ABSTRACTS
Presentations at the BACDA Study Day

Intruducing UNHS - the nitty gritty
Glynnis Parker

In June 1999, a universal neonatal hearing screening programme was introduced for babies born at Chesterfield Royal Hospital. This presentation takes a personal view of the experience of setting up the programme and looks at lessons learned.

In the past, Chesterfield was not generally regarded as a 'centre of excellence' for paediatric Audiology, unlike its neighbours, Sheffield and Nottingham. In fact, the UNHS program was introduced into this District General Hospital mainly as a result of serious concerns about the poor age of detection for significant hearing impairment, which was worse than the national average.

The following elements are considered:

The essentials -

- Funding... How much? Where did it come from? Was it enough?
- Expertise... Have you got the know-how? If not where can you find it?

Local considerations -

- Defining the population for screening

Getting started -

- Building the Team. . . Who do you need?
- The screeners - What qualities do you look for?
- Protocols, database...
- Establishing links. . . .midwives, health visitors.., to name but a few
- Public relations. . . information for parents, the press!

The headaches -

- Accommodation (or rather, lack of it)
- Administration- keeping on top
- Name changes
- 'Oddballs'- the exceptions to the rule
- 'Did not attends'

The joys-

- Achieving performance targets
- The screeners
- Parental feedback
- Professional feedback
- Early identification

Accreditation of Services
Adrian Davis

There are 20 sites that have been chosen for piloting the implementation of universal neonatal hearing screening (UNHS) in England. Those sites are loosely linked to 20 Health Authorities and are responsible for 50 or so maternity units. They are also served by a number of paediatric audiology services and education services. The Paediatric Audiology Services Index (PASI) and Deaf Early Education Services Index (DEESI) were used to assess the quality of services in areas that applied to be part of the pilot. The distribution of PASI and DEESI scores were quite considerable. There has been considerable work to validate these indices as quality indicators. Can they also be used as tools to control the development of service needs to be made prior to approving the local UNHS programme plan as part of the national protocol? What other data might be needed when the implementation team visits to assess the pilot sites?

How do we assess whether good family friendly services are in place? Should there be visits to facilities at each site, should there be discussions with current and past clients as in other quality exercises?

Should the implementation team have responsibility for identifying failing services? Is there a stamp of approval or 'accreditation' process for the whole or parts of the whole that would work without adding a large burden to central and local resources?

I shall be interested in what attendees think about these issues and if you want to contribute outside the meeting, or for all the latest news on neonatal screening, mail me on:

Professor Adrian Davis
Head of Epidemiology, Public Health and Clinical Section
MRC Institute of Hearing Research
University Park
Nottingham NG7 2RD

Tel: 0115 922 3431 - at IHR, University Park
Tel: 0115 951 8508 Ext 251 direct line
Tel: 0115 849 3351 - at IHR clinical section which is now at QMC
Fax: 0115 9518503
Email: Adrian@ihr.mrc.ac.uk

Hearing Impairment and Ethnicity
Elspeth Webb

Hearing impairment is more common in some minority ethnic communities. Contributory factors to this increased prevalence include customary consanguinity, socio-economic deprivation and poor access to antenatal services (screening, diagnostic & therapeutic).

The increased prevalence of hearing impairment in ethnic minority communities has a marked effect on both the *absolute numbers* of hearing impaired children and on the proportion of them who belong to ethnic minority communities.

The disproportionate contribution of ethnic minority populations to the prevalence of hearing impairment has important service implications. As well as combating the impact of racism on service delivery, there are specific issues that need addressing if services are to be appropriate and accessible. These include:

- Genetic services
- Needs of carers
- Assessment of special educational needs
- Health advocacy/interpreters
- Peripatetic education
- School environment
- Child protection

Beyond Neonatal Screening - team approach to working with children with multiple problems
Sally Minchom, Consultant Paediatrician (Audiol.)
Clive Sparkes, Consultant Audiological Scientist

In North Wales, we have had a targeted neonatal screen since 1997 using Automated Auditory Brainstem Response. Children who fail the screen have a high likelihood of having a hearing loss.
The aim of neonatal screening is:

- To promote early detection of permanent childhood hearing impairment.
- To fit hearing aids by the age of 6 months to those babies identified by the screen.
- To provide a family friendly hearing service with care for relationships, appropriate information provision and support for the family.

