

Practical Considerations in Providing Assistive Devices

Sharon A. Sandridge

Section of Communicative Disorders

The Cleveland Clinic Foundation

Sharon A. Lesner

School of Communicative Disorders

The University of Akron

Incorporating assistive devices (ADs) into one's service delivery is no longer a luxury but a necessity. The actual process is not as overwhelming as it may appear. By knowing and understanding the answers to the most common questions, the establishment of an AD program can be accomplished with relative ease. The purpose of this article is to provide answers and suggestions concerning the most commonly asked questions involved in setting up an AD program.

Assistive devices (ADs), a term referring to both assistive listening devices and alerting devices, are an integral and necessary component of comprehensive hearing care services (Lesner, 1995; Sandridge, 1995a, 1995b). ADs solve problems associated with listening in noise, at a distance, and in reverberation that hearing aids cannot handle. It should no longer be a question of whether or not to provide AD services (see Lesner, 1995; Sandridge, 1995b), but rather, "how to" incorporate ADs within one's service delivery. There are several important issues that should be considered when planning to provide AD services, including what devices should be stocked; how to market, dispense, and sell the devices; and how to handle service and repair needs (see Table 1). The purpose of this article is to provide practical suggestions and answers to common questions concerning

Sharon A. Sandridge, PhD, is Coordinator of Electrophysiology and Hearing Research, The Cleveland Clinic Foundation, Section of Communicative Disorders A71, 9500 Euclid Avenue, Cleveland, OH 44195. Sharon A. Lesner, PhD, is Professor, The University of Akron, School of Communicative Disorders, Akron, OH, 44325-3001.

Table 1
 Issues That Need to be Considered
 When Establishing an AD Program in a Clinical Practice

1. What devices should be included?	Listening situations: one-to-one, small groups, large groups, telephone, radio, television Alerting situations: smoke alarms, telephone, doorbell, alarm clocks, other
2. What couplers or receivers should be stocked?	Headphones, earbuds Neckloops, silhouettes, direct audio input
3. Where can the devices be obtained?	Manufacturers vs. distributors Considerations: level of knowledge, accounting issues, unit pricing, quantity discounts
4. How should charges be determined for AD services?	Product cost vs. professional time
5. How should repairs be handled?	In-warranty vs. out-of-warranty
6. What personnel should be involved with the AD program?	Audiologist vs. support staff
7. How should AD services be marketed?	In-house marketing vs. outreach programs
8. How should ADs be displayed or demonstrated?	Dedicated room vs. dedicated cart

the provision of ADs. For more specific information on the various types of ADs available and their applications see Sandridge (1995a).

What Devices Should be Included?

The selection of devices needs to be made carefully considering that there are a multitude of products ranging in quality, reliability, and flexibility. It is not necessary, feasible, nor cost-effective to stock all devices, especially because ADs are not generally available on consignment. It is advisable to include at least a representative sample of devices in each of the following general categories: general listening, telephone listening, and alerting. Note that a few suggestions for specific devices will be given; however, it is not our intent to recommend a device for each situation. The manufacturers' addresses for devices mentioned are listed in the Appendix.

General listening devices include those devices for one-to-one, large or small group, television, or radio listening. A representative sample should demonstrate the four main types of general listening devices: hard-wired, FM, infrared, and an

audio-induction loop system. There are a number of relatively inexpensive personal listening systems that make good demonstration units. In addition, several systems are available that allow the demonstration of all four transmission modes within one unit. For example, the Chorus Universal Listening System (Audio-logical Engineering Corp., Somerville, MA) has an environmental microphone and interchangeable modules for infrared, FM, and audio-induction reception. A module is also available for broadcast FM radio reception. The complete Chorus System is available as a demonstration unit and costs less than purchasing the four systems separately.

A wide range of telephone listening device options are available. Selection of appropriate telephone listening devices, however, can be difficult. The effectiveness of the individual devices depends upon the actual device, the equipment to which the device is coupled, and the telephone line that is being used. For example, a particular amplified handset may not work on a particular telephone if the two are not compatible (i.e., Southern Bell handsets do not work with AT&T equipment). Likewise, some in-line amplifiers may not function on telephones with the electronics in the handset, such as Princess phones, or with phones that have special features such as memory-dialing. For this reason, a variety of devices should be available and a trial period should be offered to insure effectiveness. Portable strap-on telephone amplifiers (e.g., AT&T or Radio Shack) are compatible with all telephones and should, at a minimum, be available. A TDD is also a necessity for individuals who do not have sufficient hearing to use a regular telephone and for individuals who have speech problems which preclude their use of standard telephones.

