

Learning Goals:



- Bone Conduction Candidacy Criteria
 - List the challenges professionals face when fitting patients with conventional bone conduction solutions
- · Conventional vs BCDrive transducers
 - Compare and contrast conventional transducer technology with BCdrive transducer technology
 - Describe how BCDrive transducer technology improves the patient hearing experience
- The Baha® 5 System: Enabling the total package of benefits
 - · Key features of the Baha 5 System
- The Baha 5 System: Supporting Clinical Evidence
 - Understanding patient preference and why

Cochlear's Mission



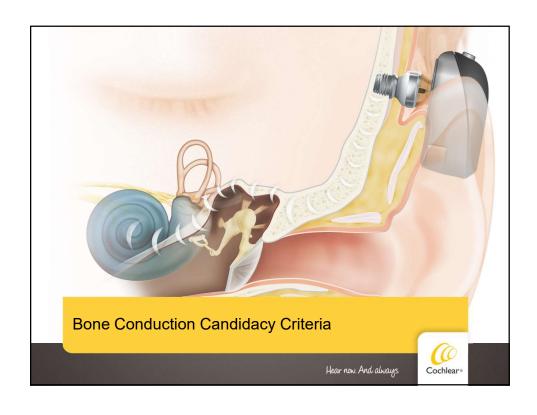


We help people hear and be heard.

We **empower** people to connect with others and live a full life.

We transform the way people understand and treat hearing loss.

We innovate and bring to market a range of implantable hearing solutions that deliver a lifetime of hearing outcomes.



Candidates for bone conduction systems



Patients with conductive, mixed hearing loss or single sided sensorineural deafness (SSD) can benefit from a bone conduction hearing implant* with:

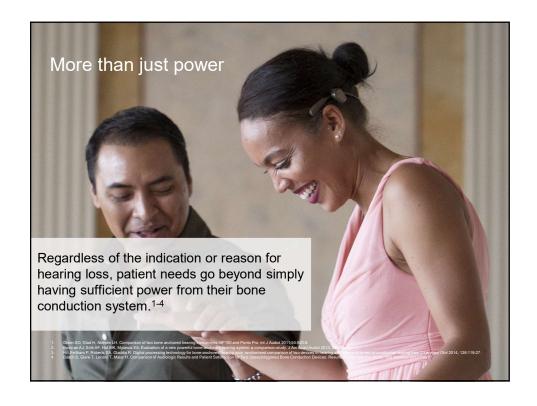
- Excellent hearing outcomes¹
- Predictable and cost-effective^{1,2}
- · Utilizes the patient's hearing nerve
- · No risk for further damage to the hearing
- Open ear canal, no irritating earmold

Possible causes of flearing loss
Atresia/Microtia
Otitis Media
Cholesteatoma
Otosclerosis
Syndromes, such as: Treacher Collins, Down Syndrome,Cleft lip and palate
Trauma / Ototoxic drugs
Acoustic Neuroma
Viral infections
Meniere's disease

*In the United States and Canada, the placement of a bone anchored implant is contraindicated in children below the age of 5.

Evans AK, Kazahaya K, Canal attesis: "Surgery or implantable hearing devices? The experts question is revisited" Journal of Pediatric Obthinolaryngology 2007; 71, 367-373.

Watstood, Stills SL, Jausées-F, Hadrin, JL, Sheehan PZ, Rone anchored hearing natice, a reteminizary assessment of the impact on ortification and crost when prohabilitations.



Expectations on modern solutions



- · Comfortable natural sound
- · Discreet, easy to care for solution
- Improved speech understanding, especially in noisy, reverberent conditions
- Connections with a variety of electronic and mobile devices
- Assurance that the solution will be safe and effective over time, even as hearing needs change