Several barriers to Family Friendly Services have been identified and these should include a lack of knowledge about children with multiple problems and their families.

From our experience, children with diagnosed hearing loss in the neonatal period have the following prognosis:

11% have severe/profound hearing loss as a single disability. This group will proportionally increase following universal neonatal screening.
32% have no major disability (hearing loss and general disability in the moderate category). This group includes children with Down's Syndrome and cleft palates. It is important to get services right with these children, as they require audiological services throughout their childhood.
21% die. These children died after their hearing loss had been diagnosed.
36% have a severe disability associated with their hearing loss.

One of the consequences of neonatal screening is that audiology services are involved with children with severe disability from a very early stage.

This talk describes how we provide services to children with multiple problems and 2 case histories will be presented.

The key points can be summarised as

- All families need information about neonatal screening and should be able to discuss the test with an informed person.
- Most parents want neonatal screening.
- Most parents want treatment of their child's hearing loss.
- This can provide a challenge for professionals not used to working with small, very young children with multiple problems.
- We try to maintain a high level of knowledge of children's illnesses, prognosis and disability.
- To adopt a flexible approach.
- To maintain a good information flow between professionals and families.
- To put service provision before audit.
- To provide a co-ordinated approach to the management of hearing loss.

IT Aspects of New-born Hearing Screening
Tim Williamson

In taking a wider view of data collection within the NHS, the benefits of UNHS data collection will be weighed against the disadvantages of not collecting data.

Specifically for UNHS, measurements (and hence data collection) will be needed for both the on-going audit and QA, and also for the evaluation of the pilots. IT will also provide support for the administration of the screening processes.

The basic IM&T requirements for new-born hearing screening are set out in the Report from the IT Working Group for the UNHS Steering Group, published on the IHR website: http://www.unhs.org.uk/

The report highlighted the need for Child Health Systems (CHSs), notably to measure coverage. Specifications for CHSs have been drawn up by the Child Health Informatics Consortium (CHIC). Details of these are available on request. The two main CHS providers (McKesson HBOC and the Welsh National) have already prepared UNHS developments.

At the point of screening, the immediate information requirement is to provide the parent with the results. Developments are required for the PCHR. Information material for parents will be developed and tested by the NDCS.

As regards the implementation and evaluation of the 20 pilot sites, the database and IT requirements will be developed through the IHR. It is intended that regular and frequent feedback from the 20 pilot sites will be maintained. The formal pilot evaluation will need appropriate IT support. This may involve measures such as time taken to screen, parental attitudes and anxiety, SEG and ethnicity, etc. A number of options for IT systems are currently under consideration. There will be a need for the IT system to link with the manufacturers of screening systems, and with the CHSs.

Finally, what of a national register?

Tim Williamson
19/01/01
tim.wiIliamson@bwc-tr. swest. nhs. uk

Educational Implications of UNHS
Jan Nanor

What is UNHS? - Educational perspective

The first and smallest part of a very long process.
The beginning of a long journey that few parents anticipate or would willingly undertake.

What is the early response of the family? - Teacher's perceptions, Waltham Forest Families

Complex response
1. Disbelief - where's the evidence?
2. Adherence to procedures
   - further assessment
   - attendance at appointments
   - acceptance of educational support

Who provides the support in Waltham Forest In the First year?

Core Team:
1. Parents and Family
2. Dr. Watkin, Consultant Audiological Physician
3. Margaret Baldwin, Senior Audiological Scientist
4. Andrea Lillystone, Specialist Speech and Language Therapist.
5. Jan Nanor, Teacher of the Deaf, Early Years Specialist

Also:
Screeners, Health Visitors, Community Paediatricians

Why <u>Educational</u> Intervention?

Parents as learners
Continuity of support 0 - 5 years - 16 - 18 years
Coordination between parents and other professionals
Assessment and planning next steps ,'rather than 'targets'
Information about educational options and procedures

Making educational support effective

Team work - we are all 'professionals'.
Shared information and maximising expertise
Clear aims, role definition and procedures
Support tailored for each family
Pace and timing
Planned progress, assessing, recording, next steps.

What are our aims in the first year?

In priority order:
Parents feel in control of changes
Child 'embedded' in family/family confident to make adjustments
Development of Early Communication skills
Opportunities to benefit from amplified sound are maximised
Making informed choices, e.g. modes of communication, amplification
Having a Laugh

<u>CONCLUSION</u>

"Neonatal screening brings the processes involved in early intervention several months earlier. There are gains in earlier auditory stimulation, development of appropriate communication skills and child-family dynamics. But, importantly, because the baby is so young and so much in the parents' domain, there is opportunity for more dialogue, reflection and considered choices.

