

# ALTERATIONS IN AUDITORY FUNCTIONS

## CAUSED BY DIABETES



FUNDACIÓN  
VALLE DEL LILI  
*Excelencia en Salud al servicio de la comunidad*

## How can diabetes affect hearing and balance?

1

Glucose metabolism is the inner ear's greatest source of energy and allows proper functioning. Alterations in this metabolic mechanism drive changes in hearing and balance functions.

2

Blood vessels are responsible for transporting oxygen to the inner ear, hence, the accumulation of fatty plaque (a sticky substance, composed mainly of fat and calcium) inside arteries will cause issues to the auditory nerve.

3

Damage to the nerves hinders message transmission from different parts of the body to the brain and vice versa, affecting the vestibular/auditory nerves, responsible for balance and hearing.

**These alterations may cause the following symptoms:**

**ringing or buzzing in the ear.**

• **Severe pain in the affected area.**

• **Hearing loss sensation.**

• **Dizziness.**

• **Partial facial paralysis.**

## MALIGNANT EXTERNAL OTITIS

*An infectious process that may cause the patient's death if it's not promptly treated.*

It begins in the external auditory canal and may extend to the cartilage, the parotid glands and the neighboring bone structures; without treatment, it might reach the skull, producing serious complications.

### HEARING LOSS

#### SYMPTOMS:

- Difficulty perceiving high-frequency sounds, such as: phone beeping or female and children's voices.
- Ringing in one or both ears, constant earache, need to increase too much the TV's volume; ability to hear, but without identifying words.

***Hearing loss affects your communication, interferes with all of your activities and leads to emotional and life quality deterioration.***



## HEARING LOSS DIAGNOSIS



**Pure-tone audiometry:** helps to determine hearing levels and to identify the injured area.

**Impedancemetry:** helps to evaluate the status and function of middle-ear structures and the acoustic reflex arc.

**Speech test:** helps to report on the ability to understand spoken language.

*These tests guide hearing loss treatments, in some cases more diagnostic information is required, through electrophysiologic auditory testing.*

## Hearing loss Management

An otorhinolaryngologist will define if medical or surgical intervention are viable for improving hearing capacity; if hearing loss is irreversible, he/she will recommend the use of hearing aids: a cochlear implant or other amplification devices.

## Prevention of complications

Be aware of the symptoms. You may prevent the appearance of other alterations that can be controlled, if you detect them on time. If your hearing loss is irreversible, proper management can be provided to avoid life quality deterioration.