FOR PROFESSIONALS

Cochlear®
Hear now. And always

Inspired by a lifetime of hearing performance

Delivering the best outcomes for your patients

To help your patients achieve their best possible hearing outcomes, our implants and electrodes are designed to deliver benefits over time.

There are several factors that can contribute to a patient's lifetime of hearing performance, referring to it simply as the performance stack (Figure 1).[1-9]

The performance stack highlights that even though individually each factor may be important, the benefits are additive and only enabled by delivering the subsequent factors.

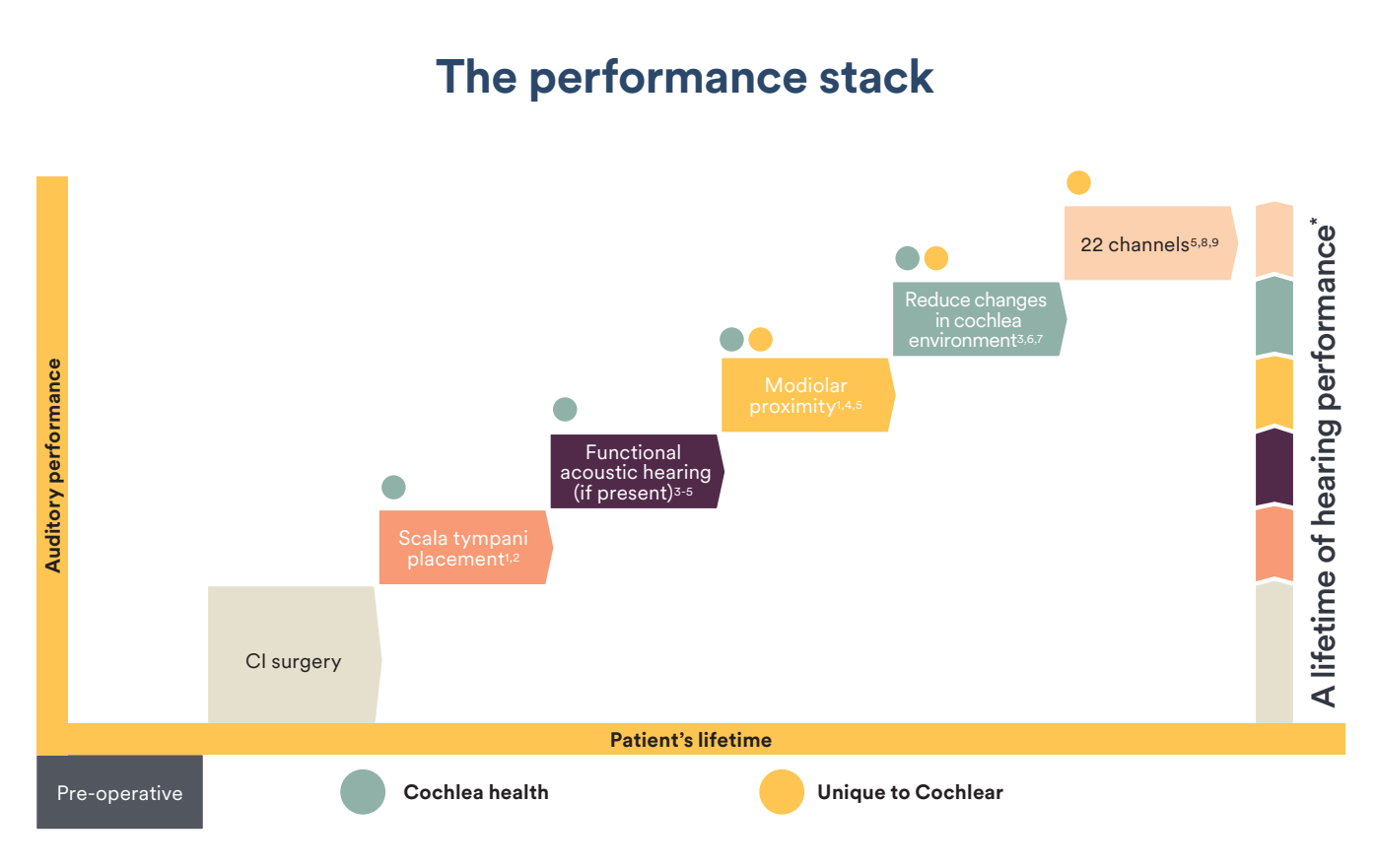


Figure 1: The performance stack highlights factors that can contribute to your patient's lifetime of hearing performance.