Single-handed Paediatric Audiometry Using a Portable Visual Reinforcement Audiometer: The First One Hundred Children Tested

Keith Stewart, MSc MRCS LRCP

Abstract:

Understaffing at times of leave prompted a study of the viability of single-handed, sound field, visual reinforcement audiometry (VRA) to be carried out on one hundred consecutive children tested. These children had been referred to second or third tier community paediatric audiology clinics at twelve venues. A prototype, portable sound field visual reinforcement audiometer was specified and used in the study. The age range of the children was from six months to 53 months. Some of the children studied had developmental delay and as the only ones excluded from the study were those who could be conditioned for some form of play audiometry, VRA was appropriate for all those tested. Only 15% of children failed to complete VRA of which four (4%) had some form of global developmental delay. The single-handed management of the test proved viable, since 85% of children completed the sound field VRA testing regime.

Key Words:
audiometry, paediatric, single-handed, sound field, VRA

Introduction:

Visual reinforcement audiometry (VRA) is established as a valid test of children's hearing and is becoming more widely used in British paediatric audiology, particularly following the emphasis on the technique by Bamford and McSporran (1995). The recent publication of Quality Standards in Paediatric Audiology (Vol. 4, 2000) by the National Deaf Children's Society recommended VRA using insert earphone techniques for ear specific minimum response levels (MRLs). Day et al. (2000) reported a significantly greater number of MRLs obtained per child per session aged between 20 and 42 weeks when using sound field, against insert earphone VRA. In direct comparison with the Distraction Test (DT), sound field VRA has been shown to take less time to obtain thresholds and to enjoy greater confidence of parents (Gliddon et al., 1999). VRA is normally carried out using a fixed set-up in appropriate accommodation for audiometry, with at least two clinical operators. Community based paediatric audiology is often chronically under resourced in terms of accommodation, equipment and staffing. A county-wide community paediatric audiology service in the south of England, serving a population of 1.6 million and spanning two health authorities was experiencing difficulty in staffing clinics during annual, study and sick leave. It was resolved to obtain a portable visual reinforcement (VR) audiometer that could be used in the sound field and which, it was hoped, could be operated, single-handed, by the community doctor. The peripatetic nature of service provision required a kit that could be quickly and easily set up and stowed away, robust, solid-state construction and was portable. In autumn 1999, Puretone Ltd. was approached to design, and build such a piece of equipment that was delivered in March 2000.

The paediatric audiology service in one half of the county (population, 609,000) was chosen to study the viability of single-handed, sound field VRA and it was resolved to analyse the results of the first one hundred consecutive children tested by this method. Children referred to the service would normally be aged between eight and 42 months, though some children with developmental delay would be preferentially referred to the service despite being over 42 months old. The work of Moore et al. (1977), Thompson et al. (1989) and Gliddon et al. (1999) suggested that an upper age limit of 24 months was appropriate for VRA. It was decided that all new referrals would be included in this study unless it was possible to condition the child for a form of play audiometry. This was felt to be expedient and equable to all those referred who would not be required to wait until an assistant was available – which, in the case of some clinical venues might be five weeks later.

It was expected that about 15% of children would be unable to complete VRA (Widen 1990: Gravel and Tarquina, 1992) and would need further testing. All such children in this study were to be tested using the DT. The duration of consultation for children within the study was to be, nominally, 20 minutes, within which a history would be taken, VRA, otoscopy and tympanometry carried out, the results conveyed to the accompanying adult, records maintained and letters dictated. This represented no change from appointment frequency for children undergoing the DT.

A period during which the doctor became proficient at simultaneously handling distraction toys and operating the audiometer by touch alone was thought to be necessary before children were tested. It was recognised that there were similarities between the proposed single-handed, sound field VRA and the automated, single-handed distraction test promoted by McCormick. The BeST test, as it was called, failed because of commercial considerations (personal communication) and would not have been available.

