, to use DAI an audio input shoe (sometimes called a direct input shoe, interface shoe or simply a 'shoe') must be used. This shoe fits snugly onto the bottom of the hearing aid.
- To connect the radio aid to the hearing aid, a DAI lead of the correct type is fitted to the 'shoe'.
- Newer radio aid receivers fit directly onto a hearing aid.

Hearing aids - using a neck loop

- The child wears a neck loop around their neck. Their hearing aids are switched to the telecoil ('T' or 'MT') position.
- When a hearing aid is switched to T, the hearing aid microphone is usually switched off.
- Sound quality is affected by the position of the hearing aids, electromagnetic interference and the quality of the telecoil.

Hearing aids - inductive coupling using a silhouette inductor

- This looks like a very thin BTE hearing aid and is worn between the head and hearing aid. The hearing aid is switched to 'T' or 'MT'

Hearing aids - using a digital (pulse code modulation) neck loop

- One radio aid (Phonic Ear Solaris) has been developed with the option to use a digital, pulse code modulation (PCM) neck loop instead of the traditional analogue neck loop. The Solaris option is known as TMX. The hearing aids are fitted with a special 'shoe' into which is plugged a tiny "Telepin".
- The TMX system is said to have all of the cosmetic advantages but none of the disadvantages of the traditional analogue neck loop.

Using a radio aid without hearing aids

- Headphones can be connected to some radio aids

Microphones

Tie-clip and lavalier (neck strap) microphones

- These are clipped to a tie or other clothing (tie-clip microphone) or worn on a cord around the neck (a lavalier microphone).
- Should be worn not more than 15-20cm away from the mouth.
- Manufacturers may offer a choice of a directional or omnidirectional

Head-worn or boom microphones:

- Perhaps the most effective option, as it keeps the microphone in exactly the same position in relation to their mouth.

Conference microphones:

- In school, children often spend a great deal of time working in small groups. Conference microphones are usually designed to sit in the middle of a table and to pick up sounds in the surrounding area.

Features & Facilities

Frequencies

- In the UK the Government has set aside 22 different frequencies (channels) for use by radio aids in the range 173 - 175 MHz.

Manual Muting Systems

- A switch on the receiver operates the muting system. When switched on it will "mute" (quieten) the hearing aid microphones by a large amount effectively switching them off.

Automatic Muting Systems

- The receiver checks the level of sound being picked up by the transmitter microphone (e.g. the teachers voice). When this is above a certain level, the hearing aid microphones are automatically muted (quietened). When the teacher stops speaking, the child's hearing aid microphones are switched back on.

Current makes and models of radio aids

- Connevans FMGenie, CRM22OR/220T
- Phonak Microlink Handymic transmitter, Phonak Microlink ML3, ML4, ML5, ML6, ML7, ML8 receivers
- Phonak/Widex Microlink MLx open-platform receiver
- Phonak Microvox receiver and transmitter
- Phonic Ear Solaris 571T/572R/575R
- Phonic Ear Binaural Radio Hearing Aid 71R/ 571T
- Sennheiser Microport 2013

Related Devices

Soundfield Systems

- Soundfield FM systems should not be confused with radio aids, although they are designed to address similar issues.
- A soundfield system includes a microphone and transmitter, worn by the teacher. Loudspeakers are fitted around the classroom.
- The aim is to produce a clear and consistent level of sound throughout the classroom.
- The groups most likely to benefit from soundfield are children with a mild hearing loss, hearing children

ADDRESSES

and teachers themselves.

- It is possible to use soundfield and radio aids simultaneously.

Portable Soundfield Systems

- These are effectively a radio aid with a small loudspeaker. They are useful for children with a hearing loss who do not wear hearing aids.

