# NEW ZEALAND AUDIOLOGICAL SOCIETY POSITION STATEMENT
**August 2002**

## AUDIOLOGICAL MANAGEMENT OF CHILDREN WHO ARE DEAF OR HEARING IMPAIRED IN NEW ZEALAND

**Introduction**
In New Zealand the audiologist is the hearing health care professional most suitable to assume the leading role in the audiological management of children with hearing loss.
(See NZAS Position Statement "Audiology Services and Hearing Aids", 1993).

Members of the New Zealand Audiological Society accept that audiological management of children requires a specialised approach and special facilities. Children who are deaf or hearing impaired and their families/caregivers constitute a unique group whose needs differ from those of other families. Children with hearing loss are different from children with other disabilities because of their lack of full access to communication. This can have long-term effects on the family/caregivers and on the child's cognitive, speech, language and social-emotional development.

Early identification, assessment and management should:

a be conducted by professionals who have the qualifications to meet the needs of children with hearing loss, particularly infants and toddlers, and their families/caregivers,

b be designed to meet the unique needs of individual children and their families/caregivers, and

c include families/caregivers in an active, collaborative role with professionals in the planning and provision of early intervention services (American Speech-Language-Hearing Association, 1994, pg117).

Accurate assessment of hearing in infants, young pre-school children, developmentally delayed children and children with multiple handicaps can be a lengthy process.

Hearing test results for such children often only becomes meaningful when considered alongside observations by families and associated professionals of a child's developing listening skills and communicative behaviours.

The following position statement was developed by the New Zealand Audiological Society. The statement comprises Parts A to I.

Specific areas and goals are as follows:

**Part A Diagnosis and Confirmation of Hearing Loss**
To confirm degree, configuration and aetiology of hearing loss as quickly and as accurately as possible.

**Part B Guidance and Counselling**
To provide or arrange for appropriate informational guidance and counselling for the family/caregivers at the time of initial confirmation of hearing loss, and at later stages as appropriate.

**Part C Team Approach**
The audiological management of children with hearing impairment will involve three primary professionals: the audiologist, the adviser on deaf children and the otolaryngologist. In some cases, developmental psychologists and paediatricans may be involved. (For clarification of the roles of these professionals, see "Hearing in Infants and Children" (1992).

**Part D Selection of Personal Hearing Aids**
To select hearing aids that are optimal for the individual child.

**Part E Fitting and Evaluation of Personal Hearing Aids**
To ensure hearing aid selection and prescription goals are met as closely as possible, and to ensure that the child and family/caregivers are instructed in the use, care and maintenance of the hearing aids.

**Part F Issue of Hearing Aids to Children**
To ensure hearing aids are issued as soon as is appropriate and funding applied for as soon as possible.

**Part G Long Term Monitoring of Progress with Hearing Aids**
To establish a regular and appropriate follow up programme for all children who are deaf or hearing impaired who wear hearing aids.

**Part H Provision of FM Radio Hearing Aids**
To select, fit and evaluate suitable FM radio hearing aids for children who would benefit from them.

**Part I Cochlear Implants, Vibrotactile Aids and Bone Conduction Hearing Aids**
To provide informational guidance about cochlear implants, vibrotactile aids or implantable bone conduction hearing aids to families/caregivers where appropriate, and to arrange or provide appropriate assessments for children to determine if these devices are suitable.

## Part A Diagnosis and Confirmation of Hearing Loss

**Goal - To confirm degree, configuration and aetiology of hearing loss as quickly and as accurately as possible.**

1 Assessment should be conducted by an audiologist, who is a member of the NZAS, using appropriate paediatric audiological techniques and in a child-oriented test environment.

2 Confirmation of hearing loss should be completed as soon as possible after initial screen/assessment/referral.

3 a Confirmation should be conducted in association with an otolaryngologist, an adviser on deaf children, paediatrician or developmental psychologist and the family/caregivers.

b The child should be referred to another audiologist for a second opinion as soon as possible if this is likely to facilitate early diagnosis and if desired by the family/caregivers.

4 a Wherever possible the degree of hearing loss should be confirmed using both objective procedures and behavioural audiometry.

b For children unable to cooperate fully with one audiologist alone behavioural audiometry must be conducted with the assistance of a second audiologist, or an adviser on deaf children or a trained assistant.