Equipment

A free field VR audiometer was specified as follows:

Frequencies: .5, 1, 2, 4kHz
Attenuator range (@ 1 metre from subject) 40 – 90dBA in 10dBA steps
Signal type: Pure and FM 10Hz (warble) tones
Reward: Random light-show.
Power: 24v DC

and supplied by Puretone Ltd. (UK) as model VR2000P. The audiometer had two main units, the control unit to which a power source (mains to 24 DC transformer) was attached. The control unit had two dial controls: an attenuator and a frequency selection dial. There were two touch switches for signal presentation and reward, respectively and a push-push switch for pure/frequency modulation (FM) tone selection. The control unit was connected via a single four-pin DIN plug and lead to the speaker and the reward unit, which was supported on a bracket above the speaker. The speaker was a 50 Watt/eight Ohm unit. The reward unit had an array of 24 light emitting diodes (LEDs) in four rows of six; one row each of red, yellow, green and orange lights. There was a built in programme to present a random selection of intermittent illumination of different groupings of LEDs, such as would be found in "disco" lights. An optional foot operated reward switch was provided, but not used.

The control unit had a rotary calibration trim switch which could be used to fine tune the signal amplitude once the unit and testing environment had been set up, however as every test room had a different acoustic environment and setting up could not be guaranteed as precisely the same on each occasion in the same test room, measurement of free field volumes for each tone was made with the sound level meter (SLM) after the first child had been tested at each clinic session. The SLM was placed on a tripod at the child's ear level and replacing the child, in front of the accompanying adult who remained sitting in the test position. The speaker was placed no less than one metre from the child's ear in the same horizontal plane and at 45° to the front.

Method

Subjects

Some time was spent in familiarisation with the controls to be able to manipulate them by touch alone whilst simultaneously holding and then releasing the attention of the child. Once proficiency was obtained, VRA was begun with the children who were not selected in any way except that children who could be conditioned for play audiometry were not tested using VRA. Older children who were impossible to condition for play audiometry were tested using sound field VRA and included in this study of one hundred consecutive tests on children. Children who had been referred to second and third tier clinics were included.

All tests were carried out by the Associate Specialist in Community Paediatric Audiology without any clinical assistance. Ten children, all within the first thirty in the series, were also tested using routine Distraction Test (DT) techniques in order to verify the results of VRA, allowing ±5dBA between the two methods in accordance with Wilson's findings quoted by Gliddon et al. (1999).

A test was regarded as complete when the child had been stimulated with the speaker on both sides in front of the child; responses to sounds <40dBA at all four frequencies (.5, 1, 2, and 4kHz) had been ascertained on both sides; the child had responded to stimuli and not responded to "no sound" trials.

Visual reinforcement audiometry

The procedure for sound field VRA followed an explanation to the accompanying adult about the test and guidance for his/her co-operation. The child was sat upon the accompanying adult's lap with a low table between them and the doctor, as for a DT (fig. 1). The doctor caught and held the child's attention by spinning a brightly coloured spinning top. The top was then covered and after a brief pause (a half to one second) a 1kHz FM tone was presented at a nominal volume of 60dBA through the speaker. If the child responded by looking towards the speaker, the doctor activated the reward display of "disco lights".

The procedure was repeated, using an increased volume (nominal 10dBA steps), if there had previously been no response, until it was considered that the child was conditioned to the signal/response/reward cycle. Stepwise the volume of sound at 1kHz was reduced by 10dBA increments, each volume being presented (for up to five seconds) after first gaining the child's attention, the top being covered and a pause. If the child responded appropriately the visual reward (disco lights) was given. Once the child failed to respond the minimum response level (MRL) was obtained by increasing the volume in 10dBA increments until a response was obtained.

The equipment was not able to produce sound levels below a nominal 40dBA. The 4kHz, then the 500Hz and then the 2kHz MRLs were obtained in the same way. Finally the 1kHz MRL was checked. Each child had at least one "no sound" trial incorporated in the test. The speaker/reward unit was then moved to be at 45° in front on the child's other side and the procedure repeated without conditioning. If the test had been on the first child of the day, the accompanying adult was asked to remain seated, usually cuddling the child, so that SLM measurements of the specific (against nominal) volumes across the frequencies, for the set up, could be measured and noted, as described above. The accompanying adult was then given an explanation of the child's VRA results, and advice as to any further testing.

Fig. 1. Plan of room set up for single-handed VRA testing.