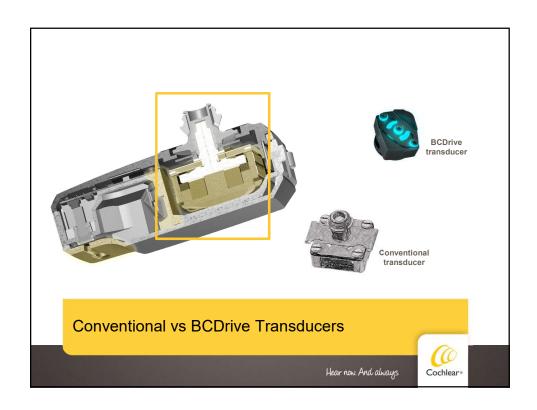






ICE

Source: market research and post market surveillance for hearing implant systems



Maximize power through the transducer



The transducer is a powerful engine and the "heart" of the processor

- A transducer plate and countermass is pulled up or pushed down as electromagnetic force is applied via magnets with changing polarities.¹
- Distance between the transducer plate and magnets is called the air gap. This need to be carefully balanced with a spring for good performance and overall reliability.¹
- Larger magnets and counter weight = more electromagnetic force = more power¹
- Highest power output in the system is at the resonance peak¹
- Increasing power requires more input current¹
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Representative frequency response for two different transducers

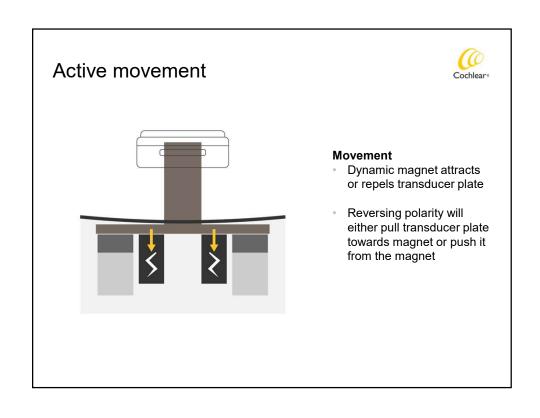
Conventional transducer technology

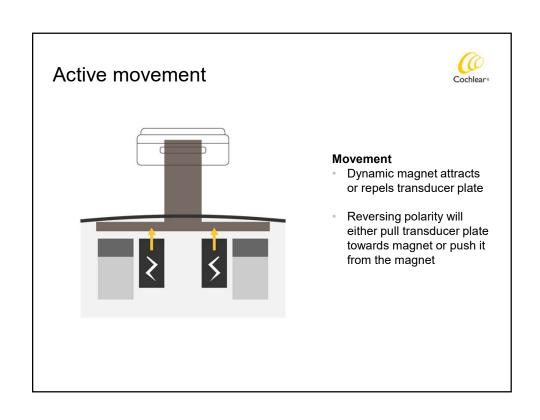
Air gap

Air gap

Counter weight

Aagnet





Drawbacks with the conventional design



- · Relatively poor size to effect ratio
 - Makes it difficult to create a small sound processor with sufficient power
 - Makes more powerful sound processors very power-hungry resulting in poor battery lifetime
- · Relatively poor reliability
 - Due to asymmetry, the spring maintaining the air gap may collapse leading to transducer failure
 - Deformation of the spring or other damage to the internal mechanism can cause sound quality to deteriorate over time

What this could mean for the patient



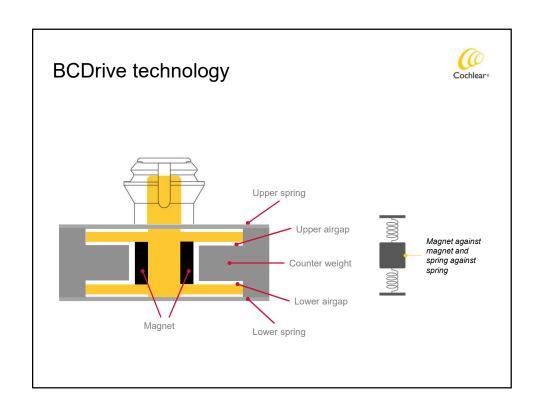
It may be harder to provide a satisfactory solution that meets patient expectations

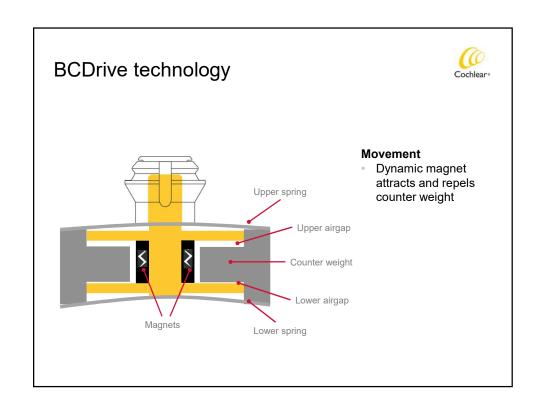
- Larger, less discreet processors
- Limited available gain in HF and LF to meet power level for fitting range
- Risk for distorted or unnatural sound
- · Costly to maintain
- More difficult to fit patients with greater hearing losses due to risk of feedback when power levels (and electromagnetic forces) rise