NDCS Blue Peter Service

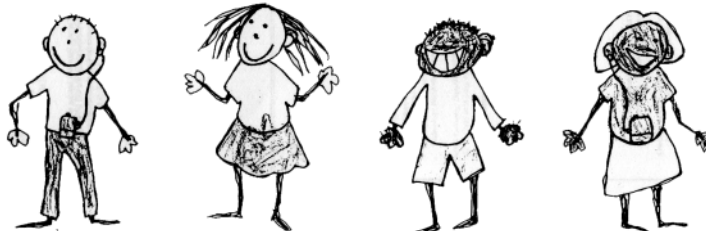
- The Blue Peter Lend-an-Aid Library offers families throughout the UK the opportunity to borrow radio aids and other equipment for deaf children, to assess in the comfort of their own homes and at school.

- If the child benefits from the loan, NDCS can help the family obtain the equipment from their local education authority or social services.
- A full range of the latest radio aids are available.
- Radio aids can be borrowed for up to 3 months and other equipment for up to 8 weeks.
- For more information, or an application form, contact the NDCS Technology Department.

NDCS Technology Department, 15, Dufferin Street, London, EC1Y 8UR

Tel: 020 7490 8656 (v & t), Fax: 020 7251 5020,

Email: technology@ndcs.org.uk



Modernising Hearing Aid Services: Paediatric (MHAS-P) Project

John Bamford, Amy Skipp, Mary Hostler
MHAS teams at RNID, MRC IHR

MHAS-P Project

Aims:

- To facilitate the introduction of Digital Signal Processing hearing aids within a modernised paediatric audiology service
- To examine the relative costs and benefits of DSP hearing aids to children, families and services
- To inform “roll out” to other NHS Trusts

Children’s hearing aids in UK:

Currently: mostly good quality analogue aids with compression limiting

some analogue nonlinear aids (digitally programmable)

NHS DSP hearing aids

Starkey Gemini,
GN Resound Danalogic,
Oticon Digifocus H,
A&M Selectra
Plus a “baby” aid : Gemini 312
Two high-power aids, Widex P37, Philips

DSP aids offer:

fitting to nonlinear fitting algorithms
more accurate ‘shaping’ to fit hearing loss
more appropriately
processing flexibility eg:
— feedback cancellation
— noise suppression
— multiple programmes

GN ReSound Danalogic

- Multi channel
- DFS
- Multi memory
- Directional microphone
- Noise reduction
- NoDAI

A & M Selectra

- Multi channel
- Feedback manager
- Multi memory
- Directional microphone
- Noise reduction
- DAI

Starkey Gemini

- Multi channel
- Feedback manager
- Multi memory
- Directional microphone
- DAI
- VC

Oticon Digifocus

- Multi channel
- Feedback manager
- ASA
- DAI

Consensus documents driving the wider modernisation context for MHAS-P

- NDCS Quality Standards in Audiology Vol IV
- RNID/NDCS Statement of Competencies for Early Support Workers
 - ASHA 1996 Document on Paediatric Hearing Aid Fitting (UK one being drafted)
 - J CIH Year 2000 Statement
 - Family Friendly Hearing Services

MHAS-P Project: Summary

- 10 sites, c 7000 births/yr each (6 of which overlap with UNHS pilot)
- evaluate the change for current hearing aid wearers aged 7-15 from good quality analogue to DSP aids: controlled trial
- evaluate the fitting of DSP aids to newly-identified babies: observational study

Studies in all sites:

- Study 1: Health economics (comparative costs and benefits)
- Study 2: observational study of new fittings (n60?)
- Study 3: controlled trial with 7-15 yr olds (n260)
- Study 4: transition survey

