An Introduction to Cochlear Implant Technology

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Speaker: Poorna Mane, Ph.D.
Sr. Project Manager & Systems Integration Engineer
Advanced Bionics-California

Abstract:
Cochlear implants are electronic devices that contain a current source and an electrode array that is implanted into the cochlea; electrical current is then used to stimulate the surviving auditory nerve fibers. Cochlear implantation has been an approved method of treating profound hearing loss since the mid-1980s. Over the course of the last two decades, cochlear implant technology has development yielded substantial gains in spoken word recognition for the average cochlear implant user. Along with advances in engineering and speech processor design have come changes in the criteria for cochlear implant candidacy. When implantation of children was approved by the FDA it was limited to children 2 years of age and up; now, the FDA has approved the use of multichannel cochlear implants in prelingually deafened children as young as 12 months of age. This talk provides a high level description of how cochlear implants work, the various components of the system and the latest technology available to the user.
Biography

Dr. Poorna Mane is a Senior Project Manager and Systems Integration Engineer in Research and Development at Advanced Bionics, California. Advanced Bionics (AB) is the only cochlear implant manufacturing company based in the US and one of three companies world-wide. AB is a subsidiary of Sonova Holding AG which is the world leader in hearing solutions and largest hearing aid manufacturer in the world. 

Dr. Mane received her undergraduate degree in Computer Engineering from Goa University and MS and PhD degrees from Virginia Commonwealth University, Richmond. She has completed a post-doctoral research fellowship from the General Motors – University of Michigan Research Institute in Smart Material and Structures at The University of Michigan, Ann Arbor. Dr. Mane’s expertise cover the full scope of Class I, II and III medical device design and development with focus on active implantable devices. She specializes in long term reliability characterization of implants and associated sub components. She also specializes in MRI safety assessment of active implantable medical devices.