A variety of alerting devices should be stocked so that appropriate transmission mode (visual, auditory, or tactile) can be demonstrated. Many alerting devices can be obtained from home improvement centers for prices less than purchasing from distributors. In such cases, it may be advisable to have the device to demonstrate and then refer out for the purchase.

Telephone alerting devices can be auditory, visual, or vibrotactile. We recommend that at least two devices be available, one that emits an enhanced (loud or low-pitched) audio signal and the other that results in a light flash. The latter may include devices that have a flashing light or that cause existing lights within the home to flash. In a typical practice, the majority of patients needing telephone alerting devices will probably have moderate to severe hearing losses. For these patients, a device having variable pitch, loudness, and ring patterns such as a Ring Max (Williams Sound, Eden Prairie, MN) may be the most versatile. The Sonic Alert Remote Horn Receiver (Sonic Alert, Rochester Hills, MI) which emits an 85 dB SPL low frequency signal, is also particularly effective as an audible alerting device for patients with high frequency hearing loss. For more severe hearing losses, the use of a bright strobe light such as the Wheelock Phone Strobe (Wheelock, Long Beach, NJ), or the Call Alert Telephone Signaler (HARC, Kala-

mazoo, MI), which flashes a connected lamp, may be more appropriate.

Doorbell devices are either portable or permanently installed. The portable doorbell devices have receivers that either plug directly into electrical outlets or are battery-powered. The push-button doorbell transmitter attaches easily to the outside door with a few screws, requiring no other installation. With wired doorbells, installation requires modifications to a home's existing circuitry. If installation of any alerting device involves direct wiring, it is recommended that it be done by an appropriately credentialed technician to avoid legal and liability problems.

Portable doorbells can also serve as personal pagers. For example, wireless doorbells have receivers that can be either carried or attached to a belt. This allows caregivers who are hearing impaired the freedom to move around the house knowing that they can be summoned by a bedridden individual.

In addition to improving quality of life, alerting devices serve important safety purposes. For example, appropriate selection and installation of smoke detectors can be literally a matter of life and death. Currently, there are no standards in the United States concerning the acoustic output of smoke detectors. Commercially available smoke detectors tend to emit signals in frequency regions of 2500 to 4000 Hz, a region that is difficult for many individuals with hearing impairments to detect (Nober, Wells, & Moss, 1981). Also, the output intensity of smoke detectors is not currently regulated. Therefore, commercially available smoke detectors may not be audible to persons with hearing loss who usually do not wear their hearing aids when they sleep. Detection may be further compromised when distance or barriers such as closed doors reduce the overall intensity of the signal that reaches the person. Therefore, it is recommended that units with strobe lights or vibrotactile units be considered. There is a real need to experiment with a device before purchase to verify its effectiveness. The Gentex with strobe light (Model 710 which is AC powered or Model 7109 which is battery powered; Gentex Corp., Derry, NH) and the Shake-Up by Silent Call with a remote vibrator (Silent Call Corporation, Clarkston, MI) appear to be the most effective devices currently available. In cases where audible or visible alarms are not effective, a smoke alarm that emits a pungent aerosol spray into the air is available (Scent of Life Alarm available from Paradigm Enterprises, Hixson, TX).

What Couplers or Receivers Should be Stocked?

Most listening devices are shipped with standard coupling devices including headphones, earbuds, or specific receiver units. The output of a device can vary significantly depending upon the actual coupler or receiver used (Hawkins & Schum, 1985; Hawkins & Van Tasell, 1982; Thibodeau, 1990; Thibodeau, McCaffrey, & Abrahamson, 1988; Thibodeau & Saucedo, 1990). Each coupler/receiver should be evaluated for each device with which it is coupled to verify performance (see Thibodeau, 1995 on how to evaluate ADs).

It is advisable to have several sets of different headphones and earbuds. In addition, a neckloop and a silhouette should be available. We have found the Sony Turbo Headphones (Models MDR-W07L or MDR-A22) to have exceptional quality. Direct-audio input is another option for coupling. However, a variety of boots and cords are needed for different hearing aid models, and it is not usually feasible to demonstrate this coupling option, except on a case-by-case basis.

A variety of adapter plugs should also be stocked. Adapters can be used to couple 1/8 in. mini phones to 1/4 in. phone plugs. Other adapters are available for stereo to mono conversions. The adapter plugs can be obtained through local Radio Shack stores or similar retailers.

Where Can Devices be Obtained?

In the 1994/1995 *Hearing Review Worldwide Registry*, over 100 companies were listed as providers of ADs. The listing includes distributors and manufacturers of the devices and there are advantages and disadvantages associated with obtaining ADs from each.