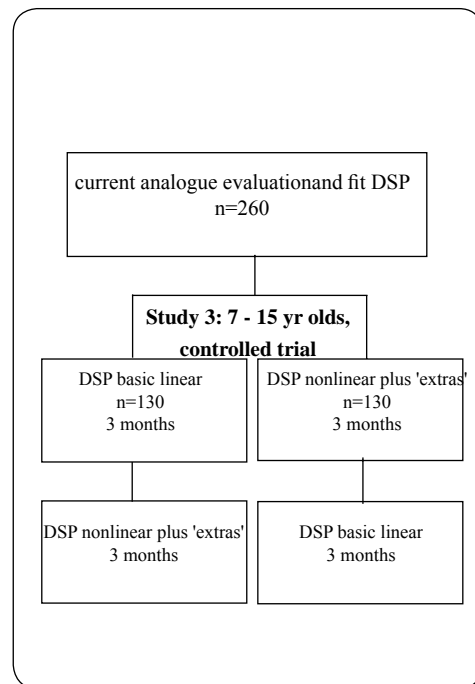
Further studies in two sites with RAs:

- Crossover trial of good quality analogue v Power DSP for children with severe/profound hearing loss
- Generic prescription: DSL1Jo vs j manufacturer's software/fitting rule

Study 2 :

Fitting to newly-identified babies and children:

- Started May, observational study
- monitoring issues involved with fitting (protocols, time, equipment etc), parent management, ToD management, loan systems, information sharing —Health and Education
- OME episodes and management (if no vol control)
- test box checks by ToDs
- comparisons with those fitted in previous 12 months ('historical controls')



Study 3 evaluations:

- SII or SHARP (index of aided audibility) derived from REAR
- FAAF (Four Alternative Auditory Feature speech hearing test, two levels of speech, two S:N ratios, plus Quiet)
- LWE, Listening Situations Qs (child and parent), speech quality Qs, child preference and use Qs
- monitoring audiologists' process/opinion
- health economics: time, staff levels, equipment monitoring HUI, CHQ-PF

Categories of measuring instruments

1. For the evaluation only eg FIUT
2. For the evaluation, may be useful for routine use in future eg FAAF
3. For the evaluation, used routinely as well eg REMs
4. Not for the evaluation, but part of 'service modernisation' eg Family Needs Survey

Three issues re: DSP hearing aids

- Test box checks
- FM set up and balancing (These have implications for ToDs and Ed Auds)
- Earmould provision

For further information visit

www.rnid.org.uk

POSTERS



Four posters!

No, not the beds - just that's all the posters I've ever prepared for academic meetings. So on that limited basis, here goes.....



Question one:

Why should you want to present a poster?

Answer: Different reasons: maybe it's a chance to report a piece of work you've done that perhaps wouldn't get into an academic journal. There could be various reasons for this - it might be incomplete research, or research lacking in sufficient scientific rigour. You may have done an interesting audit or qualitative investigation. You may be wanting to highlight an area of practice that might otherwise be ignored. Finally it is a chance to network with others with a similar interest. So have a quiet think - what have you got to say that the meeting participants might want to hear?

Question two:

Can you just turn up at a meeting with a poster?

Answer: Well you might just be lucky - but basically it's not the way to do it. You might see a meeting advertised for which posters are invited - for example the BSA conference. You are usually asked to send in an abstract of your poster - by a certain date. This process may seem like a quality filter, weeding out unsuitable posters, but firstly most meetings are quite glad to receive posters, and secondly what they need is to be able to publish your abstract in the literature given out to participants at the meeting.

Do you get the feeling there are two sorts of abstracts? Those that say something like "The results of the investigations will be presented and discussed in the light of blah, blah." Not very useful.

Or they might present a very concise overview of the topic with key data included. I prefer this type, because you can take it home, use it, quote it. Or bin it. If you use this type, then your poster is almost written anyway.

Question three:

How do you get all the fancy graphics into posters?

Answer: Sorry, I'm not very helpful here. I'm limited to things like MS WordArt or PowerPoint. I have to say that if you can cut and paste a bar chart or pie chart - then people love to see that.

But we're missing the point here.