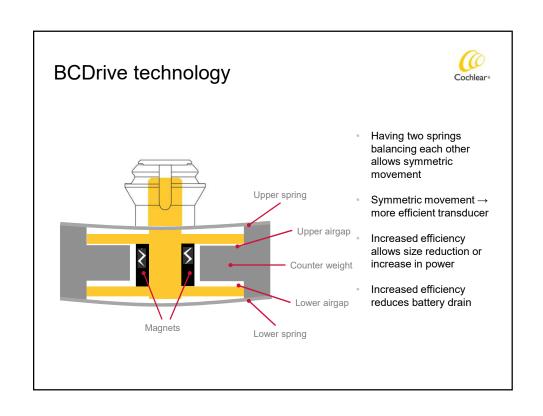


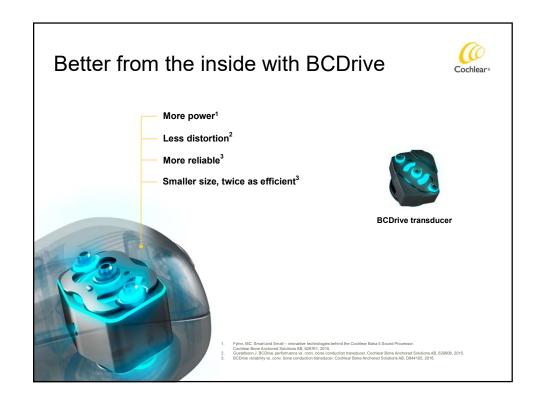
How do we address a patient's need for hearing via bone conduction without compromising on aesthetics?

