

HEARING AIDS AND THE VETERANS ADMINISTRATION

G. Donald Causey, Ph.D.

Director, BioCommunications Laboratory, University of Maryland
College Park, Maryland 20742

There are about 12 million people in this country who could benefit from the use of a hearing aid. At the present time about 3 million people wear hearing aids. Last year, hearing-aid manufacturers sold 600,000 hearing aids. These aids were sold by the manufacturers to their dealers for about \$100 each. The dealers in turn sold them to the hearing-handicapped for about \$350 each. The fact that components costing less than \$30, when packaged, cost the hearing-impaired individual \$350 is a cause of quite some concern at the moment. I suppose this concern has been just beneath the surface for some time, but at the moment, it is very much in the public view. In 1962, the Kefauver hearings on "The Prices of Hearing Aids" did not have the impact that the 1973 Church committee hearings on "Hearing Aids and the Older American" seems to be having. The big difference has been the consumer interest drive.

Concurrent with the Church hearings came the publication of the Nader Retired Professional Action Group Report called "Paying Through The Ear." This report attacked the dealers for the type of delivery system and prices of hearing aids, attacked FTC for not tightening trade practice rules for the industry, attacked the Food and Drug Administration for not developing standards for the industry, and attacked the American Speech and Hearing Association for not taking a stronger position in favor of better health care for the hearing-handicapped.

In order to put this discussion in proper perspective, let us review how the hearing-handicapped receive attention in this country. There are three major routes (Hearing Aid Journal, 1974) which the hearing-handicapped take to obtain help for their hearing problems (Fig. 1). About 75 percent of the individuals who come to dealers' offices come directly, without referral from either an audiologist or a physician. About 10 percent come from referral by a physician, and 15 percent come from referral by an audiologist or hearing and speech center. The audiologist requires that a hard-of-hearing patient have an otological examination or an examination by his family physician before the audiologist will measure hearing or conduct a hearing-aid evaluation.

Since many hearing problems may be a manifestation of pathology that is potentially a threat to the patient, the audiologist has long insisted on proper medical clearance of the patients he sees. Yet, according to a survey of hearing-aid dealers, 82 percent of the dealers who responded indicated that a medical examination was not necessary for all persons who wished to purchase a hearing aid. The ethical standards of the American Medical Association and the American Speech and Hearing Association have prevented either the ear specialist or the audiologist from engaging in the sale of hearing aids directly or indirectly. They are allowed to make referrals to dealers from whom the hearing aids may be purchased. This kind of delivery system for a sensory aid has the effect of keeping prices high, interrupts the normal flow of patients to physicians, and deemphasizes the need for counseling and training in the use of the hearing aid required to insure that the individual will make maximum use of it.

Present Routes to Hearing Aid

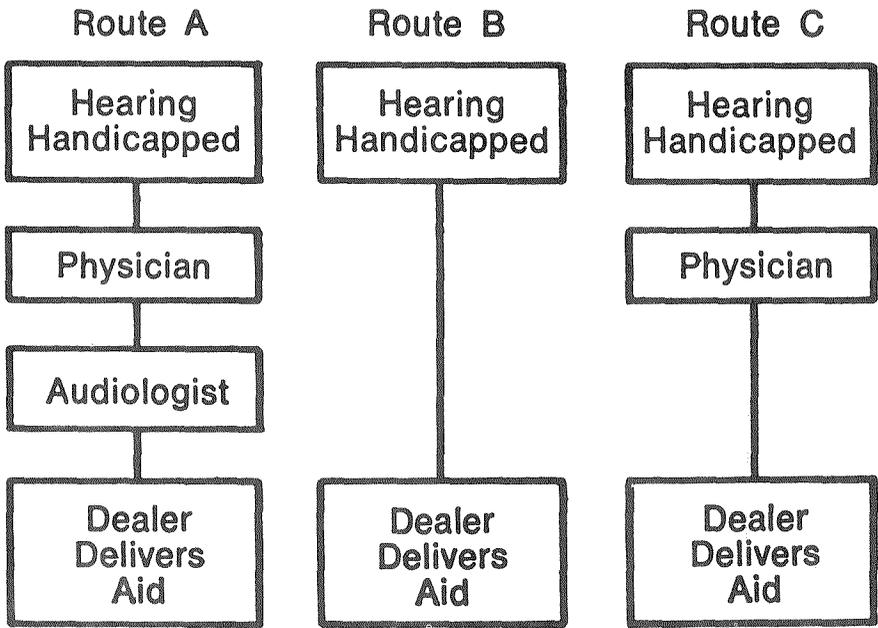


FIGURE 1

In 1967, a panel established to discuss professional qualifications and standards at a Conference on Hearing Aid Evaluation Procedures considered the question of the present system for hearing-aid evaluations and how it could best be improved (Castle, ASHA Reports, No. 2, 1967).

