

Washington University School of Medicine Digital Commons@Becker

Staff Publications

2006

Audiologic management of adult hearing impairment

American Academy of Audiology Task Force

Follow this and additional works at: http://digitalcommons.wustl.edu/audio_fapubs



Part of the [Medicine and Health Sciences Commons](#)

Recommended Citation

American Academy of Audiology Task Force, "Audiologic management of adult hearing impairment" (2006). *Staff Publications*. Paper 2.
http://digitalcommons.wustl.edu/audio_fapubs/2

This Article is brought to you for free and open access by Digital Commons@Becker. It has been accepted for inclusion in Staff Publications by an authorized administrator of Digital Commons@Becker. For more information, please contact engeszer@wustl.edu.

AUDIOLOGIC MANAGEMENT OF ADULT HEARING IMPAIRMENT

An executive summary of the American Academy of Audiology's Task Force on Audiologic Management of the Adult Patient and Adult Hearing Impairment is presented on the following pages. Michael Valente served as chair of the Task Force and prepared this summary on behalf of the Task Force. The Task Force members were Harvey Abrams, Darcy Benson, Theresa Chisolm, David Citron, Dennis Hampton, Angela Loavenbruck, Todd Ricketts, Helenda Solodar and Robert Sweetow. The entire final report is available for review and downloads on the Academy web site at www.audiology.org/publications/documents/positions/adultrehab/.

WHY A NEW GUIDELINE?

The most recent guidelines for hearing aid fittings in adults were published in 1998 (Valente, et al., 1998) and, obviously since that time, there have been significant advances in hearing aid technology and methods to verify and validate fittings.

There was concern that current clinical practices may do little to differentiate how hearing aids are dispensed by audiologists.

The current Task Force felt that this important topic deserved analysis using evidence-based principles (EBP) in developing new guidelines, and that the guidelines must be patient-centered by incorporating a section on auditory and non-auditory needs-assessment. Finally, it was felt that if the “*spirit*” of the guidelines were followed then implementation by audiologists would:

- Promote uniformity of care,
- Decrease variability of outcomes,
- Promote better fitting practices,
- Elevate the clinical care to our patients as well as elevate our profession,
- Provide greater patient satisfaction, and,
- Reduce the hearing aid return rate.

The Task Force divided the guidelines into five major divisions: (1) Introduction; (2) Assessment; (3) Technical Aspects of Intervention; (4) Audiologic Rehabilitation including Instruction, Orientation, Counseling and Follow-Up; (5) Assessing Outcomes. These divisions follow the sequence patients typically follow when pursuing amplification. The five divisions were divided into the nine sections and the numbers appearing below in parenthesis indicate the number of key recommendations developed for each section. The specific recommendations for each section ranged between none and 13. Overall, the guideline contains 43 specific recommendations.

- **Assessment:** auditory assessment (0), auditory needs assessment (3), and non-auditory needs assessment (6).
- **Technical Aspects of Intervention:** hearing aid evaluation (13), quality control (2), fitting and verification (7), and hearing assistive technology (4).
- **Instruction, Orientation, Counseling and Follow-Up Audiologic Rehabilitation:** hearing aid orientation (2), and counseling and follow-up audiologic rehabilitation (6).
- **Assessing Outcomes** (0)

A systematic search of the literature was conducted using EBP for each of the 43 recommendations. The search focused on the best available evidence to address each recommendation and ensured maximum coverage of studies at the top of the hierarchy of study types (Levels 1-2). The search extended to

studies or reports of lower quality (Levels 3-6) only if higher quality studies could not be found. However, for most recommendations within the guidelines, less than 1/3 were judged as Level 1-2. This finding should be of concern as it points to the need for research to justify how audiologists provide services relative to the sections covered in these guidelines.

ORGANIZATION OF THE GUIDELINES

Each section of the guidelines begins with an objective stating the purpose for the section, followed by a background detailing how the section fits within the guideline. Specific Recommendations then follow and each section ends with the Table of Evidence and References.

INTRODUCTION TO THE GUIDELINES

Within the Introduction section, the guidelines provide several statements outlining some of the essential components. First, a licensed audiologist must provide services. Second, the combined efforts of the audiologist, patient, significant others, and/or caregivers are essential. Third, assessment must be viewed as a multi-faceted process that includes assessment of auditory function to determine the extent of impairment and assessment of activity limitations and participation restrictions through self-report of communication need and performance. Fourth, consideration should be given to assess the typical listening environments using such tools as data logging. Also, there should be consideration of how these levels of assessment interact and reinforce each other to improve quality of life (QOL). It was felt that as a result of the multi-faceted assessment, clear and realistic individualized goals for intervention could be set.

ASSESSMENT

Auditory Assessment. This section details the various components of the auditory assessment of the patient. Some of the specific components may include:

- Comprehensive case history,
- Identifying type and magnitude of hearing loss via pure-tone and speech audiometry as well as immittance,
- Measuring loudness discomfort levels (LDLs)
- Otoscopic inspection and cerumen management,
- Determine need for treatment/referral to physician or need for further tests (ABR; vestibular, etc),
- Counsel patient, family, caregiver on the results and recommendations,
- Assess candidacy and motivation toward amplification,
- Determine medical clearance as determined by FDA (1977).

