

# Farewell to Silence

Cochlear Implant

By Aloyma Ravelo / Photos: Miguel Gutiérrez



In patients with severe or profound hearing loss, the ciliated cells of the inner ear (cochlea), are usually damaged or non-existent, and therefore cannot transmit sound to the brain.

Cochlear implant technology has revolutionized the world of acute hearing disability. Thanks to this technique, previously hearing impaired children, young people and adults have achieved acceptable hearing, with a definite improvement in their quality of life.

Parents of children with cochlear implants have expressed profound gratitude to Cuban medicine. This is understandable in light of experiences such as that of Lianely, who lost her hearing at the age of 7 months after a bout of bacterial meningitis. She received her implant four months later and today, at the age of three, she can hear and speak normally.

She will never remember having lived in absolute silence.

#### What is a cochlear implant?

A cochlear implant, often called a bionic ear, is an electronic device which improves the hearing of patients with severe hearing loss, in cases where conventional hearing devices do not work.

The system has internal, invisible, components inserted through surgery. The electronic implant or stimulator is placed under the skin behind the ear, and the electrodes are placed in the cochlea—inside the inner ear—. The electronic device thus plays the role of the inner ear.

*Dr. Beatriz Bermejo  
with some of her Young patients.*



Dr. Antonio Paz Cordovés points out that, like all top-of-the-line technology, the high cost of these devices (over US\$ 20,000) and the long rehabilitation process means they are most in use in developed nations. The total cost in any developed country is between US\$

40,000-50,000. It is a free service under Cuba's universal health care system.

### **The National Program**

Great progress has been achieved worldwide in the last few decades in the field of cochlear

How the Cochlear Implant works in substituting for the damaged part of the inner ear:

- The microphone captures sounds.
- The processor turns the sounds into digital information.
- The antenna transfers the information through the skin into the implant.
- The implant turns the digital information into electric signals and transmits them to the electrodes.
- The electrodes supply electric signals to the acoustic nerve.
- The acoustic nerve sends the information to the brain, where it is perceived.

The entire process - from the arrival of the sound to its processing in the brain - happens so rapidly that the patients hear the sounds without delays.



*After placing the implant come logopedia and phoniatics lessons to help pronunciation.*

implants. In the recent Latin-American Symposium on Cochlear Implant, Cuba announced that a group of children and young adults have undergone surgery and some are at the rehabilitation stage. Another group of patients have dramatically improved their quality of life, including blind patients who were also hearing impaired.

Beatriz Bermejo, MD, a speech therapist (logopedy and phoniatics), explains that the implant has the capacity to improve access to environmental sounds, hearing and

word understanding, music and the use of telephones.

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