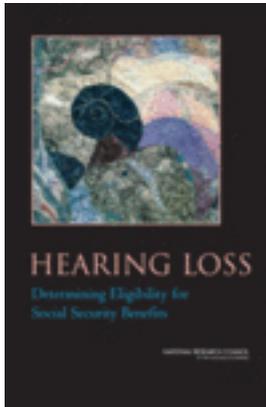


Free Executive Summary



Hearing Loss: Determining Eligibility for Social Security Benefits

Robert A. Dobie and Susan Van Hemel, Editors,
Committee on Disability Determination for Individuals
with Hearing Impairments, National Research Council

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Millions of Americans experience some degree of hearing loss. The Social Security Administration (SSA) operates programs that provide cash disability benefits to people with permanent impairments like hearing loss, if they can show that their impairments meet stringent SSA criteria and their earnings are below an SSA threshold. The National Research Council convened an expert committee at the request of the SSA to study the issues related to disability determination for people with hearing loss. This volume is the product of that study.

Hearing Loss: Determining Eligibility for Social Security Benefits reviews current knowledge about hearing loss and its measurement and treatment, and provides an evaluation of the strengths and weaknesses of the current processes and criteria. It recommends changes to strengthen the disability determination process and ensure its reliability and fairness. The book addresses criteria for selection of pure tone and speech tests, guidelines for test administration, testing of hearing in noise, special issues related to testing children, and the difficulty of predicting work capacity from clinical hearing test results. It should be useful to audiologists, otolaryngologists, disability advocates, and others who are concerned with people who have hearing loss.

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Executive Summary

The Social Security Administration (SSA) asked the National Research Council (NRC) to survey published research on assessment of hearing and the auditory demands of everyday life, and to advise them whether the process of determining eligibility for Social Security disability benefits for persons with hearing loss could be improved. SSA also asked for recommendations for a research agenda in these areas. The key issue is whether or not standardized tests exist or can be developed “that provide adequate prediction of real-world performance capacities to reflect individuals’ auditory abilities and disabilities in normal life situations with average background noise.” Such tests would need to be valid, reliable, well-standardized, and “simple and inexpensive to administer in a standard physician’s or audiologist’s office setting.”

The NRC formed the Committee on Disability Determination for Individuals with Hearing Impairment to address these issues. Several important questions are laid out in the committee’s scope of work, and the committee’s responses, in terms of general answers, appear below:

Question 1: Current SSA procedures use “subjective” (behavioral) tests that present tones and words through headphones and rely on individuals’ ability and willingness to report what they hear. Could objective (physiological) measures of auditory function perform better?

Committee Response: Physiological measures may assist in the estimation of the severity of hearing loss in claimants who cannot or will not cooperate in behavioral tests, but for most situations the committee rec-

ommends the continued use of the current approach to measuring hearing loss.

Question 2: The validity and reliability of the tests currently used by SSA, as well as their criterion values for disability, may not be optimal. Could other tests (including tests that incorporate background noise) or other criterion values perform better?

Committee Response: In general, for adults, the committee recommends the continued use of the current medical listing of impairments to establish disability, with a modified and specific protocol for speech testing. We also recommend that a battery of tests be administered prior to applying the medical listing criteria, in order to improve the reliability and validity of all stages of the SSA disability determination process. For children, the committee is recommending some changes in the speech perception test battery and criteria, as well as the addition of a test of language competence for children over age 3.

Question 3: At present, as stated in the scope of work, “SSA does not give clear guidance about testing with and/or without hearing aids or cochlear implants for those who use such devices.” Should aided testing be recommended, and if so, how should such tests be conducted?

Committee Response: The committee provides several recommendations for testing with cochlear implants and hearing aids.

Question 4: Current procedures attempt to assess only the abilities to detect simple tones and to understand speech. Because identification of nonspeech sounds and sound localization are required in some jobs, should these auditory abilities be tested as part of the SSA disability process?

Committee Response: Since there are no standard clinical tests for sound localization or nonspeech identification, the committee is not recommending such tests.

Question 5: Can research using measures of health-related quality of life help to determine which auditory skills and losses have the greatest impact on the lives of persons with hearing loss?

