

Intratympanic injection in Meniere's disease

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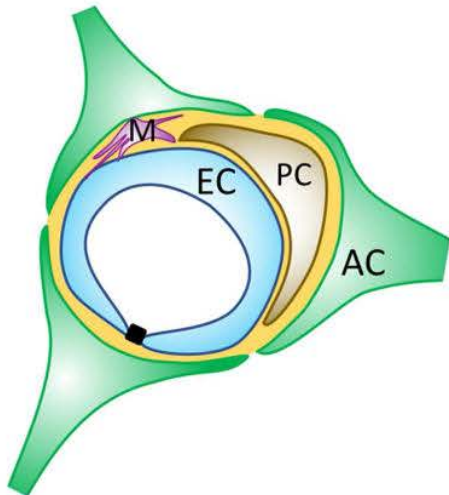
Principal advantages

- To deliver therapeutic concentrations of a pharmaceutical agent in a highly targeted fashion to the affected inner ear, with only minimal systemic exposure.

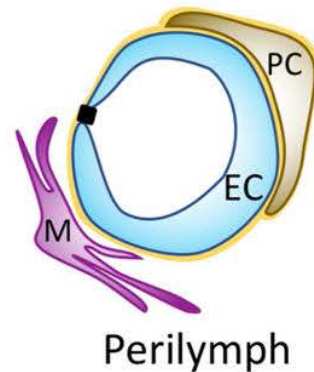
