BlueCross BlueShield of Alabama

Name of Blue Advantage Policy:

Implantable Bone Conduction and Bone-Anchored Hearing Aids (BAHA)

Policy #: 145
Latest Review Date: February 2025
Category: Surgery

BACKGROUND:

Blue Advantage *medical policy does not conflict with Local Coverage Determinations (LCDs), Local Medical Review Policies (LMRPs) or National Coverage Determinations (NCDs) or with coverage provisions in Medicare manuals, instructions or operational policy letters. In order to be covered by Blue Advantage the service shall be reasonable and necessary under Title XVIII of the Social Security Act, Section 1862(a)(1)(A). The service is considered reasonable and necessary if it is determined that the service is:*

1. *Safe and effective;*
2. *Not experimental or investigational*;*
3. *Appropriate, including duration and frequency that is considered appropriate for the service, in terms of whether it is:*
   - *Furnished in accordance with accepted standards of medical practice for the diagnosis or treatment of the patient's condition or to improve the function of a malformed body member;*
   - *Furnished in a setting appropriate to the patient's medical needs and condition;*
   - *Ordered and furnished by qualified personnel;*
   - *One that meets, but does not exceed, the patient's medical need; and*
   - *At least as beneficial as an existing and available medically appropriate alternative.*

Routine costs of qualifying clinical trial services with dates of service on or after September 19, 2000, which meet the requirements of the Clinical Trials NCD are considered reasonable and necessary by Medicare. Providers should bill* ***Original Medicare* *for covered services that are related to* ***clinical trials*** *that meet Medicare requirements (Refer to Medicare National Coverage Determinations Manual, Chapter 1, Section 310 and Medicare Claims Processing Manual Chapter 32, Sections 69.0-69.11).*

POLICY:

Blue Advantage will treat **unilateral or bilateral fully or partially implantable bone-conduction (bone-anchored) hearing aid(s)** as a **covered benefit** as an alternative to an air-conduction hearing aid in patients **five years of age and older** with a **conductive or mixed hearing loss** who also meet **at least one** of the following medical criteria:

- A pure tone average bone-conduction threshold measured at 0.5, 1, 2, and 3 kHz of better than or equal to 45 dB (OBC and BP100 devices), 55 dB (Intenso device), or 65 dB (Cordele II device); and **one of the following**:
    - Congenital or surgically induced malformations (e.g., atresia) of the external ear canal or middle ear; **or**
    - Chronic external otitis or otitis media; **or**
    - Tumors of the external canal and/or tympanic cavity; **or**
    - Dermatitis of the external canal.

For **bilateral implantation**, patients should **meet the above audiologic criteria and have a symmetrically conductive or mixed hearing loss** as defined by a difference between left and right side bone conduction threshold of less than 10 dB on average measured at 0.5, 1, 2 and 3 kHz (4 kHz for OBC and Ponto Pro), or less than 15 dB at individual frequencies.

Blue Advantage will treat **an implantable bone-conduction (bone-anchored) hearing aid** as a **covered benefit** as an **alternative to an air-conduction contralateral routing of signal hearing aid** in patients **5 years of age and older with single-sided sensorineural deafness and normal hearing in the other ear.** The pure tone average air conduction threshold of the normal ear should be better than 20 dB measured at 0.5, 1, 2, and 3 kHz.

Blue Advantage will treat **other uses of implantable bone-conduction (bone-anchored) hearing aids**, including use in patients with bilateral sensorineural hearing loss, as a **non-covered benefit** and as **investigational**.

Non-osseointegrated hearing devices (e.g., BAHA Soft Band, SoundBite, Med-El Adhear) are not addressed in this medical policy since they are not osseointegrated. Please check benefit plan descriptions for hearing aid coverage.

Replacements for **lost** sound processors are non-covered. Members should contact the manufacturer for replacement under warranty or the manufacturer's replacement policy.

Replacement or upgrade of existing properly functioning durable medical equipment (including prosthetics), even if the warranty has expired is a **contract exclusion**.*

*Always check benefits for self-funded groups as it relates to contract exclusions.

