



AMERICAN  
SPEECH-LANGUAGE  
HEARING  
ASSOCIATION

# AUDIOLOGY

## INFORMATION SERIES



ASHA'S CONSUMER NEWSLETTER

## Assistive Technology

### What are assistive listening devices?

An assistive listening device (ALD) is any type of device that can help you function better in your day-to-day communication situations. An ALD can be used with or without hearing aids to overcome the negative effects of distance, background noise, or poor room acoustics. So even though you have a hearing aid, ALDs can offer greater ease of hearing (and therefore reduced stress and fatigue) in many day-to-day communication situations. ***Hearing aids + ALDs = Better listening and better communication!***

### What are examples of ALDs?

1. **Personal frequency modulation (FM) systems** are like miniature radio stations operating on special frequencies assigned by the Federal Communications Commission. The personal FM system consists of a transmitter microphone used by the speaker and a receiver used by you, the listener. The receiver transmits the sound to your hearing aid either through direct audio input or through a looped cord worn around your neck.

Personal FM systems are useful in a variety of situations such as listening to a travel guide or book review, in a classroom lecture, in a restaurant, in a sales meeting, or in a nursing home or senior center.

FM systems are also used in theaters, places of worship, museums, public meeting places, corporate conference rooms, convention centers, and other large areas for gathering. In this situation, the microphone/transmitter is built into the overall sound system. You are provided with an FM receiver that can connect to your hearing aid (or to a headset if you don't wear a hearing aid).

2. **Infrared systems** are often used in the home with TV sets, but, like the FM system, they can also be used in large settings like theaters.

Sound is transmitted using infrared light waves. The TV is set at a volume comfortable for family members. The infrared system transmitter transmits the TV signal to your receiver, which you can adjust to your desired volume. Thus, TV watching as a family becomes pleasurable for all. While it is not too loud for family members with normal hearing, the volume is just right

for you because it is adjusted by you through your individual receiver.

3. **Induction loop systems** are most common in large group areas. They can also be purchased for individual use.

An induction loop wire is permanently installed (perhaps under a carpet) and connects to a microphone used by a speaker. (In the case of individual systems, a wire loop is laid on the floor around you and the speaker.) The person talking into the microphone creates a current in the wire, which makes an electromagnetic field in the room. When you switch your hearing aid to the T (telecoil/telephone) setting, your hearing aid telecoil picks up the electromagnetic signal, and you can adjust its volume through your hearing aid.

4. **One-to-one communicators.** Sometimes in a restaurant, nursing home situation, or riding in a car, you want to be able to easily hear one person. Or perhaps you are delivering a lecture or running a meeting and a person in the audience has a question. You can give the person a microphone to speak into. The sound is amplified and delivered directly into your hearing aid (or headset if you don't have a hearing aid), and you can adjust the volume to your comfort level. When using the one-to-one communicator, the speaker does not have to shout, private conversations can remain private, and, when in a car, your eyes can remain on the road!

5. There are many, many **other ALDs** such as telephone amplifying devices for cordless, cell, digital, and wired phones; amplified answering machines; amplified telephones with different frequency responses; paging systems; computers; and wake-up alarms.

*Your audiologist can provide you with additional information on ALDs.*

### Are there communication devices besides those that assist listening?

Yes, there are **visual systems** that can be used alone or in combination with listening devices and hearing aids. Persons who are hard of hearing or deaf, or even

persons who have no hearing loss, can benefit. There are also **alerting devices** that signal you when a sound occurs. For example, there are doorbell, knock-at-the-door, or phone alerting devices; fire alarm/smoke alarm devices; baby-crying devices or room-to-room sound alerting systems; vibrating clock alarms; vibrating paging systems; and vibrating watch alarms. Many use strobe light or conventional light to alert you. Others use vibrating systems to alert you.

#### Examples of visual systems include the following:

1. Text telephones, which allow phone conversations to be typed and read rather than spoken and heard
2. Computerized speech recognition, which allows a computer to change a spoken message into a word processed document
3. Closed-captioning TV, which allows text display of spoken dialogue (All TVs with screens of at least 13 inches diagonal measurement must have built-in captioning.)
4. Note taking, which allows a hard of hearing person to concentrate on listening and watching a speaker while a trained person takes notes (This has been used in schools not only for students who are deaf or hard of hearing but also for students who are unable to write.)