Blood-labyrinth Barrier

- Blood perilymph barrier
- Blood-strial barrier

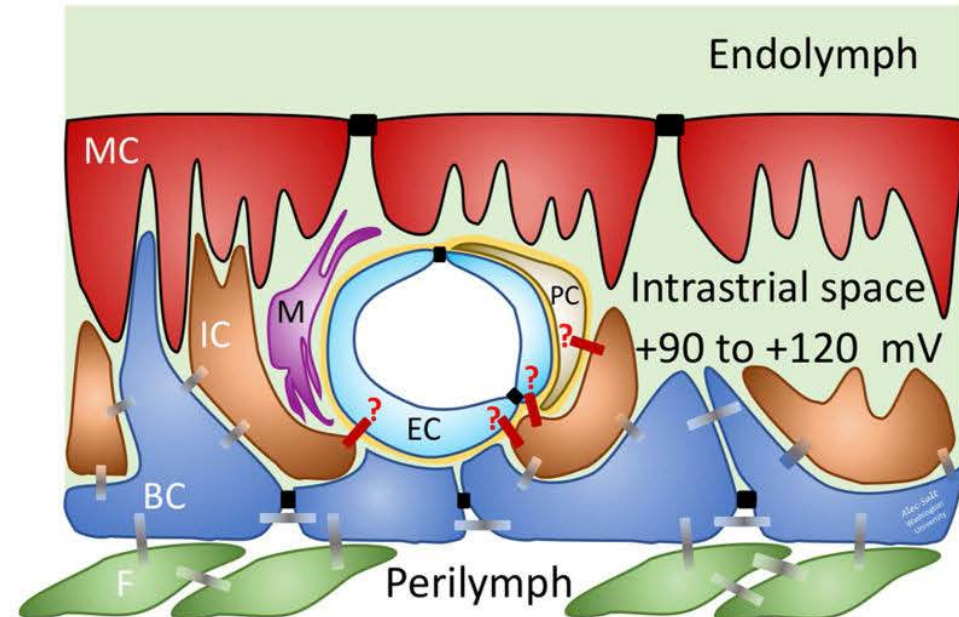
A: Blood-Brain Barrier



B: Blood-Perilymph Barrier

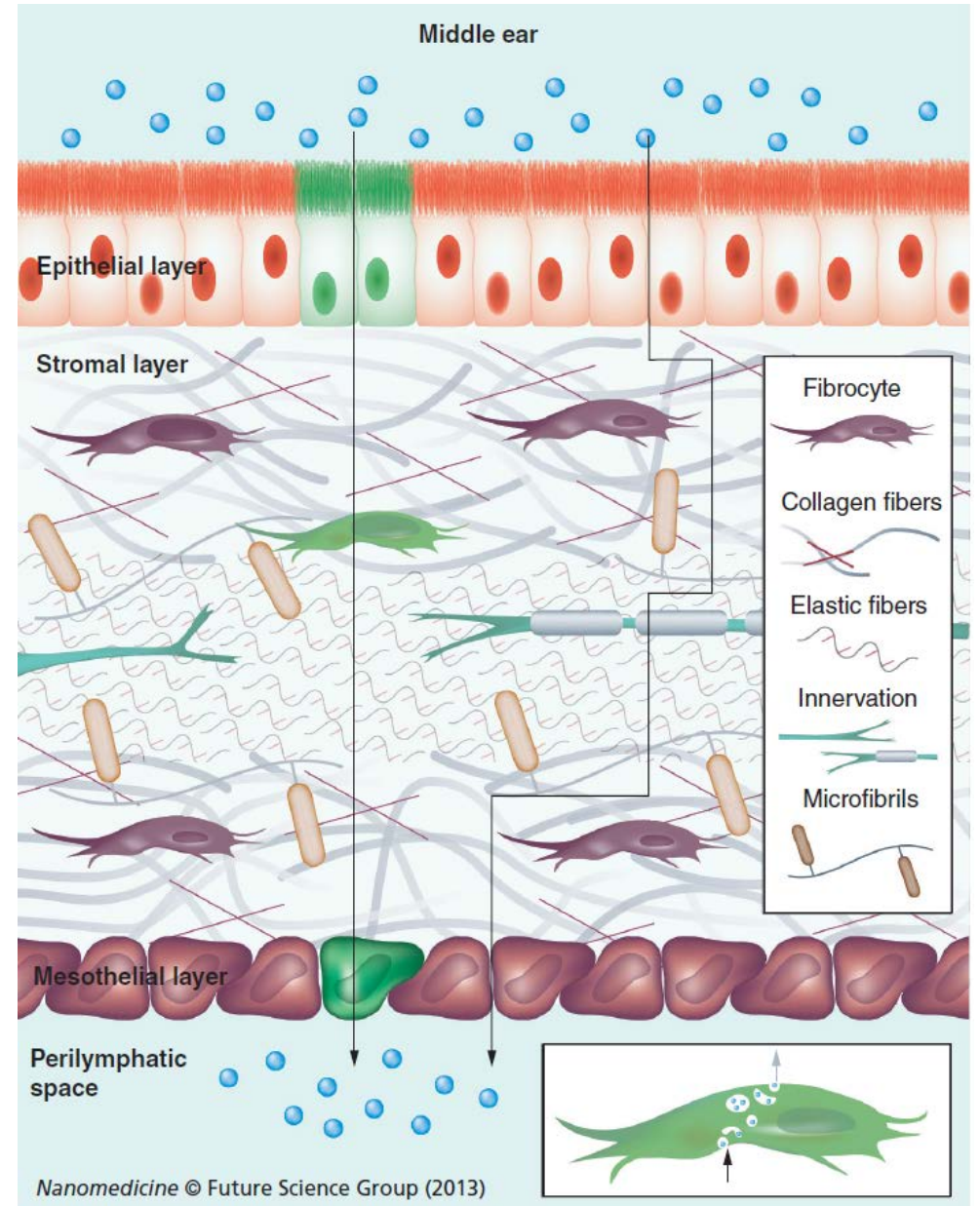


C: Blood-Strial Barrier



RW membrane

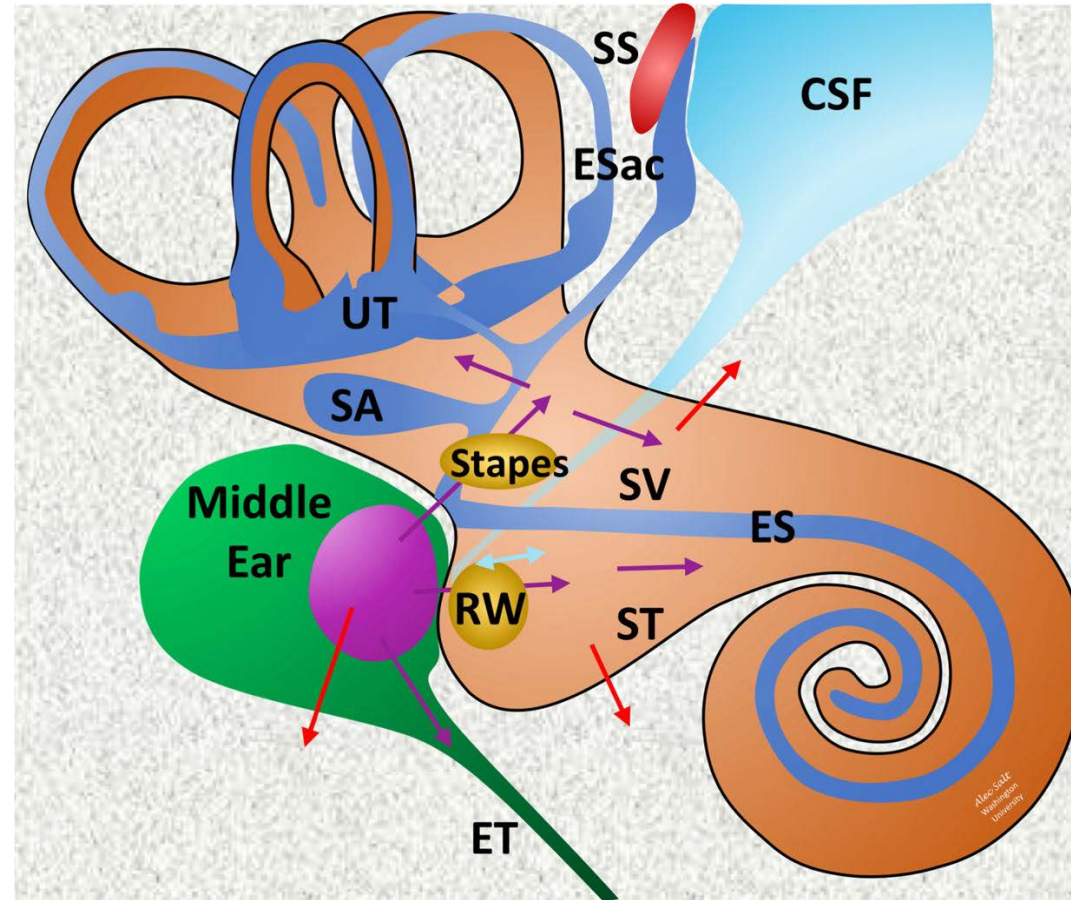
- Three layers
 - Outer epithelium
 - Connective tissue
 - Inner-ear epithelium