Blue Advantage does not approve or deny procedures, services, testing, or equipment for our members. Our decisions concern coverage only. The decision of whether or not to have a certain test, treatment or procedure is one made between the physician and his/her patient. Blue

Advantage administers benefits based on the members' contract and medical policies. Physicians should always exercise their best medical judgment in providing the care they feel is most appropriate for their patients. Needed care should not be delayed or refused because of a coverage determination.

DESCRIPTION OF PROCEDURE OR SERVICE:

Sensorineural, conductive, and mixed hearing loss may be treated with a variety of devices, including conventional air-conduction (AC) or bone-conduction external hearing aids. Air-conduction hearing aids may not be suitable for individuals with chronic middle ear and ear canal infections, atresia of the external canal, or an ear canal that cannot accommodate an ear mold. Bone-conduction hearing aids may be useful for individuals with conductive hearing loss, or (if used with contralateral routing of signal), for unilateral sensorineural hearing loss. Implantable, bone-anchored hearing aids (BAHA) that use a percutaneous or transcutaneous connection to a sound processor have been investigated as alternatives to conventional bone-conduction hearing aids for individuals with conductive or mixed hearing loss or for individuals with unilateral single-sided sensorineural hearing loss.

Hearing Loss

Hearing loss is described as conductive, sensorineural, or mixed and can be unilateral or bilateral. Normal hearing is the detection of sound at or below 20 dB (decibel). The American Speech-Language-Hearing Association has defined the degree of hearing loss based on pure-tone average detection thresholds as mild (20 to 40 dB), moderate (40 to 60 dB), severe (60 to 80 dB), and profound (>80 dB). Pure-tone average is calculated by averaging the hearing sensitivities (i.e., the minimum volume that the patient hears) at multiple frequencies (perceived as pitch), typically within the range of 0.25 to 8 kHz.

Sound amplification using an air-conduction (AC) hearing aid can provide benefit to individuals with sensorineural or mixed hearing loss. Contralateral routing of signal (CROS) is a system in which a microphone on the affected side transmits a signal to an air-conduction hearing aid on the normal or less affected side.

Treatment

External bone-conduction hearing aids function by transmitting sound waves through the bone to the ossicles of the middle ear. The external devices must be applied close to the temporal bone, with either a steel spring over the top of the head or a spring-loaded arm on a pair of spectacles. These devices may be associated with pressure headaches or soreness.

A bone-anchored implant system combines a vibrational transducer coupled directly to the skull via a percutaneous abutment that permanently protrudes through the skin from a small titanium implant anchored in the temporal bone. The system is based on the process of osseointegration through which living tissue integrates with titanium in the implant over 3 to 6 months, conducting amplified and processed sound via the skull bone directly to the cochlea. The lack of intervening skin permits the transmission of vibrations at a lower energy level than required for external bone-conduction hearing aids. Implantable bone-conduction hearing systems are primarily indicated for people with conductive or mixed sensorineural or conductive hearing

loss. These may also be used with CROS as an alternative to an AC hearing aid with CROS for individuals with unilateral sensorineural hearing loss.

Partially implantable magnetic bone-conduction hearing system, also referred to as transcutaneous bone-anchored systems, are an alternative to bone-conduction hearing systems that connect to bone percutaneously via an abutment. With this technique, acoustic transmission occurs transcutaneously via magnetic coupling of the external sound processor and the internally implanted device components. The bone-conduction hearing processor contains magnets that adhere externally to magnets implanted in shallow bone beds with the bone-conduction hearing implant. Because the processor adheres magnetically to the implant, there is no need for a percutaneous abutment to physically connect the external and internal components. To facilitate greater transmission of acoustics between magnets, skin thickness may be reduced to 4 to 5 mm over the implant when it is surgically placed.

KEY POINTS:

The most recent literature update was performed through December 16, 2024.