Committee Response: The committee does not recommend such quality-of-life measures for use in SSA disability determination.

Question 6: Can performance deficits resulting from hearing loss be separated from those resulting from nonauditory (e.g., cognitive, linguistic) factors?

Committee Response: The committee describes some of the influ-

ences that nonauditory factors can have on measures used in SSA determination of hearing impairment.

FINDINGS

The committee's efforts to assist the SSA in developing disability tests and criteria that could better predict the ability to work were impeded by two major data voids and one fact of life. The first void was the dearth of available data linking hearing loss to job performance in adults. We found some data on employment of people with hearing loss, but they were sparse, based mostly on self-report of hearing loss with no objective measurement of hearing, and could not support analysis of employment outcomes for varying levels of hearing loss. Because there are as few data to support new criteria as there are to support current criteria, we decided in the end not to recommend significant changes to the SSA disability criteria for adults. Some changes were recommended for the determination of disability in children. Research is needed to develop data to inform future decisions about disability criteria.

The second void, closely related to the first, is the lack of information on the auditory requirements of jobs. Knowledge of these requirements is vital to understanding how hearing loss may affect performance in any given job. Again, research is needed. In the absence of good data, the committee developed basic auditory task descriptions and estimates of the probable effects of hearing loss of various degrees of severity on auditory performance on the job, based on our collective expertise.

The fact of life that most complicated our work is that it is clear to those who study disability that many personal, environmental, educational, and social factors contribute in significant ways to the relationship between a person's hearing ability and the ability to work. The current SSA disability determination process considers only the claimant's measured hearing loss through application of the medical listing criteria in Step 3 of the disability determination process. Thus, the very concept of medical listings as a basis for determining disability is called into question. We stopped short of recommending that all claimants be given the vocational factors assessment of Steps 4 and 5, but this was a decision based primarily on practical and economic considerations. Some committee members think that such a step would improve the determination process.

In light of the above issues, the committee's overall approach was to recommend a battery of tests to be used in Step 2 of the SSA process, largely to provide valuable information that should improve the validity of the determination of disability in Steps 4 and 5. Testing with cochlear implants and hearing aids is also included in the recommended test bat-

teries. In general, the committee retained the current Step 3 (medical listing) tests and their criteria, with modifications to the test protocol for adults. For children, we recommend some modifications to the Step 3 tests and their criteria. We also make recommendations for research to support the development of tests or test batteries that could better predict the ability to work. First, however, we discuss the weaknesses in the current measures and criteria that we were able to address.

LIMITATIONS OF CURRENT FORMULA AND TESTING PROTOCOL

Hearing impairment in adults that qualifies for disability benefits under the existing SSA determination in Step 3 is a loss of hearing that is not restorable by a hearing aid. In Social Security programs, eligibility for disability benefits is all or nothing; there is no partial disability. The current formula specifies the following disability criterion: average pure-tone hearing thresholds (500, 1000, and 2000 Hz) of 90 dB HL or worse for air conduction stimuli and at maximal levels for bone conduction stimuli in the better ear, or speech discrimination scores of 40 percent or less in the better ear. These criteria often fail to identify individuals who may have a disability in the workplace because of hearing loss, particularly those in hearing-critical jobs, and they may classify as disabled some claimants who are able to work, especially successful cochlear implant users. There are several reasons for such failures:

- The existing formula for disability determination for adults does not take into account speech recognition performance at average conversational speech levels, which are likely to be encountered in everyday communication situations.
- The current procedure does not evaluate speech recognition in noise; poor speech understanding in noise may severely impair the ability to function effectively in many jobs that are dependent on oral communication.
- The current procedures and formula do not consider performance with a hearing aid or implantable device. Actual performance with these devices cannot be predicted from unaided performance.
- The current protocol includes neither assessment of sound localization nor the ability to differentiate a change in an acoustic stimulus (i.e., sound discrimination). While these are fundamental hearing abilities, especially in certain hearing-critical jobs, there are currently no standard clinical methods of assessing these auditory functions.
- The current formula does not recognize that individuals with severe hearing losses (71-90 dB HL pure-tone average or PTA) cannot re-

ceive spoken communication auditorily without a hearing aid. Many people with 71-90 dB hearing loss have not been successful hearing aid or cochlear implant users and function primarily in the deaf world. Such claimants may be at a significant disadvantage in the workplace.