5 When AEP testing is performed, estimates of low, mid and high frequency hearing thresholds should be obtained in each ear, using frequency specific air and/or bone conducted stimuli. This is highly desirable to facilitate selection and fitting of hearing instruments (including cochlear implants).

6 With the family's permission the Deafness Notification Form should be completed by the audiologist and signed by the family/caregivers for all children diagnosed with hearing loss.

**Part B Guidance and Counselling**

**Goal - To provide or arrange for appropriate informational guidance and counselling for the family/caregivers at the time of initial confirmation of hearing loss, and at later stages as appropriate.**

1 Any emotional support provided must be consistent with the needs of the family/caregivers and child and their culture.

2 Informational guidance shall include:

a The full range of options available for family/caregivers to stimulate communication development, including types of sensory aids and signed communication.

b Names of persons or organisations who can act as resource and support people.

c Information on cognitive, listening, speech, language and social-emotional development, including the impact of hearing loss.

d The recommendation that the child's vision be tested.

3 Informational guidance and counselling should be provided in conjunction with an adviser on deaf children.

4 a Extended counselling may be offered to the family/caregivers if considered necessary.

b Extended counselling for family/caregivers must be conducted by professionals with training in counselling or persons experienced in counselling families of children who are deaf or hearing impaired.

c Only family/caregivers who are willing to participate in such counselling and who have given their consent should be referred for counselling.

5 Genetic counselling should be offered to all families/caregivers.

**Part C Team Approach**

**Goal - The audiological management of children who are deaf or hearing impaired will involve three primary professionals: the audiologist, the adviser on deaf children and the otolaryngologist. (For clarification of the roles of these professionals, see "Hearing in Infants and Children" (1992).**

1 Coordination of audiological management will be the responsibility of the child's audiologist.

2 The family/caregivers can choose to see an audiologist in private or public practice. The audiologist must inform the family/caregivers of all fees payable for audiology services and the likely costs of hearing instruments, prior to service delivery.

3 If the family chooses to see an audiologist in private practice, that audiologist must inform the family/caregivers of the (lesser) charges that would be incurred if the child were to be seen in the public sector.

4 The audiologist should ensure children are referred to an otolaryngologist and an adviser on deaf children as soon as a diagnosis of hearing loss has been confirmed, if the child has not already seen these professionals, and if the family/caregivers agree.

**Part D Selection of Personal Hearing Aids**
**Goal - To select hearing aids that are optimal for the individual child.**

1 Amplification characteristics should be prescribed by an audiologist on the basis of the best available audiological data regarding degree and configuration of hearing loss for each ear.

2 Suitable hearing aids should be selected by the audiologist after consultation with the family/caregivers, adviser on deaf children and any other appropriate professional, and having regard to the needs of the child.

3 Hearing aids meeting the following criteria will be selected:

  a Approved for subsidy purposes by National Audiology Centre.

  b Electroacoustic performance suitable for child's amplification needs.

  c Suitable size and physical shape.

  d Service and spare parts support available.

  e Direct electrical or inductive coupling to other assistive devices or accessories likely to be used by the child available.

  f Tamper-resistant battery drawer if tampering with batteries by young children likely to occur.

  g Flexible electroacoustic performance to accommodate likely fluctuations in, or progression of hearing loss.

  h Adjustable gain and maximum power output so that, where possible, distortion of the speech signal and risk of noise trauma can be minimised.

  i Reasonable instrument and servicing costs (including remaking circuitry and reshelling). When expensive hearing aids are selected careful consideration should be given to the likely benefits for the individual child.

4 To optimise speech understanding in noise (since classrooms are typically noisy and moderately reverberant) the potential advantages of binaural hearing aids, directional microphones, compatibility with direct signal input, etc should be considered.

**Part E Fitting and Evaluation of Personal Hearing Aids**

**Goal - To ensure hearing aid selection and prescription goals are met as closely as possible, and to ensure that the child and family/caregivers are instructed in the use, care and maintenance of the hearing aids.**

1 Fitting to be conducted by an audiologist, with family/caregivers in attendance. Whenever possible, an adviser on deaf children should be present when a child is being fitted for the first time.

2 The audiologist shall record:

a Audiological data which demonstrate the effectiveness of the hearing aids fitted to each ear, such as aided thresholds, functional gain or real ear probe microphone measures.

b Speech perception data which demonstrates overall effectiveness of the hearing aids wherever possible.

c. Electro-acoustic test results which may serve as a baseline for future reference and for confirmation of appropriate amplification where real ear measures are not possible.