I don't think you necessarily need fancy graphics. Posters should be presented so simply that someone could read it in a couple of minutes, maximum. Like reading someone else's newspaper on the tube. So all you need to do is to use large print (not less than 18 point) and spell out the key points, namely:

- Title of the poster, with your name and place of work, and contact details.
- A very brief introduction (use references if you want)
- A methods section - like 3 or 4 bullet points
- Your results, highlighting key data, and excluding anything that isn't essential
- Discussion / conclusions - again just a few bullet points
- References (which *can* be really small print).

Now if the reader gets interested and wants to know more, then they can ask for it.

Question four:

Do you have to draw it yourself?

Answer: I've tended to print it out on A4 sheets, and then get someone in the office to seal them in laminates. But you may want to go to your Medical Illustration Department and check out what they could do for you. Maybe they can add the pictures and present it in a cool colour scheme - all on a sheet of A3 or A2.

Question five:

What do you have to do on the day of the meeting?

Answer: Well, we'll assume you've got your abstract in on time and accepted. And you done all that hard creative work, and you've arrived early with your poster. Ask where they are to be put up, and choose your site. Usually things like bluetack will be provided, but I suggest you bring your own fixing material as well so you know it works. Up it goes, stand back and admire!

Question six:

What will people think of it?



Answer: Check out the day's programme and you'll see time set aside for viewing the posters. You should really be standing by your poster over that period of time, so you can watch people looking at it, and make your own judgement as to what they think! Mainly though, this is a chance for people to talk to you about it, and for you to answer their questions. Ideally you could have some papers to distribute with much more detail in them that you were unable to put in your poster.

Finally -

I really like looking at posters, and sometimes feel that there's not enough time to see them all. Hence my plea for brevity and large print!

It's always good to see BACDA members' posters at meetings, so why not give it a go yourself — you've got nothing to lose!

Tim Williamson

NCPA Meeting, January 2001
The National Deaf Children's Society's Perspective
Jan Croker, NDCS Specialist Advisor

NDCS

"The National deaf Children's Society is an organisation of families, parents and carers which exists to enable all deaf children and young deaf people to maximise their skills and abilities and works to facilitate this process by every possible means."

The National deaf Children's Society's Work

Working for individuals

ongoing support, information, advice, advocacy on all aspects of childhood deafness for deaf children, deaf young people, their families, carers & professionals working with them.

Working to improve services

10 years campaigning for UNHS
 working with professionals and partners to develop Quality Standards
 joint initiative with the RNID on training issues
 successful bids for government funding to:

- develop Parenting Programme
- develop family-friendly information for parents re UNHS
- Best Start for Deaf Babies project
- develop kite-marking of deaf-friendly schools

Working as part of Europe

FEPEDA - secretariat for the European Federation of Parents of Hearing Impaired Children

The National Deaf Children's Society's Quality Standards

- NDCS Quality Standards In Paediatric Audiology Vol I (1994) Guidelines for early Identification of hearing impairment.
- NDCS Quality Standards In Paediatric Audiology Vol. II (1996) The audiological management of the child with permanent hearing loss.
- NDCS & BCIG Quality Standards In Paediatric Audiology Vol.III (1999) Cochlear Implants for Children NDCS (in publication 2001) Quality Standards In the Early Years, Partnership with Families & Support
- NDCS & SENSE (In publication 2001) Guidelines on vision impairment and deaf children
- Association of Directors of Social Services, BDA, NCB, NDCS & RNID (In publication 2001) Positive practice in Social Services for deaf children
- NDCS Quality Standards in Education - England (1999)

NDCS Quality Standards Vol. 1(1994) & 11(1996) now superseded by:

NDCS Quality Standards in Paediatric Audiology Volume IV (2000)

Guidelines for Early Identification and the Audiological Management of Children with Hearing Loss

'Screening for hearing loss within the context of paediatric audiology service provision that meets individual needs & provides optimum support for all deaf children and their families'

[a sister document to NDCS Quality Standards in the Early Years, Partnership with Families & Support (in publication 2001)]

Examples of how the work of the NDCS relates to the development of Family Friendly Hearing services for Children