Auditory Needs Assessment. This section details procedures to develop patient-specific communication needs. This includes providing realistic expectations and creating patient-specific fitting goals as the initial stage of the “validation” process. Also involved in this process is determining which hearing aid “features” may be appropriate for the patient. These features may include:

- Directional microphones
- Direct auditory input (DAI)
- Noise management
- Frequency Modulation (FM) devices

As part of the Auditory Needs Assessment, the patient may respond to a variety of questionnaires which might include any of the following:

- **Abbreviated Profile of Hearing Aid Benefit (APHAB)** (Cox and Alexander, 1995).
- **Client Oriented Scale of Improvement (COSI)** (Dillon et al., 1997).
- **Hearing Handicap Inventory for the Elderly (HHIE)** (Ventry and Weinstein, 1982).
- **Expected Consequence of Hearing Aid Ownership (ECHO)** (Cox and Alexander, 2000)
- **Glasgow Hearing Aid Benefit Profile (GHABP)** (Gatehouse, 2000)
- **International Outcome Inventory-Hearing** (Cox et al., 2003)

Non-Auditory Needs Assessment. This section deals with the non-auditory needs of the patient and recognizes that these needs may interact with auditory needs to determine success with amplification. These non-auditory needs may include cognition, patient expectations, motivation, willingness to take risks, assertiveness, manual dexterity, visual acuity, prior experience with amplification, general health, tinnitus, occupational demands, and the presence of support systems.

TECHNICAL ASPECTS OF INTERVENTION

Hearing Aid Selection. This section relates to the decisions needed to select the appropriate hearing aid(s) and hearing assistive technology (HAT) based on the results of the hearing, auditory and non-auditory needs assessment. The outcome of this process is an attempt to match the appropriate style and features to the patient. These decisions may include:

- Style (CIC, ITE, ITC, BTE)
- Occlusion management
- Volume control
- Bilateral versus monaural
- Direct auditory input (DAI); telecoil (programmable)

- Type of signal processing
- Capacity for frequency shaping (number of bands)
- Selection of output and SSPL90
- Number of memories
- Number of channels of compression and feedback management
- Digital noise reduction
- Switchable or adaptive directional/omnidirectional microphones
- Frequency compression or transposition
- Bone anchored devices
- CROS/BICROS/Transcranial CROS

Quality Control. The objective of this section is to ensure hearing aids meet reasonable and expected quality standards prior to scheduling for hearing aid fitting and verification. A small percentage of instruments and earmolds may be defective on receipt. In addition, hearing aids and earmolds may arrive in good working order, but with the incorrect configuration/features. Quality control (QC) measures are necessary to limit patient and clinician frustration and inconvenience. Examples of QC may be:

- Verify directional microphones performance,
- Electroacoustic analysis of new and repaired aids to assure compliance to standards and repairs are completed to clinician satisfaction,
- Electroacoustic analysis at final fit to provide base for measures at semi-annual or annual checks,
- Verify features to include confirmation of earmold/shell style, vent, color, type, processing (memories, automatic switches, etc.) and mechanical (directional microphones, t-coil, integrated FM, etc) features,
- Features not verifiable through physical examination or electroacoustic verification should be verified through a listening check. These may include operation of the VC, directional microphones, FM, t-coil, etc.

Fitting and Verification. The objective of this section is to assure the fitting and verification procedure is viewed as a process that culminates in the optimal fitting. Verification procedures also serve as a benchmark against which future hearing aid changes can be compared. Verification procedures should be based on validated hearing aid fitting rationales and are expected to yield a comfortable fit of hearing aids including all desired features. In the fitting and verification process a signal must be presented to the hearing aid whether in the test chamber or with a probe microphone in the real ear. The

clinician must select signals ensuring accurate verification of prescriptive methods for which the targets are based on speech inputs and therefore a speech-like signal should be used. Examples of aspects of the fitting requiring verification may include:

- The physical fit should be comfortable
- Verify gain/output using validated fitting rationales
- Correction for monaural/bilateral
- Correction for type of HL
- Verifying that the measured RESR90 to below the individual LDL, when possible
- Aided sound-field thresholds for audibility of soft sounds.
- Verify function of features such as telecoil and directional microphone
- Verify that the occlusion effect is absent or minimal

Hearing Assistive Technology (HAT). The objective of this section is to promote the use of Hearing Assistive Technology (HAT) to ensure communication needs are met

because hearing aids alone may not address all the needs of the patient. HATs can either be used alone or combined with hearing aids to supplement performance in difficult listening conditions. HATs can address four communication needs:

1. Face-to-face communication
2. Broadcast and other electronic media
3. Telephone conversation
4. Sensitivity to alerting signals and environmental stimuli.