They recommended that audiologists become directly involved in the dispensing of hearing aids. All too often the audiologist recommends a hearing aid and then never sees the patient again, even though a followup visit has been scheduled. The typical dissatisfied hearing-aid user does not return to the audiologist or physician who recommended the instrument, but rather to the hearing-aid dealer from whom it was purchased. The ability of the audiologist to improve the accuracy of his recommendation can best result from the knowledge he has gained from proper followup of his past recommendations. The audiologist has been placed in an unusual position in this regard. This is somewhat like a physician who is allowed to make the decision that surgery is to be done, but who is only sometimes informed of the results of the surgery or the adequacy with which someone else carried out his decision. Such a situation is obviously intolerable if improvements in service both before and after the selection of a hearing aid are to be made by the audiologist. Increased involvement by audiologists will lead to increased amounts of research data considering the physical characteristics of hearing aids, the criteria by which a given ear is matched to a given instrument, and new ways of using hearing aids.

Since that recommendation was made in 1967, the profession of audiology slowly but surely has worked around to a position whereby the dispensing of hearing aids may be done if the audiologist does not profit from such action. In other words he may charge a fee for service, but may not add to the invoice price of the hearing aid he obtains from the manufacturer. This approach is diagramed in Figure 2 (Hearing Aid Journal, 1974). As you may suspect, there is widespread consternation among hearing-aid dealers because of this approach. On the other hand, some dealers, recognizing a revolution approaching in the way in which hearing aids are delivered to people, have changed from a system of salesmen operating in the field, and especially in the homes of the hearing-impaired, to a referral system from physicians and audiologists. These dealers now sell hearing aids only upon referral from these specialists, usually at a much reduced price.

I have discussed the American Speech and Hearing Association, the Nader report called "Paying Through The Ear," the Kefauver and Church hearings. What is FTC doing at this time? They are suing some of the major hearing-aid companies for anti-competitive practices and illegal advertising. But more importantly, they are writing a consumer advisory entitled "What You Should Know Before You See A Hearing Aid Salesman." In addition, they are about to hold a hearing on a completely new set of trade practice rules for the hearing-aid industry. The thrust of the new rules is to provide a guarantee of money back to the purchaser of a hearing aid who is dissatisfied. What is the Food and Drug Administration doing at the moment? They have asserted that a

hearing aid is a medical device, and therefore it is that agency's responsibility to develop standards for it. Accordingly, the FDA 2 months ago announced to the hearing-aid industry and the American National Standards Institute that they must develop a performance standard for hearing aids within 12 months or the agency would develop its own performance standard for hearing aids. The American National Standards Institute Committee on Hearing Aids is made up of engineers from the hearing-aid industry, audiologists, and physicists. There presently exists a standard for the measurement of hearing-aid performance and a standard for expressing that performance. However, no standard has ever been attempted which would provide acceptable limits of performance such as FDA has in mind. You cannot imagine the surprise within the group when the intention of the FDA was announced.

Proposed New System

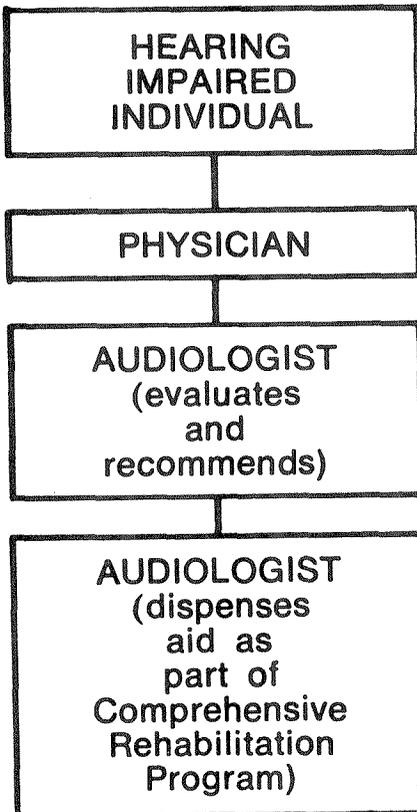


FIGURE 2

For the last 6 years the standards committee had been working slowly to adopt a change in the measurement standard which would substitute for the present coupler used for measuring hearing aids—a new coupler which better resembles the performance of the human ear. The discussions of the committee have dragged on for over 5 years, and it looked as though it might be another 5 years before accord could be reached regarding substitution of the new coupler. Incidentally, the present coupler was developed over 20 years ago, just as an interim measure anyway. The effect of the FDA announcement was to unite everyone behind the new coupler and try to dispose of the revision of the measurement standard as soon as possible in order to develop the performance standard within the deadline.