Summary of Evidence

For individuals who have conductive or mixed hearing loss who receive an implantable bone-anchored hearing aid (BAHA) with a percutaneous abutment or a partially implantable BAHA with transcutaneous coupling to the sound processor, the evidence includes observational studies that have reported pre-post differences in hearing parameters after treatment with BAHAs. Relevant outcomes are functional outcomes, quality of life, and treatment-related morbidity. No prospective trials were identified. Observational studies reporting on within-subjects changes in hearing have generally reported hearing improvements with the devices. Given the objectively measured outcomes and the largely invariable natural history of hearing loss in individuals who would be eligible for an implantable bone-conduction device, the demonstrated improvements in hearing after device placement can be attributed to the device. Studies of partially implantable BAHAs have similarly demonstrated within-subjects improvements in hearing. The single-arm studies have shown improvements in hearing in the device-aided state. No direct comparisons other than within-individual comparisons with external hearing aids were identified, but, for individuals unable to wear an external hearing aid, there may be few alternative treatments. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have unilateral sensorineural hearing loss who receive a fully or partially implantable BAHA with the contralateral routing of signal, the evidence includes a randomized controlled trial (RCT), multiple prospective and retrospective case series, and a systematic review. Relevant outcomes are functional outcomes, quality of life, and treatment-related morbidity. Single-arm case series, with sample sizes ranging from 9 to 180 individuals, have generally reported improvements in patient-reported speech quality, speech perception in noise, and satisfaction with bone-conduction devices with contralateral routing of the signal. However, a well-conducted systematic review of studies comparing bone-anchored devices with hearing aids using contralateral routing of signal found no evidence of improvement in speech recognition or hearing localization. The single RCT included in the systematic review was a pilot

study enrolling only 10 individuals and, therefore, does not provide definitive evidence. Quality RCTs on BAHA for unilateral sensorineural hearing loss are lacking. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Practice Guidelines and Position Statements
American Academy of Otolaryngology Head and Neck Surgery
In 2021, the American Academy of Otolaryngology Head and Neck Surgery updated its position statement on the use of implantable hearing devices. It states that the Academy "considers bone conduction hearing devices (BCHD) as appropriate, and in some cases preferred, for the treatment of conductive and mixed hearing loss. BCHD may also be indicated in select patients with single-sided deafness. BCHD include semi-implantable bone conduction devices utilizing either a percutaneous or transcutaneous attachment, as well as bone conduction oral appliances and scalp-worn devices. The recommendation for BCHD should be determined by a qualified otolaryngology-head and neck surgeon. These devices are approved by the Food and Drug Administration (FDA) for these indications, and their use should adhere to the restrictions and guidelines specified by the appropriate governing agency, such as the FDA in the United States and the respective regulatory agencies in countries other than the United States."

U.S. Preventative Services Task Force Recommendations
Not applicable.

KEY WORDS:
Bone conduction hearing aid, bone-anchored hearing aid (BAHA), implantable bone conduction hearing aid, air conduction hearing aid, single-sided deafness, and hearing aid, Otomag Sophono, partially implantable hearing aid, BAHA 4 Attract, BoneBridge™, BA310 Abutment, BIA 310 Implant/Abutment, Bonebridge, Baha 5 Super Power Sound Processor, Ponto 3, Ponto 4, OSIA bone conduction hearing system, Cochlear Osia, Cochlear™ Osia® 2 System, Osia OSI200 Implant, Baha 6

APPROVED BY GOVERNING BODIES:
Several implantable bone-conduction hearing systems have been approved by the US Food and Drug Administration for marketing through the 510(k) process (Table 1).

Table 1. Implantable Bone-Conduction Hearing Systems Approved by the U.S Food and Drug Administration

Device	Manufacturer	Date Cleared	510(k) No.
Baha 6 System	Cochlear Americas	Sept 2021	K212136
BA310 Abutment, BIA310 Implant/Abutment		Dec 2018	K182116

Baha 5 Power Sound Processor		May 2016	K161123
Baha 5 Super Power Sound Processor		Mar 2016	K153245
Baha® 5 Sound Processor		Mar 2015	K142907
Baha® Attract System		Nov 2013	K131240
Baha® Cordelle II		Jul 2015 Apr 2008	K150751 K080363
Baha Divino®		Aug 2004	K042017
Baha Intenso® (digital signal processing)		Aug 2008	K081606
Baha® 4 (upgraded from the BP100)		Sep 2013	K132278
Cochlear™ Osia™2 System		Dec 2019	K191921
OBC Bone-Anchored Hearing Aid System	Oticon Medical	Nov 2011	K112053
Ponto Bone-Anchored Hearing System	Oticon Medical	Sep 2012	K121228
Ponto 5 SuperPower	Oticon Medical	Dec 2021	K213733
Ponto 4		May 2019	K190540
Ponto 3, Ponto 3 Power and Ponto 3 SuperPower		Sep 2016	K161671