3 The audiologist shall ensure that hearing aids and earmoulds are or appear comfortable and well fitting for the child.

4 The audiologist shall provide informational guidance to the family/caregivers and the child and the adviser on deaf children (if necessary) on:

a The fitting, operation and removal of the hearing aids.

b The proper care and maintenance of the hearing aids, and where suitable checking and maintenance equipment may be obtained (battery tester, spare batteries, listening tube/stethoclip, body aid earphone and cord for listening to output of FM radio aids, tool for releasing tamper-resistant battery drawer, earmould blower, cleaning tools, etc).

c Resources and appropriate support persons for care and maintenance of the hearing aids.

d The cost of the hearing aids for insurance purposes.

5 The audiologist shall the advise family/caregivers of the expected battery life and the size of battery used.

6 The audiologist shall arrange for a trial period during which:

a The adviser on deaf children monitors acceptance of the hearing aid(s) by the child and the family/caregivers.

b The family/caregivers keep a daily diary to monitor signs of:

i hearing/communication benefit,

ii discomfort or intolerance of amplification,

iii acoustic feedback, and

iv acceptance of hearing aids.

7 The audiologist shall review progress with the hearing aids on trial with the child, the family/caregivers, the adviser on deaf children and other professionals who are involved. The review shall include evaluation of:

a Physical comfort of hearing aids and earmoulds.

b Audiological/communicative benefits of hearing aids.

c Ease of operation of hearing aids.

d Level of care of hearing aids.

e Any preferences that the child or family/caregivers have for cosmetic features which may improve acceptance of the devices.

f Length of time and situations in which child wears hearing aids.

**Part F Issue of Hearing Aids to Children**

**Goal - To ensure hearing aids are issued as soon as is appropriate and funding applied for as soon as possible.**

1. Documentation for funding of hearing aids shall be completed as soon as possible after their issue is confirmed.

2. Accurate records shall be kept of model numbers, serial numbers, hearing aid settings and any accessories supplied to children.

3. Information regarding hearing aid model and serial numbers, hearing aid settings and accessories shall be distributed to relevant professionals such as advisers on deaf children, and to family/caregivers at the time of issue of hearing aids.

4. Lost or damaged hearing aids should be replaced immediately once loss or damage has been confirmed.

**Part G Long Term Monitoring of Progress with Hearing Aids**

**Goal - To establish a regular and appropriate follow up programme for all children who are deaf or hearing impaired who wear hearing aids.**

1. The objectives of long term monitoring are:
   - a To monitor hearing levels with and without hearing aids.
   - b To monitor middle ear function.
   - c To monitor hearing instrument and earmould function and condition.
   - d To monitor the child's communicative development and listening ability in the environment in which hearing aids are used.
   - e To keep family/care givers and associated professionals up to date with audiological information and progress.

f To be alert for changes in hearing levels and ear health which warrant prompt referral to associated professionals, or revision of the hearing aid fitting.

2 For preschool children accurate details of individual ear unaided and aided hearing levels may not be available at the time of hearing aid issue. If audiological data is incomplete children should be seen by the audiologist as often as required in as short a time period as is practical until sufficient data are available to ensure the hearing aids are appropriately adjusted. The degree of hearing loss and general developmental progress of the child, and the cooperation and needs of family/caregivers should be considered when making follow up appointments.

3 For older preschool and school aged children for whom details of hearing levels and hearing aid settings are well established, and with whom audiological assessment can be conducted in a cooperative manner, a full audiological review should be conducted at least once a year.

4 For preschoolers at risk of significant changes in hearing levels, an audiological review should be conducted at least every six months until the range of fluctuation or any progression in hearing levels can be established.

5 An audiological review should consist of at least the following assessments (whenever possible depending on age, cooperation and other factors):

**Unaided Testing**

a Soundfield, headphone (or insert phone) and bone conduction audiometry.

b Measurement of discomfort levels.

c Immittance audiometry (tympanometry and acoustic reflexes).

d Speech perception testing if appropriate (depending on age and abilities of the child).

**Aided Testing**

a Probe microphone real-ear gain and functional gain or aided soundfield threshold testing and comparison with target gain threshold requirements for each ear.

b Physical and electroacoustic checks of hearing aids and replacement of old and unreliable hearing aids when necessary.

c Checking of earmoulds and repairs to existing moulds, and taking impressions for new earmoulds to be made.

d Checking of assistive listening devices such as FM radio aids,conference microphones, hand held microphones and extension microphones.

e Checking of aided tolerance of loud sound.

f Speech perception testing.

g Noting family/caregivers comments on use and benefits from hearing aids.