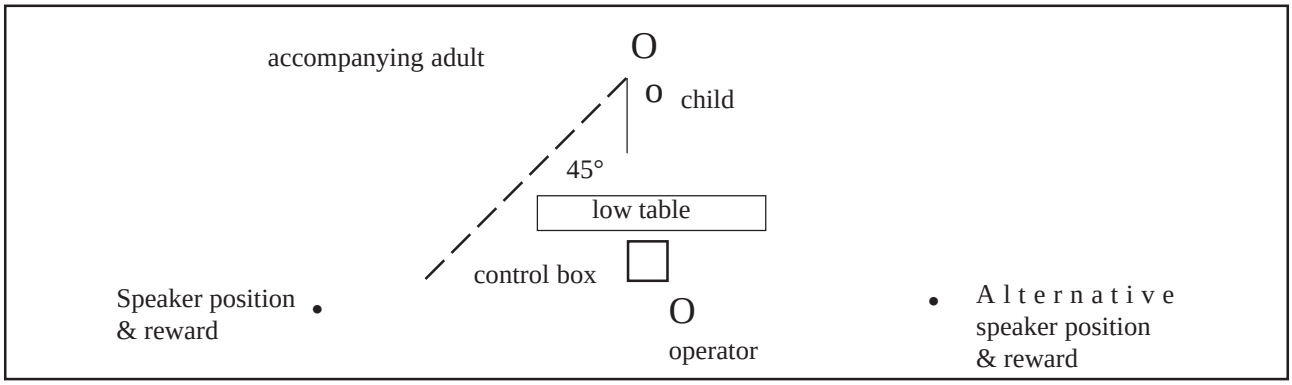
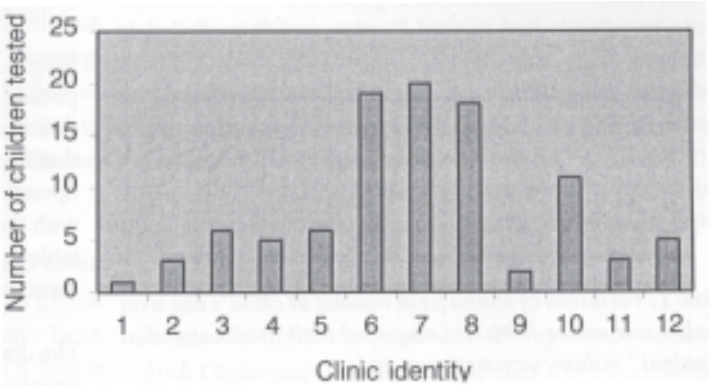


Fig. 2. Numbers of children tested at each location



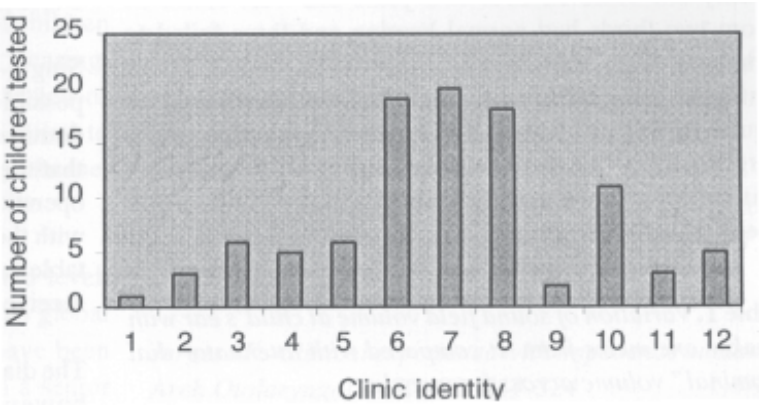


Fig. 3. Background noise levels in dBA for each clinic location

Results:
Sound field VRA was carried out on 100 children at twelve different locations (see fig. 2).

The test rooms were the usual ones allocated for hearing tests. Optimal background noise levels varied between 23dBA and 37dBA (see fig. 3). Six test rooms had background noise levels between 30dBA and 37dBA. There was no difference between the four centres where between 11 and 20 children were tested in terms of incomplete tests (18.2 –22.2%) and background noise levels (23-28dBA). Overall there were 15 (15%) incomplete tests.

The children were spread from six months to 53 months (a child with Down's syndrome) of age at the time of testing (mean age 18.75 months, median 16.5 months and mode 13 months – see fig. 4).

Of the 15 children who had incomplete tests the average age was 17.3 months. Two children (one, under two years old at the time of VRA testing, was confirmed later) were autistic, one had Down's syndrome, one global delay and one was the youngest tested (six months old). There were four incomplete tests in the first 25 and three in the last 25 VRA tests. The 15 children with incomplete VRA were subsequently tested using the DT: all but three produced complete results over between one and three DT sessions.