FFHs for children

- Collaboration with parents and between agencies
- Responsiveness of service to meet the real needs of families
- Optimal provision of information
- High quality, accessible paediatric audiology
- Continuous evaluation of services

Work of the NDCS

- Supporting the development of local Working Groups
- Early Years QS and Joint Initiative on Training Issues
- NDCS Information Projects
- Paediatric Audiology QS & modernising NHS HA's
- Development of Quality Standards and the audit process

Quality From The Perspective of Parents - What parents want: (according to NDCS survey on late diagnosis, 1999)

- Early accurate confirmation of hearing loss in an appropriate setting
- Quality time with "professionals" to understand the implications of that diagnosis
- Provision of clear accessible and balanced information with details of self-help support groups
- Well-trained and qualified staff who are deaf aware and who have empathy & understanding of child

AUDITING

- and family
- A positive and encouraging attitude towards deafness
- Respect for the child and the child's family
- Inclusion/partnership in the development plan for their child
- Co-ordination between services to eliminate conflicting advice
- Long term local quality services and support

"Parents have the right to expect "professionals" to listen to them, and to acknowledge their expertise as parents, to share information and be involved in the decision-making process."

Some Basic Principles:

- It is the role of the paediatric audiologist to work with family support workers who must specialise in early years support for deaf babies and children.
- Together they must help parents to help their child acquire communication skills through the mode(s) of communication chosen by the parents.
- Parents must be well informed and receive information without bias if they are to make informed choices.

NDCS QS In Paediatric Audiology Volume IV. a summary of identified targets and timescales:

Immediate:

Services must rectify the present inadequacies in service provision for deaf children. In particular there is an urgent need to ensure that the HVDT is functioning according to recommended standards & that comprehensive follow-up audiological services are appropriately staffed & resourced.

By 2001:

Services must be at an advanced stage of preparation for the introduction of UNHS. Attention must be given to ensure that services are well co-ordinated at a multi-disciplinary level (e.g. by setting up local audiology working groups) & that they function in a family friendly context.

By 2003:

There should be nationwide introduction & full implementation of UNHS so that all babies born with deafness are identified & supported within the first weeks of life. There must be sensitive follow-up care & appropriate habilitation available for all deaf children and their families.

There won't always be agreement. examples of the NDCS possibly having a different view:

- Paed. Aud. Services must develop services &

- strategies to support ALL deaf children
- The provision of truly unbiased information for parents to make informed choices
- There must be a quality UNHS programme in place throughout the UK by 2003. In the interim, there must be efficient and effective targeted neonatal hearing screening & universal infant distraction testing in each HA
- Choice of aids - Babies have differing requirements to adults & no single choice of technology is adequate to meet their individual and changing needs

NDCS perspective on joint working issues

- Achieving true interdisciplinary collaboration and working practices -what is the NCPA's role?
- Involving parents in strategic management
- Working Groups - membership including all those supporting deaf children & their families
- Optimal provision of information at the appropriate time is crucial
- Audit

How does partnership with parents and interagency collaboration and partnership work at the strategic management level?

- District-wide Audiology working groups must be set up across the UK with a "named co-ordinator"
- Membership must include a service user or parent of a deaf child with representation from all those supporting hearing impaired children in health, education, social services and the voluntary sector.
- Audiology Working Groups must take responsibility for making sure that paediatric audiology services work in a coordinated, "seamless" way, whether provided through health or education.
- Audiology Working Groups should be responsible for overseeing the monitoring and implementation of quality standards

Principles and Guidelines for Audiology Working Groups

- Maintain as paramount the requirements of the child and family
- Recognise & respect the contribution of all
- Optimise, share and maximise resources
- Identify local policies & local strategies to develop family-friendly hearing services for children
- Agree policies for children with complex needs providing services sensitive to those needs
- Develop clear policies for the exchange of information between service providers/agencies/families

- Help develop appropriate services & strategies to support all hearing impaired children and their families at each stage