Following the audiological review a report with data should be sent to the family/caregivers, the adviser on deaf children and other associated professionals. Pure tone audiograms should be plotted on a form that includes the speech spectrum.

5 Ideally ear impressions should be dispatched from clinics on the same day that the impression is taken, or as soon as possible afterwards.

6 Earmoulds should be frequently replaced during younger childhood to pre-empt the onset of feedback.

7 Ear impressions should be taken immediately if acoustic feedback due to a poorly fitting earmould is occurring.

**Part H Provision of FM Radio Hearing Aids**

**Goal - To select, fit and evaluate suitable FM radio hearing aids for children who would benefit from them.**

1 Any child using personal hearing aids or a cochlear implant is a potential candidate for an FM aid who is, or who is likely to be, disadvantaged by distance from the source of a signal or by the high level of ambient noise present during signal transmission.

2 Children for whom reliable hearing aid or a cochlear implant use is not established or for whom appropriate hearing aids have not yet been confirmed as a result of insufficient audiological data, should not be considered as candidates for radio hearing aids.

3 The performance of FM radio hearing aids, when connected to or combined with children's personal hearing aids, requires assessment with both electro-acoustic and behavioural audiological techniques.

4 Techniques suitable for the audiological fitting and evaluation of FM radio hearing aids are published by hearing aid, cochlear implant, FM radio aid and hearing test equipment manufacturers and by the American Speech and Hearing Association (ASHA, 2000). See further references at end of statement.

**Part I Cochlear Implants, Vibrotactile Aids and Bone Conduction Hearing Aids**

**Goal - To provide informational guidance about cochlear implants, vibrotactile aids or implantable bone conduction hearing aids to families/caregivers where appropriate, and to arrange or provide appropriate assessments for children to determine if these devices are suitable.**

1 Families/caregivers of children with severe-profound hearing losses (in particular those who obtain little or no benefit from conventional hearing aids) need to be made aware of cochlear implants and vibrotactile aids.

2 Families/caregivers of children who wear bone conduction hearing aids need to be made aware of implantable bone conduction hearing aids.

3 The decision to refer a child for consideration for these devices shall be made after informational guidance has been given to the family/caregivers (and to the child themselves if appropriate) and after informed consent has been obtained from the family/caregivers and the child.

4 The role of the child's local audiologist in the long term audiological management of the children receiving these devices is determined by the providers in consultation with the local audiologists, family/caregivers and associated professionals.

5 The child's local audiologist shall be kept informed of a child's progress with these devices, including the provision of periodic reports, by the service or programme providing the specialist audiological services for such aids.

6 Prior approval for the funding of vibrotactile aids and implantable bone conduction aids is required from the Special Aid Fund before these devices can be ordered and fitted to children in New Zealand .

**Further Reading and References**


1 American Speech-Language-Hearing Association "Audiology Services in the Schools: Position Statement". ASHA (1983 May) 25: 53-60.

2. 1990 Joint Committee on Infant Hearing "Position Statement". Audiology Today 1991; 3(4): 14-16.

3 American Speech-Language-Hearing Association "Vanderbilt/VA Hearing Aid Conference 1990 consensus statement. Recommended components of a hearing aid selection procedure for adults". ASHA (1991 April) 33: 37-38.

4. Hawkins DB, Beck LB, Bratt GW, Fabry DA, Mueller HG, Stelmachowicz PG.
"Service provision under the Individuals with Disabilities Education Act - Part H,
as amended (IDEA- Part H) to children who are deaf and hard of hearing ages
birth to 36 months". ASHA (1994 August) 36: 117-121.

5 Department of Health, NZ
"Child Hearing in New Zealand: Strategic Directions". June 1991.

6 Department of Health/National Audiology Centre, NZ.
"Hearing in Infants and Children". Manual for Primary Health Care Professionals. June 1992.

7 The National Deaf Children's Society, UK
"Audiological Services for Children. Recommended Practice". September 1990.

8 NZ Audiological Society
"The Statement of Position; Audiology Services and Hearing Aids". New Zealand Audiological Society Bulletin 1993; 3 (1): 3-4.

9 Seewald RC (Ed), "A Sound Foundation Through Early Amplification." Proceedings of an International Conference., Phonak AG, 1998.