RECOMMENDATIONS FOR SSA ACTION

In the following sections we present our recommendations for the testing of hearing and the determination of disability based on hearing loss. These changes will improve the validity and reliability of tests for disability determination and will provide additional information on residual function for use in Steps 4 and 5 of the determination process. The text of all recommendations and the rationale supporting them is found in the body of the report and the complete range of recommendations is referenced here.

General Recommendations for All Testing During Step 2 of the SSA Process

- The committee recommends that the standard otolaryngological examination follow the audiological examination (but by no more than 6 months), because a physician cannot provide a competent report without recent audiometric data (see Action Recommendation 4-1).
- The otological examination should be performed by an otolaryngologist who has completed at least five years of residency training following receipt of the M.D. or D.O. (doctor of osteopathy) degree and who is certified by the American Board of Otolaryngology (see Action Recommendation 4-1).
- The audiological tests for determining a disability based on hearing impairment should be conducted by a **clinical audiologist** who holds state licensure (if applicable) or, if no state licensure is available, is certified by the American Speech-Language-Hearing Association (Certificate of Clinical Competence in Audiology, or CCC-A) or by the American Board of Audiology (see Action Recommendation 4-3).
- Equipment should meet American National Standards Institute (ANSI) **standards** or other established standards when no ANSI standards are available. The environment for assessment of auditory threshold should conform to current ANSI standards (see Action Recommendation 4-4).
- Audiometric testing should not be performed within 72 hours of significant noise exposure or if there is recent exposure to ototoxic drugs or, in cases of fluctuating hearing loss, on a day when hearing is noticeably poorer (see Action Recommendation 4-5).

Recommendations for Testing Adults

- In order to capture an accurate assessment of an individual's hearing abilities on a given day, a test battery is recommended (see Action Recommendation 4-2). This approach permits a determination of the validity of the claimant's responses by examining intertest agreement. It is recommended that this entire test battery be completed in Step 2 before a determination of disability is formulated:

- pure-tone thresholds in each ear presented via air and bone conduction transducers;

- speech thresholds under earphones in each ear;

- monosyllable word recognition performance for test materials presented in the sound field at average conversational levels in quiet and in noise;

- tympanometry; and

- acoustic reflex thresholds.

- The committee recommends that SSA require a **checklist** to be completed by the clinical audiologist at the time of testing, as an indication of the quality of the data collected for use in the disability determination process and to provide additional useful information for evaluating a claim in Steps 3, 4, and 5 (see Action Recommendation 4-5).

- The standard **pure-tone threshold** audiometric test is required to determine pure-tone average thresholds at 500, 1000, and 2000 Hz (PTA 512) for each ear. The pure-tone test should be conducted without the use of a hearing aid (unaided). Even if an individual wears a cochlear implant, it is necessary to assess hearing sensitivity bilaterally (see Action Recommendation 4-6).

- A **speech threshold** is a required measure in the test battery for the primary purpose of cross-checking the validity of the pure-tone audiogram and indicating the claimant's ability to detect and recognize speech. If a speech recognition threshold cannot be determined, then a speech detection threshold should be assessed (see Action Recommendation 4-6).

- **Speech recognition** testing should be performed under controlled conditions in quiet and in noise, using standardized monosyllable word recognition test materials that meet the criteria recommended in Chapter 3 (see Action Recommendation 4-6).

- **Objective (physiological) tests**, such as frequency-specific evoked potentials, should be used in place of or as corroboration for behavioral tests for persons who cannot or will not cooperate in behavioral testing (see Action Recommendation 4-6).

- Two **test protocols** are recommended: one for claimants who use hearing aids or cochlear implants and one for claimants who do not. The

protocol for users of hearing aids or cochlear implants includes aided testing (see Action Recommendation 4-6).

- The committee recommends that **all information gathered during testing be used to evaluate residual functional capacity**. SSA should examine the claimant's test performance in relation to auditory communication task requirements on the job to help determine the claimant's ability to work in his former job or in other appropriate jobs (see Action Recommendation 4-7).