The FDA cleared these systems for use in children age 5 years and older and adults for the following indications:
• Patients who have conductive or mixed hearing loss and can still benefit from sound amplification;
• Patients with bilaterally symmetric conductive or mixed hearing loss may be implanted bilaterally;
• Patients with sensorineural deafness in 1 ear and normal hearing in the other (i.e., single-sided deafness);
• Patients who are candidates for an AC CROS hearing aid but who cannot or will not wear an AC CROS device.

Baha sound processors can be used with the Baha® Softband™. With this application, there is no implantation surgery. The sound processor is attached to the head using a hard or soft headband. The amplified sound is transmitted transcutaneously to the cochlea via the bones of the skull. In 2002, the Baha Softband was cleared for marketing by FDA for use in children younger than 5 years. Because this application has no implanted components, it is not addressed in this evidence review.

The FDA also cleared 3 partially implantable magnetic bone-conduction devices for marketing through the 510(k) process (Table 2) .

Table 2. Partially Implantable Magnetic Bone-Conduction Devices Approved by the U.S Food and Drug Administration

Device	Manufacturer	Date Cleared	510(k) No.
Bonebridge	MED-EL	Mar 2019	K183373
Otomag® Bone-Conduction Hearing System	Medtronic (Formerly Sophono)	Nov 2013	K132189
Cochlear Baha® 4 Sound Processor	Cochlear Americas	Oct 2012	K121317

The SoundBite™ Hearing System (Sonitus Medical, San Mateo, CA) is an intraoral bone-conducting hearing prosthesis that consists of a behind-the-ear microphone and an in-the-mouth hearing device. In 2011, it was cleared for marketing by FDA through the 510(k) process for indications similar to the Baha. However, the manufacturer, Sonitus Medical, closed in 2015.

BENEFIT APPLICATION:

Coverage is subject to member's specific benefits. Group-specific policy will supersede this policy when applicable.

CURRENT CODING:

CPT codes:

69710	Implantation or replacement of electromagnetic bone-conduction hearing device in temporal bone
69711	Removal or repair of electromagnetic bone-conduction hearing device in temporal bone
69714	Implantation, osseointegrated implant, skull; with percutaneous attachment to external speech processor

69716	Implantation, osseointegrated implant, skull; with magnetic transcutaneous attachment to external speech processor, within the mastoid and/or resulting in removal of less than 100 sq mm surface area of bone deep to the outer cranial cortex
69717	Replacement (including removal of existing device), osseointegrated implant, skull; with percutaneous attachment to external speech processor
69719	Replacement (including removal of existing device), osseointegrated implant, skull; with magnetic transcutaneous attachment to external speech processor, within the mastoid and/or involving a bony defect less than 100 sq mm surface area of bone deep to the outer cranial cortex
69726	Removal, entire osseointegrated implant, skull; with percutaneous attachment to external speech processor
69727	Removal, entire osseointegrated implant, skull; with magnetic transcutaneous attachment to external speech processor, within the mastoid and/or involving a bony defect less than 100 sq mm surface area of bone deep to the outer cranial cortex
69728	Removal, osseointegrated implant, skull; with attachment to external speech processor, outside the mastoid
69729	Implantation, osseointegrated implant, skull; with attachment to external speech processor, outside of the mastoid
69730	Replacement osseointegrated implant, skull; with attachment to external speech processor, outside the mastoid
92622	Diagnostic analysis, programming, and verification of an auditory osseointegrated sound processor, any type; first 60 minutes
92623	Diagnostic analysis, programming, and verification of an auditory osseointegrated sound processor, any type; each additional 15 minutes (List separately in addition to code for primary procedure)
92626	Evaluation of auditory function for surgically implanted device(s) candidacy or postoperative status of a surgically implanted device(s); first hour
92627	Each additional 15 minutes (list separately in addition to code for primary procedure)