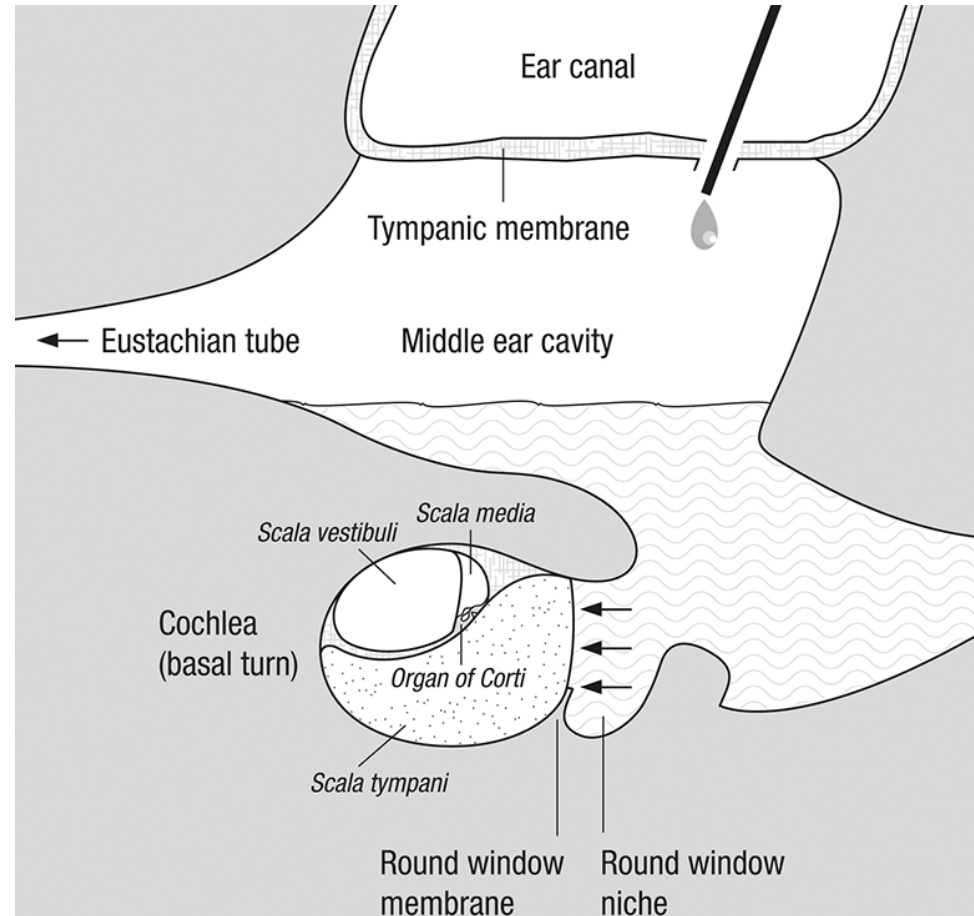
Diffusion rate

- Size/molecular weight
- Configuration
- Concentration
- Liposolubility and electrical charge of the active substance
- Thickness of the membrane