Recommendations for Testing Children

- **Recommended tests and protocols**, as well as criteria for disability, for infants and children **vary with the age of the child** (see Action Recommendations 7-1 through 7-4; Table 7-2). We recommend that the degree of hearing loss in the better ear that is considered disabling in infants and children should be 35 dB HL before age 6, 50 dB from ages 6 to 12, and 70 dB from ages 12 to 18.

- **Standardized language processing measures** should be administered to compare the child's function at the time of testing to normative data for children of comparable age (see Action Recommendation 7-1 and Table 7-2).

- The recommended **criteria** for determination of disability in children during Step 3 appear in Chapter 7, Table 7-2. To qualify for benefits, children age 3 and older must meet the criterion for hearing level *and either* the criterion for deficit in speech perception *or* the criterion for language processing. For children under age 3, only the hearing level criterion must be met (see Action Recommendations 7-1 and 7-4).

- **Speech perception tests** should be administered in quiet using recorded test materials at 70 dB SPL. Presentation of the speech perception test should be via sound field using personal amplification or cochlear implant if such is used by the child. If no device is used by the child, testing is performed unaided (see Action Recommendation 7-2).

- In general, **average hearing levels** should be determined from pure-tone thresholds at 500, 1000, 2000, and 4000 Hz (PTA 5124) (see Action Recommendation 7-3). Under conditions that warrant using auditory brainstem response (ABR), the ABR thresholds require a minimum of two frequencies, one low (500 to 1000 Hz) and one high (2000 to 4000 Hz) to determine average hearing level. When auditory neuropathy is thought to be present, it will not be possible to determine hearing thresholds by ABR. In those cases, disability should be presumed unless or until proven otherwise by behavioral testing (see Action Recommendation 7-3).

- The committee recommends that SSA require a **checklist** to be completed by the clinical audiologist, as an indication of the quality of the data collected for use in the disability determination process and to provide additional useful information for evaluating a claim (see Action Recommendation 7-5).

RESEARCH RECOMMENDATIONS

The committee developed many recommendations for research that the SSA should support in order to provide a sound scientific basis for future decisions about the determination of disability due to hearing loss. The most important are summarized below, first for adults, then for children, followed by some general research goals. For each recommendation we have referenced the complete text in the report.

Research Recommendations Related to Adult Disability Determination

- Develop and standardize new tests of basic hearing functions—including speech recognition for words and sentences in quiet and in noise, localization, and sound discrimination—that correlate with auditory performance in the workplace (see Research Recommendations 4-1 and 4-2).
 - Study speech recognition performance in a variety of listeners with and without hearing loss, both users and nonusers of aids and implants, in acoustic environments and conditions that simulate the workplace (see Research Recommendation 4-3).
 - Develop an understanding of the auditory requirements of jobs in the current workplace (see Research Recommendation 4-4).
 - Study the effectiveness of hearing aids, assistive listening devices, and workplace accommodations in realistic listening environments, for individuals with severe and profound hearing loss (see Research Recommendation 5-1).
 - Determine the prevalence of hearing loss in the workplace and its effects on worker performance, earnings, and mobility (see Research Recommendation 6-1).

Research Recommendations Related to Children's Disability Determination

- Develop standardized speech perception measures for infants and children, in English and other languages, that take into account develop-

mental age and degree of hearing loss (see Research Recommendation 7-1).

- Identify the contributions of environmental factors, such as the linguistic environment in the home and educational settings and educational intervention variables, to the varying outcomes in persons who have been deaf or hard-of-hearing since early childhood (see Research Recommendation 7-2).
- Perform more prospective studies of children using amplification to determine outcomes for communication, socialization, and educational achievement (see Research Recommendation 7-3).
- Develop standard clinical measures that incorporate auditory and visual assessments (see Research Recommendation 7-4).
- Perform research to better understand the true nature of auditory dysfunction in children with slight or unilateral hearing loss and the possibilities for interventions to mitigate such dysfunctions (see Research Recommendation 7-5).