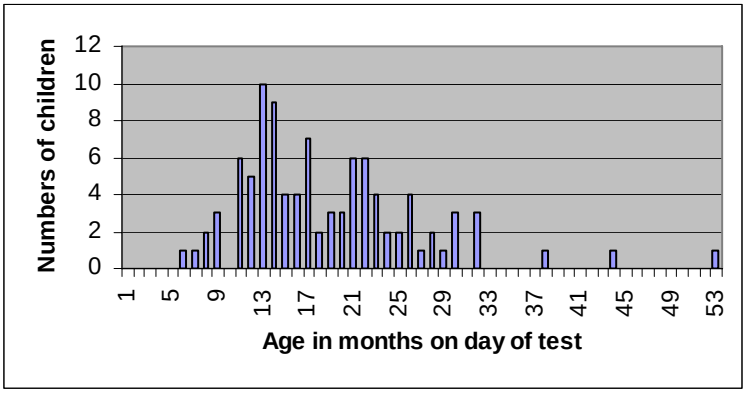


Fig. 4. Numbers of children tested by age in months

Twenty-one children over two years old were tested of whom two thirds had normal hearing and three failed to complete testing. "Normal hearing" (MRL = 40dBA) was confirmed using VRA in 64 children. Twenty-one children required >40dBA all these had Jerger "B" tympanographs (Jerger, 1970), but one was suspected of having a mixed hearing loss. Subsequent investigation showed the loss to be entirely conductive.

Table 1. *Variation of sound field volume at child's ear with speaker one metre from it compared with attenuator dial "nominal" volume across frequencies*

	Actual volume at frequency shown			
	500Hz	1kHz	2kHz	4kHz
Dial reading nominal volume				
40dBA	39	43	43	36
50dBA	47	55	52	42
60dBA	57	61	62	54
70dBA	70	71	71	62
80dBA	74	81	80	73

There was only a ±1dBA difference between FM and pure tone volumes across the test frequencies. Typical values of sound levels with the speaker at one metre distance from the child's ear (see Table 1) vary from the attenuator dial "nominal" rating by as much as -8dBA at 50 and 70 dBA (nominal) for the 4kHz tone to +5dBA at 50dBA for the 1kHz tone. It was therefore very important to establish true volume levels in each clinical session for the set up pertaining on the day (as described above). It was also necessary to be certain that the speaker positions and that of the accompanying adult's chair remained constant all day. In order to reduce the true volume at nominal 40dBA to a maximum of 40dBA across the four frequencies, the speaker was placed at 1.5 metres distance from the child's ear, when test room characteristics allowed.

If a child became unresponsive to FM tones, the pure tone option was selected and there was also the possibility of alternating the two during the same presentation by partially depressing and releasing the push-push switch. This latter operation was silent.

Discussion

Single-handed, sound field VRA of 100 children proved possible. A certain dexterity was required: using the non-dominant hand to spin and cover coloured spinning tops so that the dominant hand could be used for the "touch only" operation of the audiometer/reward controls. It was possible, with the operator kneeling or sitting on a child's chair at the table (see fig. 2), to be certain that the child being tested received no visual clues as to operation of the equipment.

The dials of the VR2000P were virtually silent in operation, however the tone/FM selector switch made a loud mechanical click on being fully depressed/released. The speaker also produced a moderately noisy static click when first operated. The amplitude decreased to become almost inaudible after three pulses. Thus, with conditioning tones being presented first, the click with the test tones would only have been audible to a child with normal hearing.

The convenience and portability of the equipment was on a par with a tympanometer. An added advantage of the equipment was that it could be used as a very loud, hand-held speaker (up to 110dBA at ear level) for testing children with severe to profound hearing loss. The visual reward using "disco lights" appeared satisfactory as a reinforcer and would be far more robust than a moving/lit-up puppet arrangement.

Sound field VRA, by definition, failed to show hearing ability in each ear separately. Only if the child had not recognised that the speaker and reward unit were being moved from one side to the other and then (s)he had localised the sound on the first presentation on the second side would any indication of binaural hearing been demonstrated. Testing on one side would have been preferable, saving time and keeping the speaker in a constant place once calibration had been carried out.