HCPCS Codes:

L8625	External recharging system for battery for use with cochlear implant or auditory osseointegrated device, replacement only, each
L8690	Auditory osseointegrated device, includes all internal and external components
L8691	Auditory osseointegrated device, external sound processor, excludes transducer/actuator, replacement only, each
L8693	Auditory osseointegrated device abutment, any length, replacement only
L8694	Auditory osseointegrated device, transducer/actuator, replacement only, each

REFERENCES:

1. AlFarraj A, AlIbrahim M, AlHajjaj H, et al. Transcutaneous Bone Conduction Implants in Patients With Single-Sided Deafness: Objective and Subjective Evaluation. Ear Nose Throat J. Feb 2025; 104(2): NP92-NP100.
2. Allis TJ, Owen BD, Chen B, et al. Longer length Baha abutments decrease wound complications and revision surgery. Laryngoscope. Apr 2014; 124(4):989-992.
3. American Academy of Otolaryngology-Head and Neck Surgery. Implantable Hearing Devices. Position Statements 2013; //www.entnet.org/?q=node/932.
4. American Academy of Otolaryngology-Head and Neck Surgery. Position Statement: Bone Conduction Hearing Devices.Position Statements 2016; www.entnet.org/resource/position-statement-bone-conduction-hearing-devices/.
5. Amonoo-Kuofi K, Kelly A, Neeff M, et al. Experience of bone-anchored hearing aid implantation in children younger than 5 years of age. Int J Pediatr Otorhinolaryngol. Apr 2015; 79(4):474-480.
6. Baguley DM, Bird J, Humphriss RL, et al. The evidence base for the application of contralateral bone anchored hearing aids in acquired unilateral sensorineural hearing loss in adults. Clin Otolaryngol. Feb 2006; 31(1): 6-14.
7. Baker S, Centric A, Chennupati SK. Innovation in abutment-free bone-anchored hearing devices in children: Updated results and experience. Int J Pediatr Otorhinolaryngol. Oct 2015; 79(10):1667-1672.
8. Bosman AJ, Snik AF, van der Pouw CT, et al. Audiometric evaluation of bilaterally fitted bone-anchored hearing aids. Audiology. 2001; 40(3): 158-67.
9. Bravo-Torres S, Der-Mussa C, Fuentes-Lopez E. Active transcutaneous bone conduction implant: audiological results in paediatric patients with bilateral microtia associated with external auditory canal atresia. Int J Audiol. Jan 2018; 57(1):53-60.
10. Briggs R, Van Hasselt A, Luntz M, et al. Clinical performance of a new magnetic bone conduction hearing implant system: results from a prospective, multicenter, clinical investigation. Otol Neurotol. Jun 2015; 36(5):834-841.