Pre-operative factors impact hearing outcomes

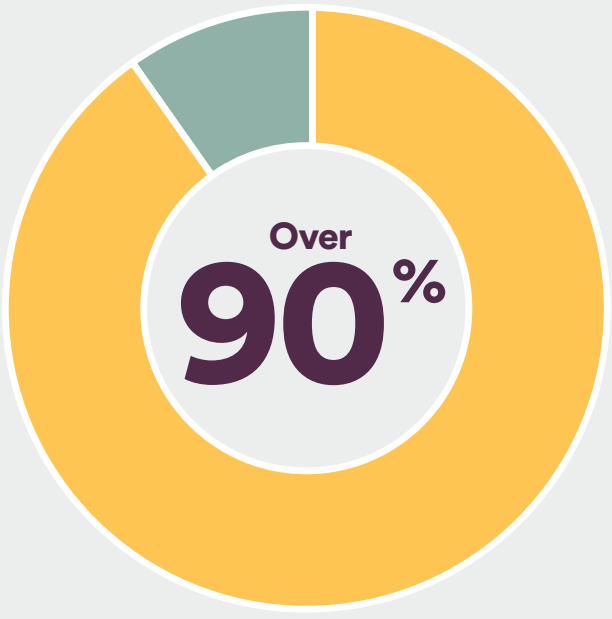
Research shows that certain pre-operative factors are associated with speech perception outcomes after receiving a cochlear implant.[10-12]

Factors such as age of implantation, duration of hearing loss, etiology, and pre-operative thresholds all correlate to how well your patients may perform with a cochlear implant.[10-12]

Acoustic hearing considerations

All cochlear implant candidates will rely on electrical stimulation for hearing over their lifetime.[6,13] A very small number of candidates (<10%) may have mild-moderate levels of residual low frequency hearing which may potentially be preserved and aided acoustically in combination with their cochlear implant postoperatively. Many of these patients will experience a delayed onset of progressive loss and come to rely solely on electrical stimulation with their cochlear implant for hearing.[6,13]

That's why the goal should be to optimise outcomes of electrical stimulation.[6,13]



Over 90% of patients will rely solely on hearing with electrical stimulation through their cochlear implant.

Benefits of modiolar proximity

Modiolar proximity is a significant factor in patient hearing outcomes (Figure 2).[1,14]

In multiple studies investigating outcomes, electrodes placed closer to the modiolus contribute to better hearing performance.[1,2,14 -16]

To reduce the likelihood of structural changes leading to altered cochlear mechanics, electrodes should be positioned further from the basilar membrane.[17]

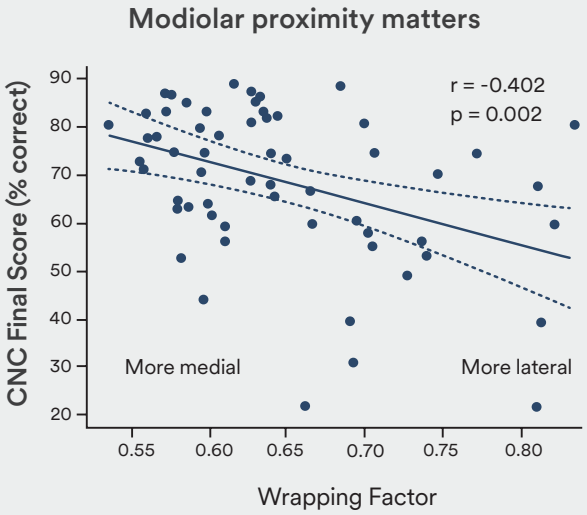


Figure 2: A scatter plot of Wrapping Factor vs. CNC Final Score for 59 participants with electrode arrays positioned in ST (scala tympani). Adapted from Holden et al. (2013)

"Positioning of electrode arrays closer to the modiolar wall is related to higher speech recognition outcomes."[1]

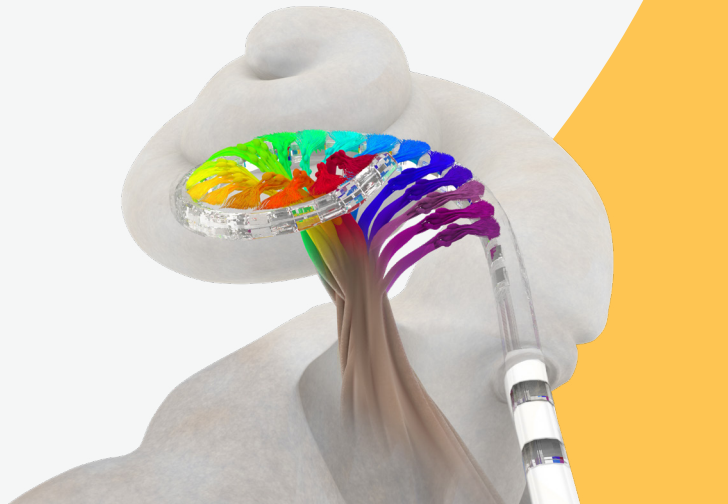
Protecting the natural structure of the cochlea