Other Research Recommendations

- Acquire data about the real-world use of hearing aids from a large population of users, separating those with adult-onset hearing loss from those who developed their hearing loss as children (see Research Recommendation 5-1).
- Conduct research to validate tests that purport to measure or predict functional hearing ability in daily life against real-world criteria measured in natural settings (see Research Recommendations 4-8 and 5-3).
- Develop and validate methods to detect and manage exaggeration (see Glossary, Appendix A) of speech recognition problems during administration of speech tests (see Research Recommendation 4-7).

HEARING LOSS

Determining Eligibility for Social Security Benefits

Committee on Disability Determination for
Individuals with Hearing Impairments

Robert A. Dobie and Susan B. Van Hemel, *Editors*

Board on Behavioral, Cognitive, and Sensory Sciences
Division of Behavioral and Social Sciences and Education

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Preface

This report is the product of over two years' work by a committee of 12 diverse experts in hearing and other subjects, convened by the National Research Council (NRC) in response to a request from the Social Security Administration (SSA). The committee was tasked to review the tests and criteria used to determine hearing disability for purposes of eligibility for Social Security benefits. The committee evaluated the tests currently used to determine disability for people with hearing loss and examined other possible ways to assess such disability, including new tests of hearing function. Special attention was given to finding ways to improve the reliability and validity of tests of hearing and to reviewing evidence bearing on the ability of such tests to predict job performance capabilities.

On behalf of the committee, I would like to acknowledge the contributions of a number of people who helped us to complete the work reported here. First, we are grateful to Sigfrid Soli and Carren Stika, who prepared reviews and analyses for the committee. We also wish to thank Sandra Salan, the project sponsor at the SSA's Office of Disability. She and her associate, Michelle Hungerman, provided much useful information on SSA disability programs and procedures. Also at SSA, Susan David and her staff prepared data analyses from SSA statistical files in response to our queries.

In the service and advocacy community, we are grateful to the organizations that nominated speakers and otherwise supported the public forum the committee held on May 7, 2003. We are especially grateful to the forum participants, listed in Appendix C, who gave thoughtful and ex-

pert responses to the difficult questions we posed, providing the committee with valuable insights on the issues that are most important to people with hearing loss.

At the NRC, Susan B. Van Hemel was the study director for this project. Special thanks are due to Christine Hartel, director of the Center for the Study of Behavior and Development, for her guidance and support; to Christine McShane, for editing our manuscript with skill and insight; to Eugenia Grohman of the DBASSE Reports Office, who managed the review process; and to Jessica Gonzalez Martinez, our skilled and dedicated project assistant, whose contributions to this study were invaluable. The excellent interpreters from Sign Language Associates who supported all of our meetings, including the public forum, were vital to the success of this project as well. I would also like to recognize the committee members for their generous contributions of time and expertise and for their professionalism. Although members often had disparate opinions, they invariably expressed and discussed them with respect and grace.

This report has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the Report Review Committee of the NRC. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making the published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the deliberative process.

We thank the following individuals for their participation in the review of this report: Monroe Berkowitz, Program for Disability Research, Rutgers University; Judy R. Dubno, Department of Otolaryngology-Head and Neck Surgery, Medical University of South Carolina; George Gates, Hearing Research Center, University of Washington; Walt Jesteadt, Boys Town National Research Hospital, Omaha, NE; Gerald Kidd, Programs in Communication Disorders, Boston University; Doris Kistler, Heuser Hearing Institute, Louisville, KY, and Department of Psychological and Brain Sciences, University of Louisville; Robert Shannon, Auditory Implants and Perception Research, House Ear Institute, Los Angeles, CA; and Alice Suter, independent consultant, Ashland, OR.

Although the reviewers listed above have provided many constructive comments and suggestions, they were not asked to endorse the conclusions or recommendations nor did they see the final draft of the report before its release. The review of this report was overseen by Dennis McFadden of the University of Texas at Austin. Appointed by the NRC, he was responsible for making sure that an independent examination of

this report was carried out in accordance with institutional procedures and that all reviewers' comments were considered carefully. Responsibility for the final content of this report, however, rests entirely with the authoring committee and the institution.

Robert A. Dobie, *Chair*
Committee on Disability Determination for
Individuals with Hearing Impairments

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