Major processes after intratympanic application



Intratympanic injection





Types of Medical Needles



Regular Bevel



Short Bevel



Intradermal Bevel



5-Bevel



Blunt Tip

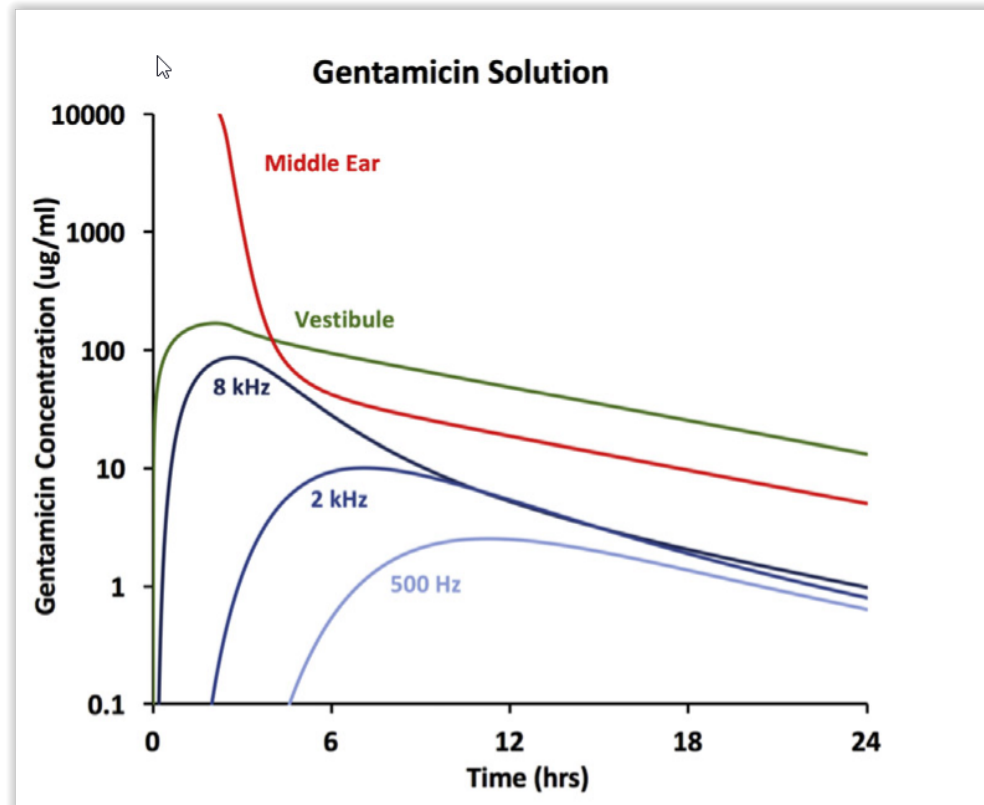


Safety Tip

SPECIFICATION	ID	OD	COLOR
18G	0.92	1.28	pink
19G	0.72	1.03	cream
20G	0.61	0.91	yellow
21G	0.52	0.82	green
22G	0.42	0.72	black
23G	0.34	0.64	blue
24G	0.31	0.57	purple
25G	0.26	0.52	orange
26G	0.25	0.46	brown
27G	0.21	0.42	grey