11. Calvo Bodnia N, Foghsgaard S, Nue Moller M, et al. Long-term results of 185 consecutive osseointegrated hearing device implantations: a comparison among children, adults, and elderly. Otol Neurotol. Dec 2014; 35(10):e301-306.
12. Carnevale C, Morales-Olavarría C, Til-Pérez G, et al. Bonebridge ® bone conduction implant. Hearing outcomes and quality of life in patients with conductive/mixed hearing loss. Eur Arch Otorhinolaryngol. Sep 05 2022.
13. Carnevale C, Morales-Olavarría C, Til-Pérez G, et al. Bonebridge ® bone conduction implant. Hearing outcomes and quality of life in patients with conductive/mixed hearing loss. Eur Arch Otorhinolaryngol. Apr 2023; 280(4): 1611-1619.
14. Carr SD, Moraleda J, Procter V, et al. Initial UK experience with a novel magnetic transcutaneous bone conduction device. Otol Neurotol. Sep 2015; 36(8):1399-1402.
15. Centric A, Chennupati SK. Abutment-free bone-anchored hearing devices in children: initial results and experience. Int J Pediatr Otorhinolaryngol. May 2014; 78(5):875-878.
16. Colquitt JL, Jones J, Harris P et al. Bone-anchored hearing aids (BAHAs) for people who are bilaterally deaf: a systematic review and economic evaluation. Health Technol Assess 2011; 15(26):1-200, iii-iv.
17. Colquitt JL, Loveman E, Baguley DM et al. Bone-anchored hearing aids for people with bilateral hearing impairment: a systematic review. Clin Otolaryngol 2011; 36(5):419-41.
18. Cywka KB, Skarzynski PH, Krol B, et al. Evaluation of the Bonebridge BCI 602 active bone conductive implant in adults: efficacy and stability of audiological, surgical, and functional outcomes. Eur Arch Otorhinolaryngol. Jul 2022; 279(7): 3525-3534.
19. Davids T, Gordon KA, Clutton D, et al. Bone-anchored hearing aids in infants and children younger than 5 years. Arch Otolaryngol Head Neck Surg. Jan 2007; 133(1): 51-5.
20. den Besten CA, Harterink E, McDermott AL, et al. Clinical results of Cochlear BIA300 in children: Experience in two tertiary referral centers. Int J Pediatr Otorhinolaryngol. Dec 2015; 79(12):2050-2055.
21. den Besten CA, Monksfield P, Bosman A, et al. Audiological and clinical outcomes of a transcutaneous bone conduction hearing implant: Six-month results from a multicentre study. Clin Otolaryngol. Mar 2019; 44(2): 144-157.
22. den Besten CA, Nelissen RC, Peer PG, et al. A Retrospective Cohort Study on the Influence of Comorbidity on Soft Tissue Reactions, Revision Surgery, and Implant Loss in Bone-anchored Hearing Implants. Otol Neurotol. Jun 2015; 36(5): 812-8.
23. Denoyelle F, Coudert C, Thierry B, et al. Hearing rehabilitation with the closed skin bone-anchored implant Sophono Alpha1: results of a prospective study in 15 children with ear atresia. Int J Pediatr Otorhinolaryngol. Mar 2015; 79(3):382-387.
24. Desmet J, Wouters K, De Bodt M, et al. Long-term subjective benefit with a bone conduction implant sound processor in 44 patients with single-sided deafness. Otol Neurotol. Jul 2014; 35(6):1017-1025.
25. Dimitriadis PA, Farr MR, Allam A, et al. Three year experience with the cochlear BAHA attract implant: a systematic review of the literature. BMC Ear Nose Throat Disord. 2016; 16:12.
26. Dun CA, de Wolf MJ, Mylanus EA, et al. Bilateral bone-anchored hearing aid application in children: the Nijmegen experience from 1996 to 2008. Otol Neurotol. Jun 2010; 31(4): 615-23.