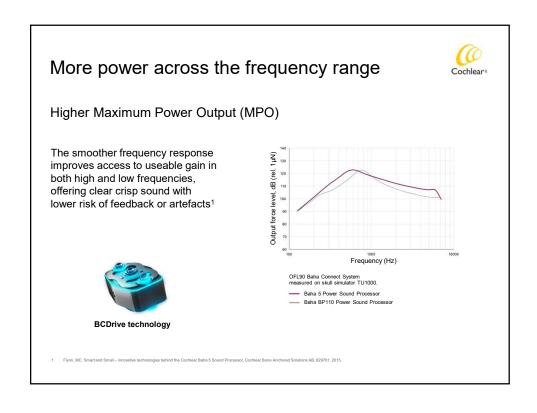


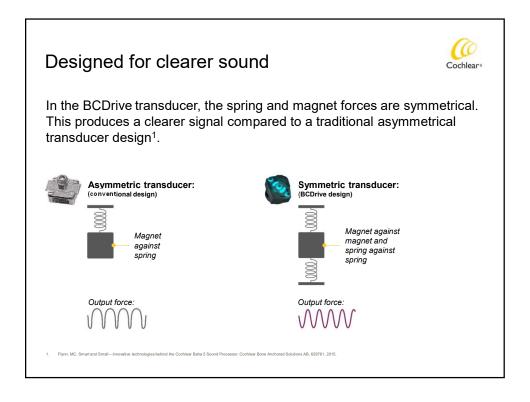


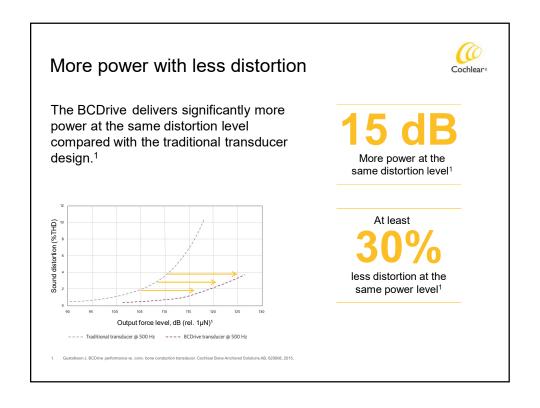




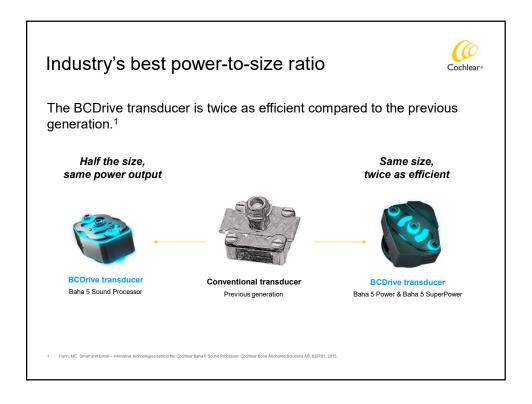


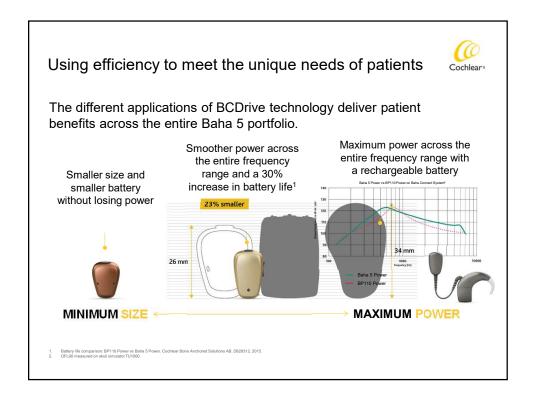






More robust and reliable technology The BCDrive transducer is Cochlear's first transducer designed for and built using high-precision robots The new balanced design, together with the accuracy of the fully-automated production process, makes it Cochlear's most robust and reliable transducer to date.¹ 1. 8CDNe reliability is core tone conduction transducer Cochien Base Archand AB, DM4105, 2016.





Available in every Baha 5 sound processor



Baha 5 System sound processors share the same unique technology building blocks to deliver a smart and seamless hearing experience to all patients.

- The industry's smallest sound processor.1
- The only smart processors with directto-device wireless streaming and
- Two power sound processors including the industry's most powerful solution.2



Bluetooth diPhone | iPad | iPod

Compatible with every Baha 5 connection



Baha Softband

Baha 5 System sound processors can be fit non-surgically with Softband or SoundArc, or as part of an implantable solution in either a direct or under-the-skin connection.

Baha SoundArd

- Suitable for conductive and mixed hearing loss, as well as SSD¹
- Up to 20dB more power in high frequencies for Baha Attract² compared to the previous generation
- BI300 is the stable foundation³ for both Baha Connect and Baha Attract



comman, J. Review of filting ranges. Cochiear Bone Anchored Solutions AB, D773528, 2015.

Baha Connect

Baha Attract
that Soupe-Power compared with EP 110 Power (both on the Saha Attract) policy at 16,000 Hz.

Confident fitting without hidden compromise



Baha Fitting Software delivers clear and transparent guidance for a clinically achievable outcome for a patient when fit with a Baha 5 sound processor.

- BC Select and Cochlear Baha Prescription optimise gain based on patient's unique configuration
- Dual Track Feedback Management minimizes gain-limiting feedback
- EveryWear[™] options offer flexibility when fitting greater hearing losses with Baha 5 SuperPower







Easy connectivity in the clinic and at home



- Made for iPhone, for discreet control and streaming
- Hands-free, neck-loop free use of mobile phones and other devices with True Wireless™ accessories
- Android™ and iPhone® compatible* Baha 5 Smart App for quick control and monitoring of processor





Incredibly powerful performance



- Industry's most powerful bone conduction system¹, Baha Connect is suitable for up to 65 dB SNHL
- Industry's most powerful non-skin penetrating system¹, Baha Attract offers hassle-free hearing with minimal care²
- Proven transition pathway³ between systems based on the safe and reliable BI300 Implant⁴ if needs change



- Brassington, W., Leese, D., Marley, S., Flynn, M. & Johnson, I. Hearing outcomes from upgrading to the Baha® 5 Sound Processor. Cochlear Bone Anchored Solutions AB, D799833, 2016
 Briggs R, Van Hassell A, Luntz M, Goycoclea M, Wigren S, Weber P, Smeds H, Flynn M, Cowan R. Clinical performance of a new magnetic bone conduction hearing implant system: results from a prospective,
- Wigner S., Weber P. Climical guidance and considerations for successful outcomes with the Cochiear Baha Althract System. Molinlycke, Sweden: Cochiear Bone Anchored Solutions AB, Molinlycke, Sweden. Cognitive States and States and

