# TUNING IN

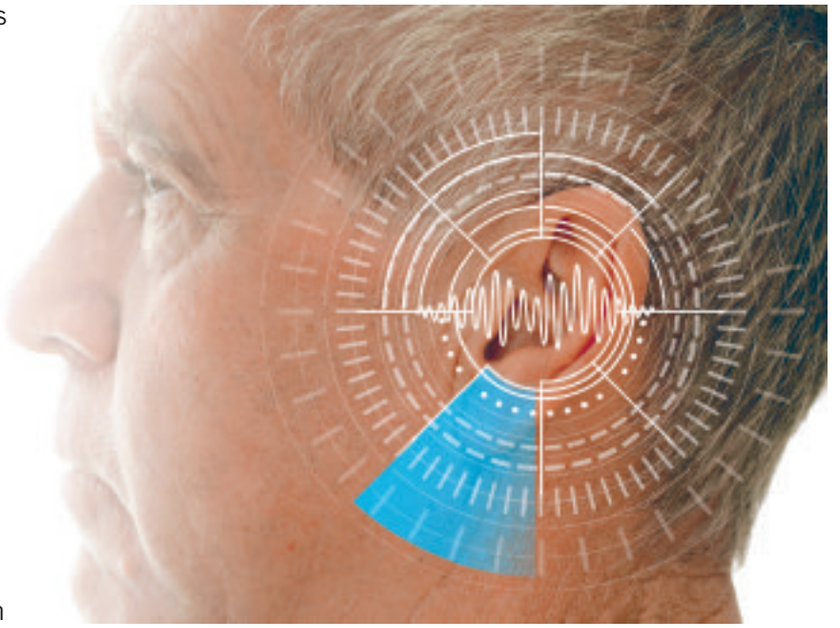
## COCHLEAR IMPLANTS GET MORE USER-FRIENDLY

By Pamela Brill

For Esther Goodcuff of Merrick, managing hearing loss for much of her adult life led her to having a cochlear implant. "I wore hearing aids for decades and had always upgraded the latest technology as my hearing declined," she says. "But I found that I had to keep distinguishing words during conversations, and it became exhausting."

After consulting with an NYU Langone physician and audiologist, she decided to undergo implant surgery in 2015 for her left ear. Once the device was activated the following month, she was amazed by the sudden clarity. "I realized that I could hear birds chirping and could distinctly make out the sounds of television in another room of the house," she says, describing the difference in the quality of her hearing as "night and day."

According to a 2017 National Institutes on Deafness and Other Communication Disorders report, more than 324,200 people across the world have cochlear implants, with 96,000 in the United States alone. As this number continues to grow, prospective patients should first understand how this device functions and what they can expect in the long run.



### THE RIGHT FIT

Unlike hearing aids, which are used to amplify sound and worn either behind or inside the ear, cochlear implants require a surgically embedded internal device and an external speech processor that work in tandem. "The internal device, consisting of an electrode array, is threaded into the cochlea, a bony structure in the inner ear, replacing sensory hair cells that are typically missing or damaged, to stimulate the auditory nerve directly," says Catherine Flynn, an audiologist at NYU Audiology Associates in Woodbury. The speech processor, worn behind the ear, then uses a microphone and transmits an auditory signal to the internal device, converting it to an electrical signal.

Despite their advantages, cochlear implants aren't for everyone. According to Dr. Andrea Vambutas, chief of otolaryngology at Long Island Jewish Medical Center and North Shore University Hospital, the best candidates are people with a shorter duration of deafness (as opposed to lifelong hearing loss), normal inner ear anatomy and a motivation to improve their quality of hearing.

During the surgical implantation, performed as an outpatient procedure that typically lasts a few hours, doctors monitor the internal device for optimal usage. "This can tell us that the brain is receiving a signal and that the device is working properly," says Dr. David Schessel, chief of otolaryngology - head and neck surgery at Stony Brook Medicine.

After surgery, patients will undergo periodic post-operative mappings with an audiologist. During these sessions, the device is programmed and tweaked based on the auditory nerve's response to sound. Vambutas