What is the situation with regard to hearing aids within the Veterans Administration? In the 1962 Kefauver hearings, the Veterans Administration received glowing praise (Subcommittee on Antitrust and Monopoly, *Prices of Hearing Aids*, 1962). In the 1973 Church Committee Hearings, the Veterans Administration was discussed as a model for future government involvement with hearing aids (Subcommittee on Consumer Interest of the Elderly, *Hearing Aids and the Older American*, 1974). To quote the Nader report, "The Federal government is doing virtually nothing on the subject of hearing aids, with the exception of the Veterans Administration." One complete chapter of the Nader report was devoted to the Veterans Administration program. What is the Veterans Administration program? The Veterans Administration has been dispensing hearing aids on a large scale through their Audiology Clinics since 1956. At the present time there are 46 centers engaged in this activity. Twenty percent of their workload is devoted to hearing-aid evaluations. As shown in Figure 3, 11,099 hearing aids were issued by VA clinics last fiscal year, 2,724 aids were issued by the military, 578 aids by other government agencies. The average cost of those 14,401 hearing aids was \$86.78. It costs the Veterans Administration \$84,000 to have hearing aids measured at the National Bureau of Standards, and it costs about \$80,000 to maintain the individuals working at the Hines Supply Depot involved with hearing aids. The Supply Service has to recover this money, and it does so by marking up the price of hearing aids about 14 percent so that the average cost of an aid with the markup is \$100.91. The depot buys the hearing aid at an average cost of \$86.78 and sells it in turn to the various hospitals in this system or to the military for \$100.91. The lowest costing aid is the Zenith Award which costs, with the markup, \$41.54, and the highest priced aid is the Sonotone 35 AX BICROS at \$157.06.

The selection of aids for contract is accomplished by following a program designed to take advantage of all known psychophysical data related to hearing rehabilitation. When this program was initiated, a

Aids Issued For Fiscal Year 1974

VA Clinics	11,099
Military	2,724
Other Gov't Agencies	578
Total For The Above	14,401

Average Acquisition Cost (without the markup)	\$ 86.78
Average Cost Per Aid (with the markup)	\$ 100.91
Cost of all Hearing Aids Purchased in 1974	\$ 1,453,219.54
Lowest costing aid is Zenith Award (with markup)	\$ 41.54
Highest priced aid is Sonotone 35 AX (with markup)	\$ 157.06

FIGURE 3

group of consultants appointed by the VA developed a series of procedures for determining the electroacoustic performance and characteristics of hearing aids. These procedures are reviewed and reevaluated each year on the basis of new research and clinical findings. Each instrument is tested at the National Bureau of Standards and/or at the Biocommunications Laboratory, University of Maryland, under exacting conditions. The analysis of these data is performed by the Auditory Research Laboratory, Veterans Administration Hospital in Washington, D.C. The electroacoustic attributes of the hearing aids are assigned specific weightings based upon their importance as determined currently by the hearing-aid consultant group. The weighted scores for the several characteristics are then summed to obtain an Index of Characteristics score that represents the performance of each hearing-aid model. This system provides the Veterans Administration with quantitative information on which to base hearing-aid purchases for its beneficiaries. Gain, saturation SPL, frequency response, nonlinear distortion at two input levels, signal-to-noise ratio, signal-to-hum ratio, and measures of uniformity of slope, product uniformity, and other data are obtained.

To provide sufficient data on which to judge the performance characteristics of the specific model being evaluated, three sample hearing aids of each model are required for these measurements. Manufacturers are limited to the submission of seven different models, a total of 21 instruments selected from his line of head-worn and on-the-body-type hearing aids.

The results of this annual measurement are published both by the Veterans Administration and the Government Printing Office and are available to the general public.