Ideal for even the smallest heads



Baha Softband provides early access to sound and supports language development in children.^{1,4}

- Small, lightweight processors
- Made for iPhone for easy iPad® play
- True Wireless™ and FM compatibility improves hearing at home and in noisy classrooms^{2,5}
- Baha SoundArc for children that don't want to use Softband for aesthetic reasons
- Baha SoftWear[™] pad* for a more comfortable hearing experience³
- Long lasting battery life⁵

Flym MC, Fyllund H. Design concept and technological considerations for the new Baha Softband. Cochievar Boxle Anchored Solutions AB, 83 1194, 2015
Wolfe J. Morais M. Schaler E. Improving hearing performance for cochieva implant recipients with use of a digital wireless, remote-microphone, audio-streaming accessory. J Am Acad Audiol. 2015 Jun;28(8):5
Flym MC, Fyllund H. Design concept and technological considerations for the new Baha Softband. Cochievar Box enhanced Softsors AB, 83 1194, 2015

Flynn MC, Fyrlund H. Design concept and technological considerations for the new Baha Softband. Cochlear Bose Anchored Solutions AB, 63 1194, 2015. Christensen L, Smith-Olinde L, Kimbertain J, Richter GT, Domhoffer JL. Comparison of traditional bone-conduction hearing aids with the Baha system. J Am Acad Audiol. 2010;21(4):267-7

High level of caregiver assurance



Baha 5 System offers parents and caregivers secure ways to control and monitor a patient's processor.

- Tamperproof door
- · LED*
- Button lock
- Dongle-free wireless connectivity nothing goes around the child's neck
- Smart App with Datalogging, Find my processor feature and Status Update for processor information

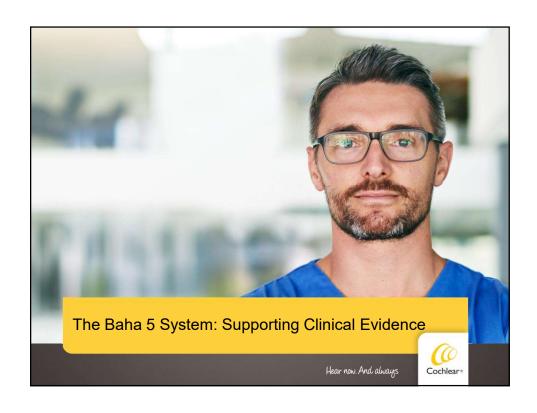
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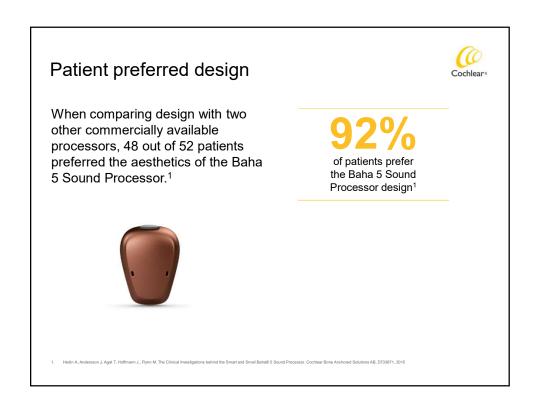
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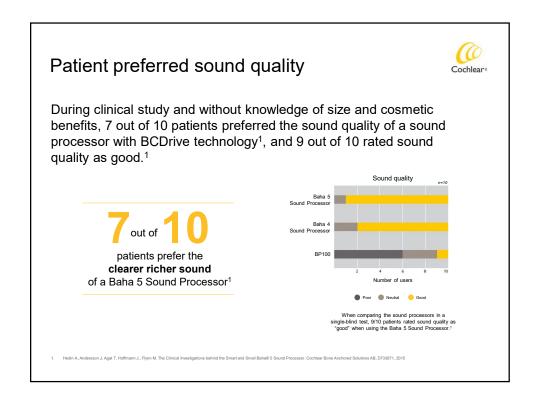