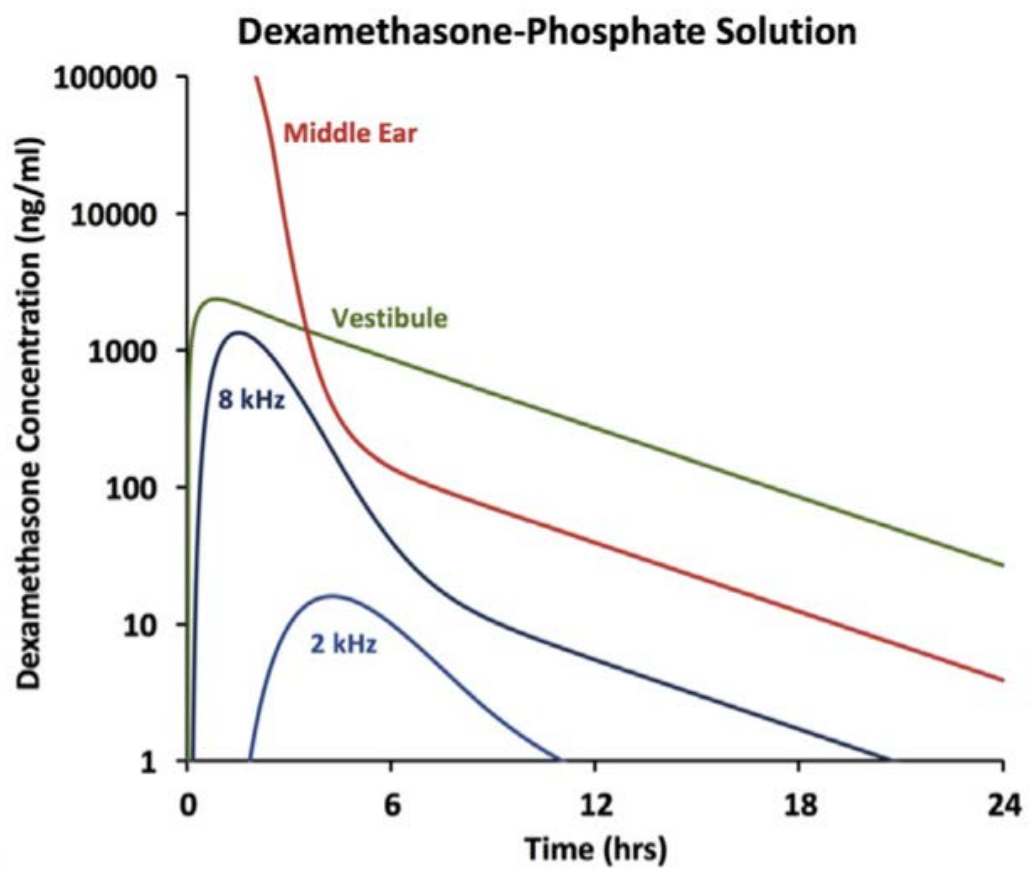
Basal-apical concentration differences

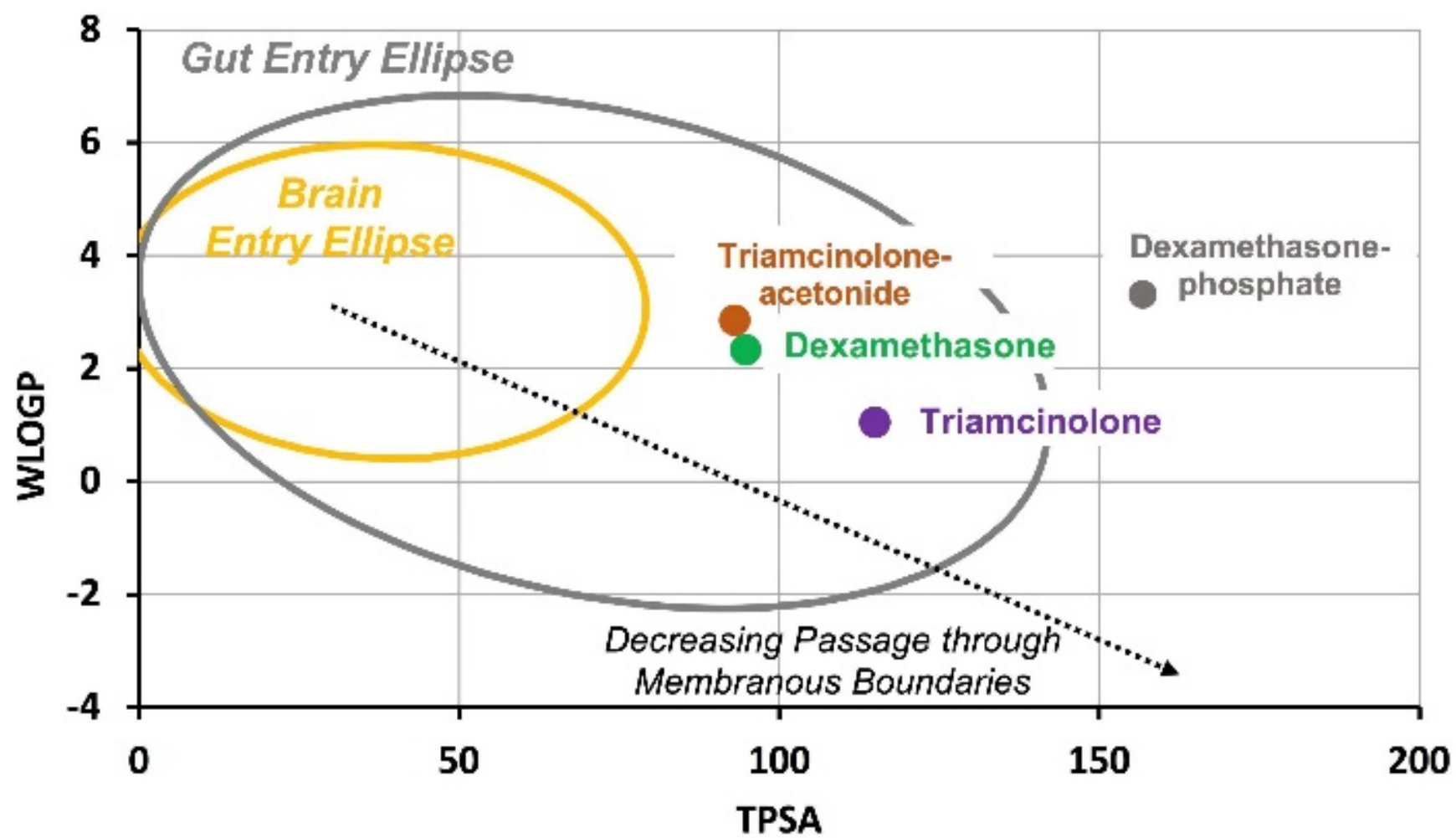
- It has been estimated in a computer-based simulation for gentamicin at around 100:1.