For Fiscal Year 1975 there are 33 hearing aids on contract. These are broken down into power categories and into categories of hearing aids with special characteristics. In the strong power category there are four on-the-body aids on contract; in the moderate power category there are five hearing aids of over-the-ear type, and two eyeglass aids. In the mild power category, there are three over-the-ear aids, one eyeglass aid, and one all-in-the-ear aid. In the special category, there are four CROS hearing aids. A CROS hearing aid has a receiver on one side and microphone on the opposite side; these are in eyeglasses. There are three BICROS hearing aids, also in eyeglasses. For the BICROS aid there is a receiver going to one ear, but a microphone in both temples. There are two body aids especially designed for the elderly. They are rather lightweight and have large controls with quite visible markings. There are two hearing aids with directional properties. In other words, they amplify sounds occurring from in front of the individual, but amplify to a lesser degree sound occurring behind him. There are three hi-pass hearing aids which amplify the high frequencies only. Finally, there is one eyeglass bone conduction hearing aid and two hearing aids with compression characteristics. These latter hearing aids tend to maintain a constant output regardless of the level of the input signal.

The veteran who is eligible for treatment of a hearing disability may apply for a hearing aid to the nearest VA center. He is given an appointment for an otological examination followed by an audiological examination. Upon determination of need for a hearing aid, a hearing-aid evaluation is conducted. When the veteran is issued a particular hearing aid, he also receives a 2-week supply of batteries. The Prosthetic Distribution Center in Denver is notified by card that the veteran has been issued a hearing aid. The veteran immediately is sent a 90-day supply of batteries for that instrument. On the average, a 90-day supply of batteries costs \$2.94. Parenthetically, let me add that last year the Veterans Administration issued 1,672,287 batteries at a cost of \$235,610. That is an average cost of 14 cents apiece. The veteran also receives from the Prosthetic Distribution Center a preaddressed mailing carton with instructions relating to packaging the hearing aid and to sending it to the Center anytime it requires repair services. Minor repairs and maintenance services are completed at the Center. The instrument needing factory repairs is sent to the manufacturer or other commercial repair facility. The repaired hearing aid is tested at the Center to determine if it is satisfactory before being returned to the veteran. Last year, 16,587 repairs were made by commercial resources at an average cost of \$14.77 apiece. The Prosthetic Distribution Center

made 11,000 small repairs or provided tubing, cords, or receivers, at an average cost of \$1.83 apiece. For the hearing aids currently issued there is a 2-year warranty period. Eligible veterans are provided spare hearing aids to utilize when their regular hearing aid is sent in for repairs so that they will not be deprived of aided hearing. Ordinarily, the veteran who receives an initial hearing aid may return after 6 months for a second instrument. The first one issued then becomes his spare aid. Studies have shown that the majority of veterans retain their hearing aids longer than the average citizen. You may note in Figure 4 that 50 percent kept their regular hearing aid for 8 years or longer before applying for replacement instruments, and 29.3 percent kept them 12 years or longer.

In a sample of 700 veterans, the following distribution indicates the length of time veterans wear their aids before obtaining a replacement. Mean = 8 years.

TIME	N	%
1 year	27	4.1
2 years	32	4.6
3 years	45	6.4
4 years	51	7.3
5 years	53	7.6
6 years	45	6.4
7 years	43	6.1
8 years	64	9.1
9 years	46	6.6
10 years	49	7.0
11 years	45	6.4
12 years	38	5.4
over 12 years	160	22.9
	700	99.9

FIGURE 4

A preliminary study has shown that it costs the VA \$219 to issue a hearing aid. This includes the cost of the aid, professional and secretarial services, the earmold, and overhead at the rate of 38 percent. This figure includes 6 hours of an audiologist's time spent in counseling, auditory training, and orientation on a group basis.

Where does VA stand as far as its needs are concerned and the current state of the art? There is a need for hearing aids of better quality and of more uniform quality, and it can achieve this only by improving its own measurement program and measuring the performance of every aid it buys from the manufacturers throughout the year. Because VA can make decisions quickly without polling the industry or getting unanimous verdicts, it can forge ahead with new developments and new techniques. This is certainly indicated by the discussions generated in the meetings of the American National Standards Institute. For example, the Committee on Hearing Aids is considering using the VA procedure for determining volume control setting for the measurement of gain, to-

gether with the utilization of shaped noise as an input signal for measurement of saturation sound pressure level. These two items were innovations introduced to the field by VA some years ago. Other innovations have been techniques for measurement of directional hearing aids and techniques for measurement of compression hearing aids.

Insofar as the current state of the art is concerned, VA is well ahead of others. However, because VA is constantly in the spotlight and VA's motto is "Health care second to none," it must be our function to remain well ahead.