HAT is available as personal systems or large area listening systems. The most common HATs are:

- a. Personal FM
- b. Infrared
- c. Induction loop
- d. Hardwired systems
- e. Telephone amplifier, telecoil, TDD (telecommunication device for the deaf)
- f. Situation specific devices (e.g., television)
- g. Alerting devices

AUDIOLOGIC REHABILITATION: Instruction, Orientation, Counseling and Follow Up

Hearing Aid Orientation. The objective of this section is to ensure patients obtain the desired benefits from amplification as easily and efficiently as possible. The hearing aid orientation process begins with the initial hearing aid fitting and may continue over several visits. Hearing aid orientation is complete only when all appropriate information has been provided and the patient (or family member/caregiver) is competent to handle the instruments or declines further post-fitting care.

Orientation information can be *device-* or *patient-related*. Device-related is specifically about the care and use of hearing instruments. Patient-related includes helping the patient understand the nature of hearing loss, adjust to amplification, have realistic expectations of the benefits and limitations of amplification, and take advantage of other sources of help (such as better communication strategies, HATs and speechreading). Topics included in orientation may include:

- Use and care of aids such as instrument features; insertion/removal; battery use; care and cleaning; comfort; feedback, use with telephone; warranty.
- Wearing schedule; goals and expectations; adjustment to amplification; speechreading; post-fitting.

Counseling and Follow Up Audiologic Rehabilitation.


The objective of this section is to provide patients who have received hearing aids a comprehensive understanding concerning the effects of hearing impairment and the implementation of strategies to mitigate those effects. The members view the fitting of hearing aids as the beginning of the treatment process. Successful management requires comprehensive counseling to help the patient adjust to his/her hearing aids and instruct the patient and his/her primary communication partners, to develop appropriate communication strategies to maximize and augment the assistance he/she receives from the hearing aids. Counseling is often required to help the patient learn new strategies to help ensure success. In addition, emotional factors concerning hearing loss must be addressed in a comprehensive audiologic rehabilitation program. Counseling can be provided on an individual basis, but is often delivered in small group settings.

Topics addressed in these sessions should include:

- Anatomy and physiology of hearing process
- Understanding the audiogram
- Problems associated with understanding speech in noise
- Appropriate/inappropriate communication behaviors
- Communication strategies
- Listening and repair strategies
- Ways in which to control the environment
- Assertiveness training

- Realistic expectations from amplification
- Stress management
- Speechreading skills
- HATs
- Community resources

Assessing Outcomes. This part of the patient management process assesses how well intervention reduced activity limitations, decreased participation restrictions, and improved quality of life and is referred to as validation. Validating the choices made as part of the assessment, selection, and fitting processes, to the extent that the patient's needs have been met, is accomplished through the administration of outcome measures. Many outcome measures, described in the auditory and non-auditory needs assessment section, have been developed to assess the impact of a hearing impairment on the individual in the areas of communication functioning, activity limitation and participation restrictions.

As critical as it is to measure the benefits of hearing aid intervention at the level of the patient, the measurement of treatment outcomes is assuming greater importance on the national health care stage. Through the routine use of clinically applied outcome measures and carefully controlled clinical trials, audiologists can build a foundation for evidence-based clinical practice guidelines. Clinical practice guidelines, in turn, minimize variability in outcome, maximize treatment efficacy, reduce risks, decrease waste, improve patient satisfaction, and should elevate the profession of Audiology among third party payers, other health care providers, and, most importantly, current and future patients. As audiologists continue to compete in the health care marketplace, they must demonstrate that treatments reduce activity limitations, decrease participation restrictions, and improve health-related quality of life. Only by measuring the outcomes of treatment can audiologists be assured that interventions make a difference and patients have benefited from their care. 

REFERENCES

- American Academy of Audiology (2004). *Pediatric amplification guideline*. *Audiology Today*, 16(2):46-53.
- American Speech-Language-Hearing Association (1997) *Preferred practice patterns for the profession of audiology*. Rockville, MD.
- Cox R. (2004) Waiting for evidence-based practice for your hearing aid fittings? It's here! *Hear J* 57(8):10,12,14,16-17.
- Cox R, Alexander G. (1995) The abbreviated profile of hearing aid benefit. *Ear Hear* 16:176-186.
- Cox RM, Alexander GC. (2000) Expectations about hearing aids and their relationship to fitting outcome. *J Am Acad Audiol* 11:368-382.
- Cox R, Alexander G, Beyer C. (2003). Norms for the international inventory for hearing aids. *J Am Acad Audiol* 14(8):403-413.
- Dillon H, James A, Ginis J. (1997) The client oriented scale of improvement (COSI) and its relationship to several other measures of benefit and satisfaction provided by hearing aids. *J Am Acad Audiol* 8:27-43.
- Gatehouse S. (2000). Page 10: The Glasgow hearing aid benefit profile. *Hear J* 53(3):10,12,14,16,18.
- Hearing Aid Devices: *Professional and client labeling and conditions for sale*. (1977). *Federal Register* 42(31):9286-9297.
- Valente M, Bentler R, Seewald R, Trine T, Van Vliet D. (1998) Guidelines for hearing aid fitting for adults. *Am J Audiol* 7:5-13.
- Ventry I, Weinstein B. (1982) The hearing handicap inventory for the elderly: A new tool. *Ear Hear* 3:128-134.