27. Dun CA, Faber HT, de Wolf MJ et al. Assessment of more than 1,000 implanted percutaneous bone conduction devices: skin reactions and implant survival. Otol Neurotol Feb 2012; 33(2):192-8.
28. Faber HT, Nelissen RC, Kramer SE, et al. Bone-anchored hearing implants in single-sided deafness patients: Long-term use and satisfaction by gender. Laryngoscope. Dec 2015; 125(12): 2790-5.
29. Farnoosh S, Mitsinikos FT, Maceri D, et al. Bone-Anchored Hearing Aid vs. Reconstruction of the External Auditory Canal in Children and Adolescents with Congenital Aural Atresia: A Comparison Study of Outcomes. Front Pediatr. 2014; 2:5.
30. Fontaine N, Hemar P, Schultz P, et al. BAHA implant: implantation technique and complications. Eur Ann Otorhinolaryngol Head Neck Dis. Feb 2014; 131(1):69-74.
31. Gawęcki W, Gibasiewicz R, Marszał J, et al. The evaluation of a surgery and the short-term benefits of a new active bone conduction hearing implant - the Osia®. Braz J Otorhinolaryngol. 2022; 88(3): 289-295.
32. Gerdes T, Salcher RB, Schwab B, et al. Comparison of Audiological Results Between a Transcutaneous and a Percutaneous Bone Conduction Instrument in Conductive Hearing Loss. Otol Neurotol. Jul 2016; 37(6):685-691.
33. Gluth MB, Eager KM, Eikelboom RH et al. Long-term benefit perception, complications, and device malfunction rate of bone-anchored hearing aid implantation for profound unilateral sensorineural hearing loss. Otol Neurotol 2010; 31(9):1427-34.
34. Heath E, Dawoud MM, Stavrakas M, et al. The outcomes of bilateral bone conduction hearing devices (BCHD) implantation in the treatment of hearing loss: A systematic review. Cochlear Implants Int. Mar 2022; 23(2): 95-108.
35. Hill-Feltham P, Roberts SA, Gladdis R. Digital processing technology for bone-anchored hearing aids: randomised comparison of two devices in hearing aid users with mixed or conductive hearing loss. J Laryngol Otol. Feb 2014; 128(2):119-127.
36. Ho EC, Monksfield P, Egan E, et al. Bilateral Bone-anchored Hearing Aid: impact on quality of life measured with the Glasgow Benefit Inventory. Otol Neurotol. Oct 2009; 30(7): 891-6.
37. Hobson JC, Roper AJ, Andrew R, et al. Complications of bone-anchored hearing aid implantation. J Laryngol Otol. Feb 2010; 124(2): 132-6.
38. Hol MK, Nelissen RC, Agterberg MJ et al. Comparison between a new implantable transcutaneous bone conductor and percutaneous bone-conduction hearing implant. Otol Neurotol 2013; 34(6):1071-5.
39. Huber AM, Strauchmann B, Caversaccio MD, et al. Multicenter Results With an Active Transcutaneous Bone Conduction Implant in Patients With Single-sided Deafness. Otol Neurotol. Feb 01 2022; 43(2): 227-235.
40. Hultcrantz M, Lanis A. A five-year follow-up on the osseointegration of bone-anchored hearing device implantation without tissue reduction. Otol Neurotol. Sep 2014; 35(8):1480-1485.
41. Hundertpfund J, Meyer JE, Ovari A. Long-term audiological benefit with an active transcutaneous bone-conduction device: a retrospective cohort analysis. Eur Arch Otorhinolaryngol. Jul 2022; 279(7): 3309-3326.
42. Ihler F, Volbers L, Blum J, et al. Preliminary functional results and quality of life after implantation of a new bone conduction hearing device in patients with conductive and mixed hearing loss. Otol Neurotol. Feb 2014; 35(2):211-215.

