

Advances in Audiology

A Brief Look at the Past 50 Years

Early hearing tests consisted of dropping a dime and then a quarter on the floor behind a person to determine his or her ability to hear sounds in low or high ranges. Funnel-shaped ear trumpets were used as primitive hearing devices.

It was not until after World War II that audiology became a formal field of study, with major universities forming audiology departments and offering undergraduate and graduate programs. Many injured veterans returning to the US had hearing losses or difficulty interpreting what they were able to hear. To help these vets, medical professionals began serious research on how the ear functions and how information is processed neurologically (central auditory processing – CAP). The focus for the next several decades was on the development of more scientific and precise diagnostic tests. Computer technology greatly advanced diagnostic sophistication and has even provided, recently, the ability to diagnose sensory from neural hearing loss. Computers even lead to the discovery of an entire new area of auditory disturbance - auditory neuropathies. New technology also enabled the development of CAP tests designed specifically for children.

After WWII, new, yet still crude amplification devices were developed. One of the first hearing aid units was a set of earphones connected to a large case with heavy batteries. Next was the transistor-radio styled device that fit into a pocket and had a wired earpiece. This was followed by the behind-the-ear hearing aids. Although audiologists could evaluate patients for hearing loss, they had to send patients to hearing aid sales representatives for amplification devices. Hearing aid devices functioned on analog circuitry, amplifying sounds that were closest to the aid's microphone. Analog offered some benefit, but could not regulate sounds well in noisy places like restaurants.

In the 1980s, the professional association for audiologists – the American Speech-Language-Hearing Association – changed its code of ethics to allow audiologists to dispense hearing aids in order to provide comprehensive services to patients. The change also prompted significant research by audiologists on the development of new amplification devices. Today, we have digital, in-the-ear canal hearing aids that are practically invisible and provide better sound quality and user satisfaction. Digital circuits specifically identify speech sounds while reducing background noise, which provides improved word intelligibility in all listening environments.

Perhaps the most revolutionary development has been the Cochlear Implant, a hearing device surgically implanted into the ear. Originally designed for adults with sudden lost hearing, the implant has been especially successful with children because of the young brain's ability to adapt to the technology. The Cochlear Implant has the potential to beat deafness. Children as young as six months can be fitted, which will enable them to develop speech, language and learning the same as children born with normal hearing.

To better diagnose and treat hearing problems earlier, New Jersey, in 2002, mandated hearing screening for all newborns at birth or within their first 30 days. It is critical for hearing problems to be diagnosed and treated early so that children can learn language and social skills that enable them to communicate effectively.