For example, dealing directly with a manufacturer will generally insure that you will be working with staff who are knowledgeable about the equipment and who can be of assistance both in terms of technology and service. Their knowledge, however, may be limited to their own products.

Distributors, on the other hand, may know less about a particular product but they may have knowledge about a wider range of products. In addition, because distributors typically work with many different manufacturers and devices, they may have insights concerning the relative quality/workmanship of various products.

Ordering directly from a manufacturer requires that a credit account be established. Initially, establishing accounts may be time consuming, especially if several manufacturers will be used. On-going time commitments may be less with distributors because a number of products can be ordered with one telephone call. Then it is necessary to deal with only one invoice and one billing account per order.

Other Considerations

Unit pricing is also a consideration. When dealing either with manufacturers or distributors it is important to establish your account as a dealer account. This should result in the lowest available pricing structure (not including quantity discount). However, with at least one major distributor, a device purchased at dealer cost is no longer returnable for credit if it does not meet your consumer's needs.

Price of the device will also be determined by quantity discounts. Quantity discounts may not be advantageous if the devices are not sold within a reasonable time period. It is also advisable to avoid purchasing devices in quantities until

specific devices have proven themselves. For example, one of the authors purchased a number of small vibrating alarm clocks at a quantity discount, which then demonstrated a high malfunction rate. The clocks became a liability because they could not be sold to patients.

Another consideration is the availability of repair services. Both manufacturers and distributors accept devices for repair while under warranty. Once a device is out of warranty, most distributors will not provide service. However, many manufacturers will. Regardless, it is advisable to identify a local repair service for out-of-warranty repairs.

In practice, it is best to deal with both distributors and manufacturers because there are advantages associated with each, especially for certain products. For example, for commonly used devices such as the Ringmax or portable telephone amplifiers, we deal with distributors. For new devices or devices requiring more extensive set-up, such as large-group listening systems, we deal directly with the manufacturer whenever possible.

How Should Charges be Determined for AD Services?

It is possible to make a profit from dispensing ADs. The two components to AD charges include product cost and professional time. Unlike hearing aids, the cost for professional time should not be bundled with the cost of the device because doing so would make the devices cost prohibitive. Instead, an appropriate mark-up (generally 25 to 50%) should be added to the product with a separate fee charged for professional time.

Although the amount of time and resultant charges vary depending on the needs of the patient, provision of ADs typically involves a charge for evaluation, installation, and training. An ecological assessment, including a home visit, may be a necessary part of AD dispensing, especially for individuals with significant hearing losses and/or multiple needs. These assessments should include travel expenses.

How Should Repairs be Handled?

The procedure for handling repairs needs to be established at the outset. If the device is still under warranty, it is prudent to return the device to the manufacturer for repairs. If the device is out-of-warranty, several other options exist such as having a repair person on staff, finding an independent repair service to subcontract with, or referring the patient to an outside source. There are pros and cons for each option. Referring the patient to an outside source will involve the least amount of time and energy; however, it is a loss of potential revenue. Repairs handled through the practice, either directly or subcontracting out to a repair service, involve time and personnel, yet they are in keeping with the concept of comprehensive care. If possible, one person should be designated as responsible for receiving, testing, and sending the product to the appropriate repair ser-

vice, as well as returning it to the patient. Although an audiologist is most appropriate for evaluation and recommendation of a particular device, office staff should be capable of handling the repair process and associated paperwork.

Options for repair charges include a flat fee or a percentage mark-up over the actual cost of the repair. Shipping and handling charges, as well as administrative costs, should be included in the bill.

What Personnel Should be Involved With the AD Program?

ADs should be evaluated, demonstrated, and recommended by individuals who have the necessary expertise, namely audiologists. Several of the same considerations made in the selection of hearing aids need to be considered when selecting ADs. Inappropriate selection can result in damaged hearing, negative experiences, and insufficient benefit. To insure safety and satisfaction, ADs should be dispensed only by knowledgeable audiologists. Although it would be ideal if all audiologists on staff had the knowledge and expertise to work with ADs, most likely, not all will. Therefore, it may be necessary to designate a key person until the remainder of the staff acquires the knowledge and experience.

The audiologist, however, does not need to be responsible for all aspects of the AD program. There are roles for support staff, including inventory, ordering, and accounting paperwork. Repairs may also be handled by technical staff.

How Should AD Services be Marketed?