It would have been an advantage to be able to use a second speaker (and reward unit) to place on the opposite side of the child to check localisation ability and increase the level of interest, but such would compromise the convenience and portability of the VR2000P. A set-up for ear-insert and

tube-phone techniques of VRA would allow a "gold standard" test, but would, surely, have required two operators. It would be more appropriate to have such equipment available at one or two designated third tier centres within the county. Day et al. (2000) report a significant increase in MRLs obtained per session using sound field stimulation for VRA in comparison with ear canal stimulation with ear insert equipment. This group were considering children between 20 and 42 weeks of age, which only constituted the very youngest of the children in the current study, so may not be applicable.

The pass/fail rates were expected to be similar to those children of comparable ages whose hearing levels were tested by other means during the same months as the study. Such proved to be the case with about two-thirds of children in the test and non-test groups having normal hearing. Twenty-one children over two years old were tested of whom two thirds had normal hearing and three failed to complete testing. Of the three, one had Down's syndrome, one was autistic and the other had global delay.

Incomplete VRA tests (15%) were at the expected level. Considering that four of the children (4%) had either global or communication delays and would normally have been designated to a two-handed, third tier clinic with a senior teacher of the deaf, the remaining 11% giving incomplete tests was less than expected. The apparent success compared with the numbers of MRLs obtained at each session quoted by Day et al. (2000) and Widen et al. (2000) is likely to have been due to the inability of the portable equipment to produce stimuli much below 40dBA: MRLs in this study were not all true "minimal" levels. Day's study was testing the feasibility of obtaining hearing levels to educate hearing aid prescription and tuning, whereas this study would have diagnosed a hearing loss, but children thus diagnosed would have required true minimal response levels ascertained. Six of the community clinics in which this study was carried out did not have a sufficiently quiet background level of noise for true MLRs to be obtained. Widen et al. found only 44% of children between eight and twelve months of age, in a study of over 3000 children, completed the insert earphone test protocol at the first session. Their study was carried out to verify neonatal screening tests. Only 18% of those in the current study fell within the same age group as Widen was testing, though children with incomplete tests in this study were spread across the full age range. It would appear that insert earphone results take longer to achieve.

The purpose of this study was to test the feasibility of single-handed operation sound field VRA testing in community clinic settings and to assess the portable equipment. With dexterity and practice the operation is possible and feasible. The equipment would require minor adjustment to the switches, work to reduce the frequency specific variability in volume presented and some measure to reduce the build-up of static to make it perfect for the purpose. The study highlighted the problem of inadequate soundproofing in many of the test rooms. This is a serious matter, whatever form of sound field testing is carried out.

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Keith Stewart, Associate Specialist, Kent Paediatric Audiology Service. January 2001

Keith Stewart, MSc MRCS LRCP,
Preston Hall Hospital, ME20 7NJ

THE BACDA PRIZE AWARD
A Visit to the Hearing Clinic

What do parents tell their young children, if anything, in preparation for a visit to the hearing clinic? And what have parents or carers been told to expect of such a visit? I had never had cause to think about this until a string of clinics left me frustrated and puzzled.

Four year old girls pouted and refused to be cajoled into co-operation; three year old boys couldn't be restrained by mothers resigned to yet another fruitless clinic appointment. Nothing unusual in those responses I hear you saying.

But there was. These families were attending hearing assessment clinics within their own neighbourhood. Care had been exercised in waiting area design, waiting was kept to less than 10 minutes in over 75% of cases, and clinic staff were committed to making a child's visit enjoyable and fun.

Paediatric audiology is difficult. But this seemed more than just the occasional child who was shy or upset.

I began to listen to conversations between child and parent (usually mum) on the way into the clinic room. What a revelation! I heard tell tale comments either as the family reached the clinic room or as they crossed the threshold on the way out. To me a mother might say 'I don't think he'll co-operate', 'he doesn't like doctors' or 'she's stubborn'. During the hearing assessment session I might hear 'he was like this with the health visitor' or 'I didn't think he'd do anything - he's always like this'. To some of the difficult but eventually successfully tested children I overheard comments like - 'I told you it wouldn't hurt' or 'see I said there weren't any needles'. The list of rewards parents offered to their children made my mouth water! Rarely did the promise of a reward have the desired effect.

I soon realised a key to quality assessment might lie in better preparation prior to the clinic visit.

