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International Conference and Expo on
Audiology and Hearing Devices

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The operation and delivery of devices to better hearing now and always

Earl Johnson
Johnson Hearing Technology and Communication, PLLC, USA

The course will present on how to better hearing using amplification products/devices (i.e., hearing aids and personal sound amplification products) and varying levels of service provision commonly found in hearing healthcare delivery. The many responsibilities of the hearing healthcare provider in treating the patient as a whole as well as the effects of hearing loss in terms of both a loss of audibility and suprathreshold cochlear distortion are discussed. The distortion poses challenges for ensuring ideal speech recognition and loudness perception in all listening environments. Hearing instrument technology offers a variety of solutions to these challenges though. Ways to ensure higher forms of hearing healthcare delivery remain prevalent both now and in the future are also discussed.

Course objectives:

- As a result of this presentation the participant will be able-
- to describe factors identify the uptake of hearing devices and the use of emerging gerontechnology in today's society.
- to summarize the multifaceted roles of the hearing healthcare delivery in the provision of devices to better hearing.
- to describe how signal processing used to treat suprathreshold distortion loss may hold a key role in differentiating hearing devices of today from those of tomorrow.

to identify realistic expectations for speech recognition performance and addressing abnormal loudness growth with hearing devices providing the latest in hearing instrument technology.

drearl@johnsonhearing.org

Implantable active middle ear devices for hearing loss

Herman A Jenkins
University of Colorado, USA

The past three decades have seen the advent of new implantable devices, with the cochlear implant, osseointegrated prostheses, and active middle ear implants. These have shown many refinements and are currently utilized in many parts of the world as part of the rehabilitation. Yet, much of this technology is in its infancy and many technical problems still exist. The author will present a summary of these prostheses with an algorithm as to appropriate use, depending on anatomical changes and severity of hearing loss. Particular attention will be placed on the active middle ear prostheses, with the potential uses in different types of hearing loss. Comparison of human and animal studies show comparative results with acoustical through the middle ear and direct ossicular and round window stimulations. These studies demonstrate the feasibility of a totally implantable device in a variety of situations, based on human results of speech discrimination and animal electrophysiological measures. An algorithm for the clinician can be developed for appropriate use. Cochlear implants are used in the severe to profound hearing loss, and recently in unilateral deafness. The osseointegrated prostheses require significant cochlear reserve with only a moderate sensorineural loss to be effective in bone conduction stimulation. The active middle ear prostheses can be used in the mild to severe range with direct drive of either the ossicular chain or round window membrane. The rapid influx of hearing rehabilitation methodologies have allowed the otologic physician and audiologist to improve hearing in essentially all types of deaf and hard-of-hearing patients, regardless of etiology or severity.

Herman.Jenkins@ucdenver.edu