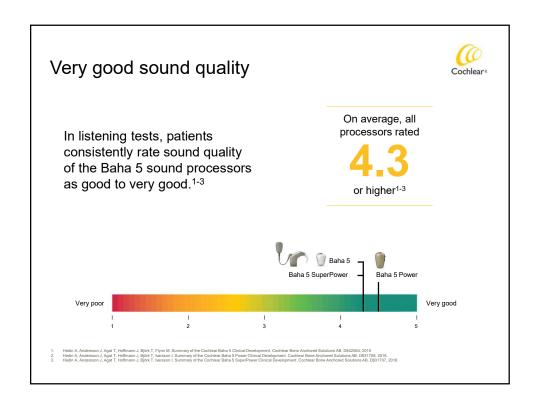
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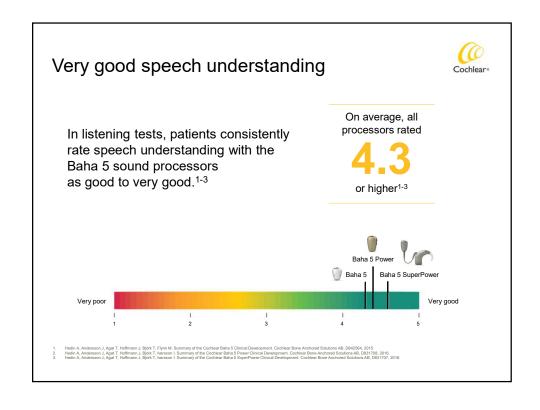
* only available in Baha 5 Power and Baha 5 SuperPow

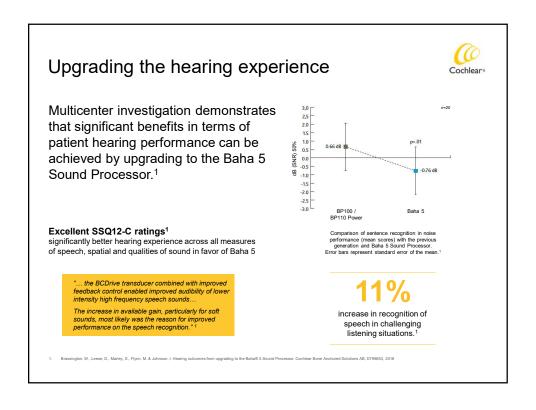








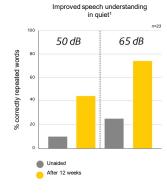


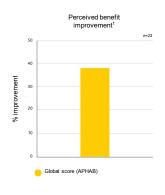


Significantly improved hearing outcomes



Results from a multicenter clinical study demonstrate significantly improved outcomes for patients with mixed hearing loss using the Baha Attract System with a Baha 5 SuperPower.¹





Ray J. Evaluation of audiological outcomes and subjective benefits of Cochlear Baha® 5 SuperPower Sound Processor on the Baha® Attract™ System. Paper presented at: Osseo2017; Nijmegen, NL

Improved demo experience with SoundArc



Results from controlled market release in Europe and US show improved patient confidence and motivation to continue with a bone conduction solution after trial on SoundArc.¹

- Excellent comfort
- Great sound quality
- Stylish aesthetics
- Strong retention
- Easy to use
- · Good speech understanding

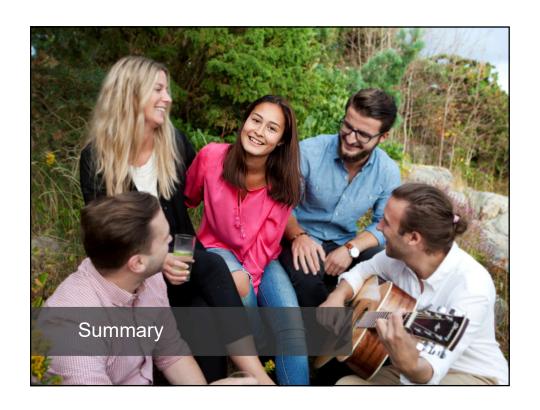
Scores of at least

4/5

in all demo ratings¹



First clinical experiences with Baha SoundArc. Cochlear Bone Anchored Solutions AB, D1247007, 201









So when it comes to getting a better fit with a bone conduction system...

... start from the inside!