#### Are there special considerations for children?

Yes! It is well documented that children's language development, speech development, social skills, and academic achievement depend on the ability to hear. Assistive listening systems maximize children's hearing and learning capabilities. **FM systems**, because of their flexibility, mobility, and sturdiness, are among the most common ALDs used with children. FM systems have wide application in educational settings because of the long-recognized benefits that this technology provides in noisy and reverberant child care, preschool, and classroom environments. When you think of where and how your child spends the day, you quickly realize how ALDs provide benefit in noisy play areas or in acoustically poor classrooms.

Studies have shown that the best results are achieved when implementation of an FM system is made early in the amplification fitting process. In fact, as a matter of routine, audiologists fitting hearing aids to children make sure the aids are prescribed with T (telecoil/telephone) switches, M / T (microphone/telecoil) combination switches, and direct audio input (DAI) capability that will allow connection with assistive listening systems. If you have a child who needs a hearing aid, be sure it comes with these features.

#### What do FM systems do for children in schools?

- € They allow the child to hear the teacher's voice at an appropriate and constant intensity level regardless of the distance between the child and the teacher.
- € They allow the teacher's voice to be heard more prominently than background noise (toys, papers, chairs scraping, whispering, pencils being sharpened, feet shuffling) *even* when the background noise is closer to the child than the teacher's voice.
- € They allow for self-monitoring of the child's own voice through the conventional hearing aid microphone.
- € They allow for the conventional hearing aid microphone to be turned off so that the child can concentrate only on the teacher.

#### Are there other assistive listening systems used in schools?

Yes. While children with sensorineural hearing loss receive the most benefit from personal FM systems, there are amplification systems, called **sound field systems**, that assist listening for all children in the class. Using FM technology, the teacher speaks into a microphone transmitter. The teacher's voice is projected through speakers mounted around the classroom. This arrangement assists in overcoming the problems of distance, background noise, and poor room acoustics that affect listening for all children.

Sound field systems have been found to benefit children with hearing loss as well as those with other auditory and learning problems. In addition to helping those with severe and profound hearing loss, sound field systems may help those with minimal hearing loss, conductive hearing loss, fluctuating hearing loss associated with otitis media, unilateral hearing loss, central auditory processing disorders, learning disabilities, developmental delays, attention deficits, language delays, articulation disorders, and those learning English as a second language.

#### Who is qualified to determine if my child needs an ALD?

The ability to select, evaluate, fit, and dispense FM systems falls uniquely within the realm of the certified audiologist. Many school districts employ certified audiologists who specialize in educational setting issues. Their expertise includes the evaluation for and the selection, procurement, and monitoring of ALDs used in school by the child. Furthermore, audiologists guide and instruct teachers and students in making the best use of ALDs.

Is there legislation that supports the provision of ALDs to children?

Increased availability and usage of FM systems are due in large measure to legislation that mandates access to technology for persons with hearing and other communication disabilities: (1) the **Americans with Disabilities Act**, (2) the **Individuals with Disabilities Education Act (IDEA)**, and (3) **Section 504 of the Rehabilitation Act**. Under IDEA, consideration of assistive technology for any child with a disability must take place as part of the development of the **Individualized Educational Program**. Each in some way deals with the issue of access to instruction. Of course, for the child with hearing loss, access means being able to hear instruction!

.....

For more information about hearing loss, hearing aids, or referral to an ASHA-certified audiologist, contact the:



AMERICAN  
SPEECH-LANGUAGE-  
HEARING  
ASSOCIATION

2200 Research Boulevard  
Rockville, MD 20850  
1-800-638-8255  
E-mail: [actioncenter@asha.org](mailto:actioncenter@asha.org)  
Web site: [www.asha.org](http://www.asha.org)

.....

*Compliments of*  
American Speech-Language-Hearing-Association  
2200 Research Boulevard, Rockville, MD 20850 ψ 800-638-8255