Marketing of AD services should be multidimensional. Perhaps the easiest way to start is to do in-house marketing, such as display of devices in the waiting room. For example, a wall- or ceiling-mounted television and VCR might be used to show the videotape *Doorways to Independence* (Compton, 1991), which describes and demonstrates various ADs. The tape also can be used to demonstrate captioning. Additionally, listening devices such as FM systems, infrared systems, or audio-induction loops can be installed in the patient waiting area so that patients can experiment with them while they wait for their appointments.

Waiting-room magazines can be replaced with informational pamphlets about ADs. A notebook of various ADs available through the practice can be developed for display. Flyers announcing new products can be displayed and/or included in monthly billing statements. Announcements or small informational pieces can be included in newsletters.

Outreach programs are very effective. Other health professionals can be targeted including speech-language pathologists, occupational therapists, physical therapists, social workers, psychologists, family practitioners, and geriatricians. Service organizations, senior groups, religious groups, community organizations, and support groups such as SHHH are always looking for speakers for their programs. Volunteer to make a presentation. Provide knowledge to consumers

about the Americans with Disabilities Act (ADA) and how ADs are an integral part of the act. Demonstrate a few of the devices and show the benefits obtained from them. Through presentations and demonstrations, development of rapport and trust may translate into potential sales.

Another approach is to develop a listing of available ADs in the community. For example, we list theaters, cinemas, and churches with assistive listening systems and the type of ADs available (i.e., FM, infrared, or loop). This list serves several purposes. First, it provides patients with useful information. Second, it identifies potential customers. Information should be provided to theaters, hospitals, hotels, public gathering places, churches, government offices, stadiums, and local businesses that do not use devices. Prepare a packet of materials about the ADA, the effects of hearing loss, the benefits of ADs, and how ADs may result in better market penetration, reduced consumer complaints, and increased consumer access. Offer to consult with targeted businesses to assist them in their attempts to comply with the ADA. The list serves to foster goodwill, to enhance your image, and to identify potential market revenues.

How Should ADs be Displayed or Demonstrated?

The extensiveness of an AD display will be determined primarily by the available space and capital. Although it may be advantageous to house ADs in a separate room in order to simulate how the devices will be typically used, it is not mandatory. Many ADs can be displayed on carts or on shelving within a counseling room, a large testing room, or a corner of the waiting room. It is not necessary to purchase an expensive display case; a cart from a local home furnishing store can suffice. A cart on wheels that complements the decor may also function effectively and can be moved to various rooms for multi-room, multi-audiologist practices.

The size of the cart/display case depends on the number of devices that are to be demonstrated. It is advisable to purchase a cart that holds all the devices. Having devices in closets or drawers does not facilitate demonstration or potential sales (see Lesner & Klingler, this issue).

Any type of audio system should be effective to demonstrate listening devices. If capital is limited, a stereo boom box with audio-out capability may suffice, although a television with a VCR allows demonstration of captioning. The VCR eliminates the need to depend on commercial broadcast stations (see Lesner & Klingler, this issue).

Telephone listening devices should be displayed by attaching them to telephones that are easily accessible to patients. The devices can be displayed on the telephone that is used to train clients in proper use of hearing aid telecoils. Several telephone training systems are available (see Lesner & Klingler, this issue) to demonstrate amplifying devices as well as to provide telephone training to patients.

Conclusions

Although establishing an AD program initially may seem daunting, it can be manageable. Knowledge and planning will facilitate the process. Expect to change some devices after initial experimentation. Listen to your patients because their comments are invaluable, and do not be afraid to experiment with the equipment.

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APPENDIX

Audiological Engineering Corp.
35 Medford Street
Somerville, MA 02143
Telephone: 617/623-5562 Fax: 617/666-5228

Gentex Corp.
5 Tinkham Avenue
Derry, NH 03038
Telephone: 800/258-3554 Fax: 603/434-3002

HARC Mercantile Ltd.
3130 Portage Street P.O. Box 3055
Kalamazoo, MI 49003-3055
Telephone: 800/962-6634 Fax: 616/381-3614

Paradigm Enterprises, Inc.
P.O. Box 339
Hixson, TX 37343-0339
Telephone: 800/818-8141 Fax: 615/870-4774

Sonic Alert, Inc.
1750 West Hamlin Road
Rochester Hills, MI 48063
Telephone: 313/656-3110

Ultratec
450 Science Drive
Madison, WI 53711
Telephone: 608/238-5400 Fax: 608/238-3008

Wheelock, Inc.
273 Branchport Avenue
Long Beach, NJ 07740
Telephone: 800/631-2148 Fax: 908/222-8707

Williams Sound Corp.
10399 West 70th Street
Eden Prairie, MN 55344-3456
Telephone: 800/328-6190 Fax: 612/943-2174