Placement of the electrode close to the modiolar wall also reduces both acute and long-term trauma to the structures of the lateral wall, further supporting ongoing hearing outcomes.[5,17-19]

Early and late changes to the intra-cochlea environment driven by inflammatory and fibrotic processes due to electrode insertion are inevitable.[5]

However there are several factors that can help reduce the level and severity of these changes over time:[1-7,16-18,20,21]

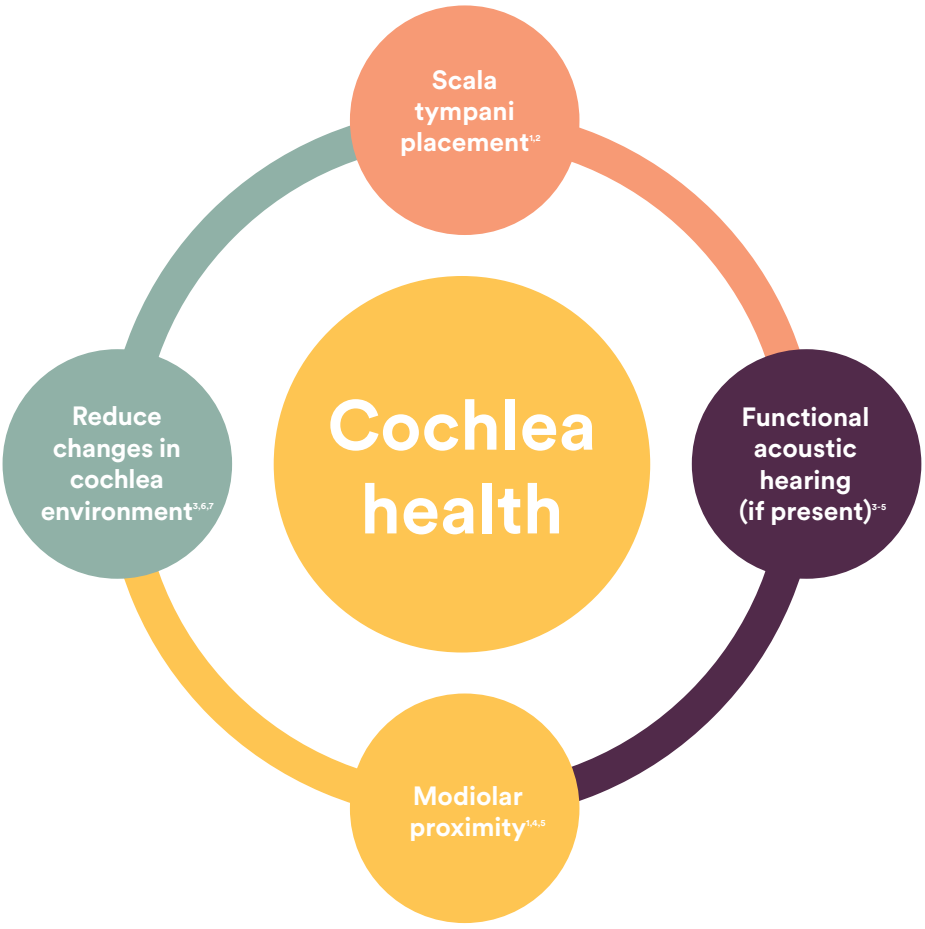
- **ensure scala tympani placement** of the electrode array
- **position** the electrode such that impact on cochlea health is minimised
- **reduce volume** of the electrode (foreign body) response



Why focus on cochlea health?

Studies highlight the importance of cochlea health and the auditory nerve.[1-5] These in turn can provide functional benefits for electrical hearing outcomes with a cochlear implant.[7,14,19]

Cochlear offers the Nucleus® Slim Modiolar Electrode - the thinnest perimodiolar electrode in the industry[22] - designed to avoid contact with soft intra-cochlear stuctures to preserve cochlea health.[15,22-25]



To find out more about how we can help you provide your patients with a lifetime of hearing performance*, speak to your Cochlear representative.

Hear now. And always

Cochlear is dedicated to helping people with moderate to profound hearing loss experience a world full of hearing. As the global leader in implantable hearing solutions, we have provided more than 700,000 devices and helped people of all ages to hear and connect with life's opportunities.

We aim to give people the best lifelong hearing experience and access to next generation technologies. We collaborate with leading clinical, research and support networks to advance hearing science and improve care.

That's why more people choose Cochlear than any other hearing implant company.

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*"A lifetime of hearing performance" and similar phrases should not be understood as claims relating to the expected life, reliability, quality or performance of Cochlear's products.

This material is intended for health professionals. If you are a consumer, please seek advice from your health professional about treatments for hearing loss. Outcomes may vary, and your health professional will advise you about the factors which could affect your outcome. Always follow the directions for use. Not all products are available in all countries. Please contact your local Cochlear representative for product information.