I surveyed 50 consecutive parents at my audiology clinic. I asked parents what they told their child about the appointment, whether they had any idea of what would be expected of their child during the assessment, what information had been given by the referrer and whether they thought an information leaflet about the clinic would be of benefit to them and their children.

Virtually all said they would like information before a clinic visit so 'they knew what to expect'. The majority thought it important to talk to their child about the visit prior to arrival, and most liked the idea of illustrations showing what we did with the children. Surprisingly a small minority said they had not thought it necessary to tell the child anything about the visit.

Mums with young babies felt it helped to know what might happen in clinic. Some admitted to being quite upset after seeing the health visitor and subsequently apprehensive about a visit to the hearing clinic. If they were relaxed they thought it might help their baby.

I began a search for suitable materials that could be either sent out with the appointment or left strategically placed in the waiting room. I found a book suitable for an ENT outpatient department (it was very 'hospital') but nothing for community settings. I'd have to do it myself!

The idea lay gestating in my mind for some months and then surfaced at a quality circle meeting. The Director of Quality Development was present and suggested I put a proposal together for the annual 'Pot of Gold' competition. This award was set up to encourage Trust employees to develop ideas that would improve service delivery and which would not

otherwise gain funding.

Months later I was asked (at short notice of course!) to make a 10 minute presentation to the selection committee. I chose several 'bullet point' style statements illustrated by a couple of two minute video clips from clinic filmed as part of my own self monitoring procedure. Knowing that there had been seventeen applications and several other projects short listed I had no great expectations.

Some time later at the annual staff award ceremony I was astonished to hear this project announced as the winner. I had money to produce and print information for parents and children and to make a video suitable for family viewing.

In consultation with parents I produced two booklets. The first reads like a children's story with plenty of pictures to talk about. It aims to encourage parents and carers to read the story with their children, who can then colour in the illustrations. Assessments of hearing are described as 'hearing games' to play and range from distraction testing through to play audiometry. Otoscopy and tympanometry are included. A child friendly font is used and a drawing by a well known children's illustrator appears on each page of the booklet

The second booklet is aimed at parents bringing babies to the clinic. It explains why babies are referred to hearing clinics, how hearing will be checked, and how parents or carers can contribute to the assessment process. A diplomatic reminder to bring the child's own personal health record is included.

Both booklets are designed to inject a little fun into preparation for a clinic visit. Informal feedback confirms parental appreciation of the information, and now we see children rushing up to the 'men in the boat' and saying "here they are". One boy recently told us the booklet had been his bedtime story for the past week, and he had obviously enjoyed it, another came clutching a well used and beautifully coloured booklet!

I was still concerned that the printed word may not be accessible to many of our youngsters nor their families. For this group I saw production of a video as a valuable resource. Video is a very familiar medium to young children and provides another simple and fun way to help demonstrate what we do in the hearing clinic and the games we will play with the children.

Producing a video is not a task to be undertaken lightly! I used a professional video production company and am very pleased with the quality of the product. The video begins with a mother reading one of the booklets to a brother and sister who have both received appointments to visit the hearing clinic. Then two pre-school children and a baby are shown having their hearing tested using a combination of distraction testing, VRA, sound field performance testing, pure tone audiometry and a live speech test using the McCormick Toy Test.

Parents may borrow the video from their health visitor or local public library. Children enjoy the video and parents find it informative. Information about the video together with a booklet is sent with the appointment letter to parents about three weeks prior to a clinic visit. Each booklet fits easily into a DL sized envelope and with a weight of only 20gm does not add to the postage cost of an appointment letter.

We are beginning to see more positive co-operation in clinic with both children and parents seemingly better prepared. It has been very encouraging to see children recognise aspects of the assessment and spontaneously comment accordingly without hint of fear or anxiety.

Both booklets have received the coveted 'Crystal Mark' from the Plain English Campaign - slight editorial changes were necessary to meet the exacting standards required for the award.

The video and both booklets are available to purchase - you don't have to reinvent the wheel. The booklets are available in electronic format, with options for inclusion of local information on the front and back covers. The material can be adapted to reflect local practice.

The challenge now is to evaluate the success of this intervention in an attempt to demonstrate a positive benefit on clinical effectiveness and user satisfaction with the service. Sounds like clinical governance in action! But at least the exercise has been enjoyable, even if demanding.

For more information contact the author by phone 01903 843518
or Email: adrian.dighe@wpc-tr.sthames.nhs.uk