Hearing Loss Association of America

POLICY STATEMENT

Telecoils

All hearing aids contain three basic components: the microphone, amplifier, and loudspeaker (called a "receiver" in hearing aid terminology). The microphone picks up sound waves and converts these into a tiny electrical current. This current is then amplified and changed back into sound by the hearing aid receiver. The best way to conceptualize a telecoil is as a microphone, but one that responds to a varying electromagnetic field rather than to sound waves. About 50 years ago, a very astute hearing aid engineer by the name of Sam Lyberger, realized that the sound heard through a telephone was produced by an electromagnetic field vibrating a diaphragm in the telephone earpiece, and that this field could be directly accessed by hard of hearing people. He substituted a coil of wire wound around a metal core (termed an "induction" coil) in the same circuit position as the microphone within the hearing aid. By placing this coil in the varying magnetic field, an electrical current was "induced" in it; this current could then be amplified and converted back into sound by the hearing aid receiver. These were the days when only body worn hearing aids were available and trying to listen to a telephone by placing the hearing aid against the telephone receiver was not always possible. Not only was the already limited fidelity further decreased, but environmental noise and acoustic feedback made effective telephone communication a difficult chore at best, and an impossible dream at worst. By using the induction coil (now called the "telephone coil" or "telecoil") instead of the microphone, a direct "inductive" coupling was possible, thus bypassing the potential problems of acoustical coupling. Thus was born the whole idea of Hearing Aid Compatible (HAC)telephones.

The Hearing Loss Association of America believes that telecoils in hearing aids area valuable hearing aid feature that are currently insufficiently utilized or appreciated. Industry figures indicate that only about 30% of modern hearing aids incorporate a telecoil (the "T" switch). Because, unlike the old body worn hearing aids, effective telephone communication may be possible with many in-the-ear (ITE), in-the-canal (ITC) and completely-in-the-canal (CIC) hearing aids, and because there may be insufficient physical space to include telephone coils in the smaller aids, some dispensers evidently think that they are unnecessary. This is unfortunate and short-sighted. While initially designed to detect the electromagnetic field around telephones, in actuality a "T coil can detect any electromagnetic field, including that emanating from room, area or neck loop. It is this additional property of "T" coils that is being overlooked when hearing aid dispensers only consider "T" coils in terms of telephone usage. Large and small area assistive listening devices transmit signals to a listener using either Infra-Red (IR) light, FM radio waves, or an electromagnetic field (via a loop of wire on the floor). To detect the IR or FM signals, the listener has an option to couple their IR and FM receivers to the hearing aids with either a neck loop or silhouette inductors. Both of these transmission modes require that the

hearing aid be equipped with a "T" coil. Without the "T" coil, the listener must use earphones to hear the signals, necessitating either the removal of the hearing aid or the placement of the earphones directly over the hearing aids. Besides being less convenient, when earphone listening is substituted for personal hearing aids, listeners are deprived of the specific electroacoustic characteristics of the aids and the advantages they presumably offer. And, of course, when an induction loop is the transmission mode, all a listener has to do is switch the hearing aid to the "T" position to be "on the air".

Clearly, the addition of a "T" coil in a hearing aid facilitates the provisions of auditory access as mandated by the Americans with Disabilities Act. Many hearing aid users were not informed about telecoils and their potential as an assistive listening device when they purchased their hearing aids. Other users, while being aware of telecoils and their primary purpose for improved telephone access, may not be fully cognizant of their other assistive listening possibilities. HLAA recommends that all hearing aid dispensers inform their patients of the function and potential advantages of "T" coils during the course of the hearing aid selection process and strongly suggest their inclusion in the hearing aids. It is evident that including "T" coils in hearing aids may require somewhat larger hearing aids and a slight additional cost. While hearing aid users may elect to forgo them, as it their right, they also have a right to be fully informed of their potential usefulness and given an objective demonstration of their efficacy. The ultimate decision to incorporate them or not rests with the hearing aid user and not with the hearing aid dispenser. HLAA strongly recommends that consumers accept this option.

HLAA further recommends:

- That hearing aid manufacturers ensure that the electroacoustic characteristics of the hearing aid in the "T"coil position be identical to that of the microphone response. Whatever advantages are presumed to occur when a certain response is "prescribed" in the conventional, microphone listening mode, should also be present when listening through the "T" coil.

- That manufacturers incorporate "M/T" capability whenever possible. In some situations it may be advisable to be able to hear through both the "T" coil (an FM output for example), and the hearing aid microphone (monitoring one's own voice or conversing with a companion in some large-area listening situation).

- That "T" coils be developed which are insensitive to changes in the relative positioning of the electromagnetic field and the hearing aid. Currently, inducing the best possible

signal in a "T" coil is different when using a telephone or listening through a neck or floor loop.

In brief, it is the position of HLAA that telecoils be given the prominence they deserve as a valuable hearing aid feature that will allow the expanded use of assistive listening devices.