Drug entry through oval window

- Access to the scala vestibuli
- Oval window is more permeable to compounds than RWM
- Useful in treating vestibular dysfunction

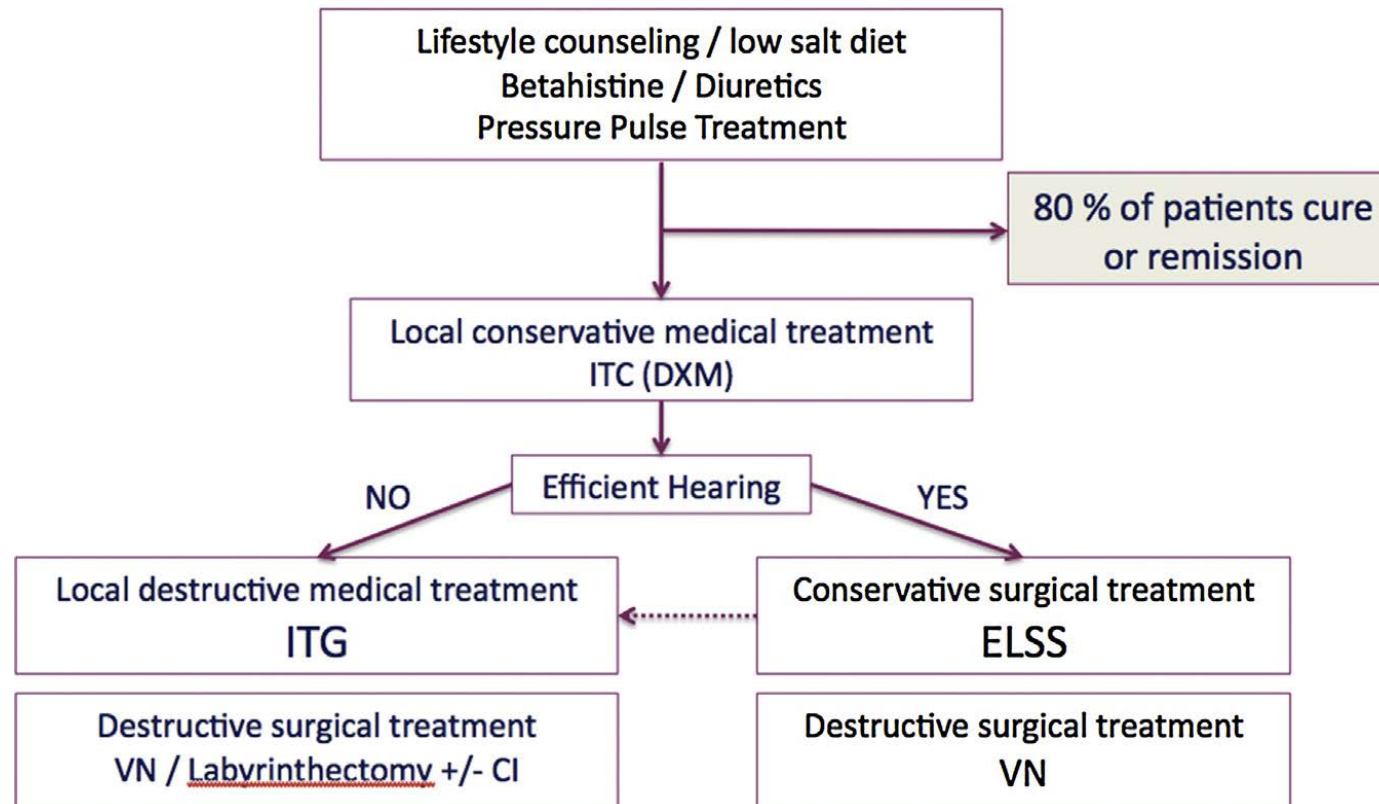




The International Consensus (ICON)

- ITS can be used as an effective treatment for refractory Meniere disease, particularly for vertigo control, reducing the number of attacks.

ICON algorithm for treatment of Menière's disease



Therapy for inner ear diseases

- Steroids
- Aminoglycosides

Dexamethasone-phosphate

- has pharmacokinetic properties that make it almost useless for the therapy of some inner ear disorders.
- Polar phosphate group

shot-gun protocol vs. titration protocol

- The appearance of ocular nystagmus and the rise of hearing threshold value by 10–15 dB as a guideline for the end of the treatment.

	Complete control of vertigo	Hearing preservation >−10 dB
Endolymphatic sac surgery	70–80%	60–80%
Vestibular neurectomy	More than 90%	50–60%
Intratympanic gentamicin	More than 80%	50–60%
Non-surgical treatment	25–70%	25–50%

Safety

- Due to drug
- Local side effects

**Thank you
for your attention.**