New Zealand Audiological Society Inc
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Hearing Aid Selection, Fitting and Follow-Up

These procedures apply to all age groups. For more detailed recommendations for children refer to the NZAS position statement- Audiological management of Children who are deaf or Hearing Impaired April 2002.

Expected outcomes

Selection, fitting and evaluation of optimal amplification systems for the lient to enhance communication ability in as many aspects of their daily life as possible.

Clinical indications

- Individuals of all ages with a hearing loss.

Clinical process

- Client's suspected of having active medical pathologies of the auditory system or medically treatable hearing loss are referred for a medical evaluation prior to hearing aid assessment and fitting.
- Hearing aids are recommended on the basis of the client's audiological and communicative needs.

Assessment for fitting is based on:

- Client's communication needs and preferences.
- Individual's adjustment to their hearing loss and readiness to undertake the rehabilitation process.
- Audiological and/ or Electrophysiological test outcomes.
- Consideration of particular hearing aid styles and characteristics and their suitability for the client.
- Discussions with client/ caregiver regarding rehabilitation options including hearing aids FM systems, Assistive listening devices, hearing tactics, auditory training.

1. **Selection** of characteristics of hearing aids/ FM aids to be based on:

- A recognised and validated prescriptive approach which may be prescriptive for hearing aids or that recommended by an FM manufacturer or audiological service as most valid for that particular product/ type of FM aid..
- Understanding of individual hearing aid circuit characteristics.
- Consideration of appropriateness and physical comfort of hearing aid style selected.
- Ability of client and caregivers to manage the hearing aid/ FM aid type chosen.
- Application of knowledge regarding acoustic modifications and ear mould technology.
- A clear understanding of client's wishes and needs in regard to the level of technology and price. In the case of children requiring an FM aid, an assessment of the child's needs and the most suitable technology, in conjunction with an advisor on deaf children.

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2. **Fitting** of devices

- Hearing aids and earmoulds are physically and acoustically comfortable and well fitting.
- Age appropriate acoustical verification should be carried out ideally at fitting and/ or follow up appointments using, electroacoustic evaluation of hearing aids and/ or real ear measurements.
- The performance of FM radio hearing aids, when connected to or combined with personal hearing aids, requires assessment with both electroacoustic and behavioural techniques to ensure that
    - the device is compatible with the hearing aids and with the persons amplification needs
    - the expected outcome of an improvement in speech to noise ratio as a result of fitting the FM aid is likely to be met, and therefore its cost is justified.
- Clients/ carer provided with informational guidance on:
    - Fitting, operation and removal of aids/ FM aids.
    - Proper care and maintenance of hearing aids/ FM aids.
    - Wearing schedule for hearing aids/ FM aids, suggestions for trial period.
    - Expected battery life.
    - Resources and appropriate support persons.
    - Precautions regarding batteries.

3. **Follow-up**

- Evaluation of the hearing aid's effectiveness will be based on interview and progress review with client/ carer. The follow up process should involve a number of reviews prior to the aid being finalised with the client.
- Client satisfaction with and knowledge of the hearing aid management features mentioned in section 2 above should be checked. As part of this the client's skill in managing the device should be evaluated by the audiologist and assistance given to improve this or help sought from others such as family members or a hearing therapist.
- The acoustic performance of the hearing aid should be verified using
- Electroacoustic evaluation of hearing aids.
- Real-ear measurements.
- The review of FM aids, in addition to the above where appropriate, requires the input of associated professionals where field performance and benefit is best assessed by such professionals (e.g. advisors on deaf children).
- The assistance that the hearing aid is providing to the client for improved communication should be validated using
- Administration of communication inventories or questionnaires.
- Appropriate behavioural testing e.g. frequency specific measures of functional gain, speech perception testing.
- Significant fine tuning over a number of appointments may be required during the follow up process for the benefit to the client to be optimised for their hearing loss.

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- The decision to finalise a hearing aid fitting should be made between the audiologist and client/ carer when the client has had sufficient opportunity to trial the hearing aid in the listening environments/ situations relevant or important to the individual.

Clinical setting/ equipment standards

- Instrumentation and test environments are available for free field testing, electroacoustic evaluation of hearing aids, and real ear measurements. These procedures are measurable acoustic stimuli e.g. pure tone and FM tones, calibrated noise signals.
- Equipment should be calibrated and rooms should meet acceptable standards for background noise levels as specified in ISO and IEC standards.
- Fitting, orientation and follow-up is carried out in a structured environment that is physically, acoustically and visually appropriate.

Documentation

- Documentation contains identifying information, pertinent information assessment results and specific recommendations and results of verification and validation of hearing aid/ FM aid fitting. Recommendations may address the need for further assessment, follow-up or referral. When rehabilitation is recommended, information is provided concerning the frequency, estimated duration and type of service (e.g. individual, group, home programme) required.

Related references

American National Standards, Methods of measurement of Real ear Performance Characteristics of Hearing Aids. ANSI S3.X 199, Draft 13, 1997

Dillon, H. “Hearing Aids”. Turramurra: Boomerang Press, 2001.

Guidelines for Hearing Aid Fitting for Adults. ASHA Ad Hoc Committee on Hearing Aid Selection and Fitting. American Journal of Audiology. March 1998, Vol 7, Pages 5- 13

New Zealand Audiological Society Position Statement on the Audiological Management of Children who are Hearing Impaired or Deaf in New Zealand- April 2002

IEC 60118-8 Ed. 1.0b: 1983 Hearing Aids. Part 8. Methods of measurement of performance characteristics of hearing aids under simulated in situ working conditions (under review)

Jordt J., Presentations on FM aids at NZAS Conference, Auckland 2003.

Jordt J, Heslop N, Peryman P, Pokorny M, Poludore W, Tu’inukuafe D, Wheadon L, Wilson O. “ FM Workshop” at NZAS Conference, Auckland, 2003.

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

There are a large number of IEC standards that relate to the Manufacturing standards for Hearing Aids. These are not really relevant to clinical practice.

1. The ASA have acknowledged the input into their standards of the "Draft Standards for General Practice", Royal Australian College of General Practice, " Clinical Standards For Clients Attending Private Sector Providers" and Service Private Provider Qualifications and Accreditation" Australian Hearing Service and "Preferred Practice Patterns for the Professions of Speech-Language Pathology and Audiology", American Speech Language and Hearing Association

2. In New Zealand the most frequently used reference standard for room calibration is ISO8253-2 1992. Acoustics - Audiometric test methods - Part 2 sound field audiometry with pure tone and narrow band test signals. Room calibration must be repeated whenever equipment is changed or room layout/acoustics altered. Sound level meters used in sound field testing also need regular calibration.