Involving parents in the strategic management of services

- Make it possible for representative families to be involved in the strategic management of services
- Involve families in developing services and reviewing plans
- Use parent satisfaction surveys
- Involve families in reviewing drafts of written/ audio/video materials
- Invite families to present at in-service training of staff
- Keep a suggestion book in the waiting area
- Invite families on site visiting teams & to accompany staff when meeting with decision makers
- Recognise that there must be a funding source found to reimburse them for their time, travel expenses & childcare

(Adapted from DesGeorges (2000) *Parent Participation in Systems Building*, Colorado)

Examples of Standards for additional training issues that AWG's & teams will need to address:

All staff within audiology services must receive training in:

- Deaf awareness and sign language through an approved course
- Disability awareness
- Racial and cultural awareness
- Text phone use
- Additionally, all clinical staff must receive training in sign language to a minimum of CACDP Stage I
- Sign language tuition should be made available early on for families & be available for parents, siblings and other family members

Examples of Minimum Performance Standards for Audiology Working Groups (as recommended by the UNHS steering group)

- Records of Audiology Working Group meetings at least twice a year
- Record of attendance including which sectors represented
- Record of equipment downtime which should be no more than 5 days per year
- Annual survey of client satisfaction
- Appropriate planning to meet the level of screening and quality standards needs of the increasing size of the target population
- Equipment must meet performance Standards
- No equipment should be more than 5 years old
- There must be an appropriate replacement strategy in place for all equipment

RESPONSIVENESS OF SERVICES

AWG's and teams have a responsibility to:

- Develop a plan to identify each family's different requirements as all families are different
- Develop strategies to be responsive at each stage
- Develop strategies for determining the needs of difficult-to-reach families
- Help "professionals" challenge their assumptions about families
- Determine training/CPD necessary for listening/ counselling skills
- Make sure that hearing parents of deaf babies have access to the opportunity of developing awareness of the deaf community and deaf people's needs
- Ensure that the family is given every opportunity to discuss & explore issues relating to child's deafness

Colorado Home Intervention Program

Janet DesGeorges - Parent Advisor

The Journey for families-

Balancing the emotional process:

Too little information creates apathy

Too much information creates panic

The balance of information increases through the transitions of screen, re-screen, assessment and early intervention

- sensitivity at the postpartum period

- seriousness of hearing loss

- delivery of information - confident,

professional, knowledgeable

Remember the specific objectives of helping parents in the early stages:

- Support emotionally and socially throughout the adaptation process
- Enhance their self-esteem
- Increase their feelings of efficacy
- Help them explore their situation
- Enable them to communicate effectively with, and support their child
- Enable them to develop general coping strategies
- Encourage open communication & mutual support within the family
- Enable parents to find their own support systems as necessary outside the immediate family
- Help them communicate appropriately with professionals in order to work in partnership
- Enable them to make decisions for themselves, in consultation as necessary and to foster independence

(Hilton Davis, 1993)

Continuous Evaluation of services

- Ensure continuous internal & external evaluation of services using nationally agreed standards

AUDITING

- Include families & the views of consumers in the strategic management of services
- IT is absolutely crucial
- Local joint registering of deaf children
- Nominated person responsible for monitoring on behalf of HA
- Annual written report

To summarise:

- Work of the NDCS to support individuals and to improve services, takes a broad perspective
- NDCS development of quality standards along

- with partners and the perspective of what is a "quality" service is defined by service users and their families
- NDCS development of projects to support the development of family-friendly hearing services for children
- NDCS perspective on joint working issues
- The NDCS needs to work with service providers to help revise the Paed. Aud. QS document in the light of full implementation by 2003 - the standards need to be applied in order to know how they should be refined.

What Can My Child Hear?

This parent information video, 1 hr long in 8 stand-alone sections, provides essential information for parents who have a hearing impaired child. It was made with minority ethnic communities in mind, but is suitable for all groups.



It is now available in 4 languages -

English
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Cost £10+ £2 pp

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