43. IOM (Institute of Medicine). 2011. Clinical Practice Guidelines We Can Trust. Washington, DC: The National Academies Press.
44. Iseri M, Orhan KS, Kara A, et al. A new transcutaneous bone anchored hearing device - the Baha(R) Attract System: the first experience in Turkey. Kulak Burun Bogaz Ihtis Derg. Mar-Apr 2014; 24(2):59-64.
45. Iseri M, Orhan KS, Tuncer U, et al. Transcutaneous Bone-anchored Hearing Aids Versus Percutaneous Ones: Multicenter Comparative Clinical Study. Otol Neurotol. Jun 2015; 36(5):849-853.
46. Janssen RM, Hong P, Chadha NK. Bilateral bone-anchored hearing aids for bilateral permanent conductive hearing loss: a systematic review. Otolaryngol Head Neck Surg 2012; 147(3):412-22.
47. Kim Y, Choe G, Oh H, et al. A comparative study of audiological outcomes and compliance between the Osia system and other bone conduction hearing implants. Eur Arch Otorhinolaryngol. May 2023; 280(5): 2217-2224.
48. Kiringoda R, Lustig LR. A meta-analysis of the complications associated with osseointegrated hearing aids. Otol Neurotol Jul 2013; 34(5):790-4.
49. Kompis M, Kurz A, Pfiffner F, et al. Is complex signal processing for bone conduction hearing aids useful? Cochlear Implants Int. May 2014; 15 Suppl 1:S47-50.
50. Kraai T, Brown C, Neeff M, et al. Complications of bone-anchored hearing aids in pediatric patients. Int J Pediatr Otorhinolaryngol. Jun 2011; 75(6):749-753.
51. Kunst SJ, Hol MK, Mylanus EA, et al. Subjective benefit after BAHA system application in patients with congenital unilateral conductive hearing impairment. Otol Neurotol. Apr 2008; 29(3): 353-58.
52. Kunst SJ, Leijendeckers JM, Mylanus EA, et al. Bone-anchored hearing aid system application for unilateral congenital conductive hearing impairment: audiometric results. Otol Neurotol. Jan 2008; 29(1): 2-7.
53. Larsson A, Tjellstrom A, Stalfors J. Implant losses for the bone-anchored hearing devices are more frequent in some patients. Otol Neurotol. Feb 2015; 36(2): 336-40.
54. Laske RD, Roosli C, Pfiffner F, et al. Functional Results and Subjective Benefit of a Transcutaneous Bone Conduction Device in Patients With Single-Sided Deafness. Otol Neurotol. Aug 2015; 36(7):1151-1156.
55. Leterme G, Bernardeschi D, Bensemman A, et al. Contralateral routing of signal hearing aid versus transcutaneous bone conduction in single-sided deafness. Audiol Neurootol. 2015; 20(4):251-260.
56. Lin LM, Bowditch S, Anderson MJ, et al. Amplification in the rehabilitation of unilateral deafness: speech in noise and directional hearing effects with bone-anchored hearing and contralateral routing of signal amplification. Otol Neurotol. Feb 2006; 27(2): 172-82.
57. Magliulo G, Turchetta R, Iannella G, et al. Sophono Alpha System and subtotal petrosectomy with external auditory canal blind sac closure. Eur Arch Otorhinolaryngol. Sep 2015; 272(9):2183-2190.
58. Manrique M, Sanhueza I, Manrique R, et al. A new bone conduction implant: surgical technique and results. Otol Neurotol. Feb 2014; 35(2):216-220.
59. Marsella P, Scorpecci A, Pacifico C et al. Pediatric BAHA in Italy: the "Bambino Gesu" Children's Hospital's experience. Eur Arch Otorhinolaryngol 2012; 269(2):467-74.

60. Marsella P, Scorpecci A, Vallarino MV, et al. Sophono in Pediatric Patients: The Experience of an Italian Tertiary Care Center. Otolaryngol Head Neck Surg. Aug 2014; 151(2):328-332.
61. McDermott AL, Williams J, Kuo MJ, et al. The role of bone anchored hearing aids in children with Down syndrome. Int J Pediatr Otorhinolaryngol. Jun 2008; 72(6): 751-7.
62. Mohamad S, Khan I, Hey SY, et al. A systematic review on skin complications of bone-anchored hearing aids in relation to surgical techniques. Eur Arch Otorhinolaryngol. Mar 2016; 273(3): 559-65.
63. Monini S, Musy I, Filippi C, et al. Bone conductive implants in single-sided deafness. Acta Otolaryngol. Apr 2015; 135(4):381-388.
64. Nelissen RC, Agterberg MJ, Hol MK, et al. Three-year experience with the Sophono in children with congenital conductive unilateral hearing loss: tolerability, audiometry, and sound localization compared to a bone-anchored hearing aid. Eur Arch Otorhinolaryngol. Oct 2016; 273(10):3149-3156.
65. Nelissen RC, Stalfors J, de Wolf MJ, et al. Long-term stability, survival, and tolerability of a novel osseointegrated implant for bone conduction hearing: 3-year data from a multicenter, randomized, controlled clinical investigation. Otol Neurotol. Sep 2014; 35(8):1486-1491.
66. Nicolas S, Mohamed A, Yoann P et al. Long-term benefit and sound localization in patients with single-sided deafness rehabilitated with an osseointegrated bone-conduction device. Otol Neurotol 2013; 34(1):111-4.
67. O'Niel MB, Runge CL, Friedland DR, et al. Patient Outcomes in Magnet-Based Implantable Auditory Assist Devices. JAMA Otolaryngol Head Neck Surg. Jun 2014; 140(6): 513-20.
68. Pai I, Kelleher C, Nunn T et al. Outcome of bone-anchored hearing aids for single-sided deafness: a prospective study. Acta Otolaryngol 2012; 132(7):751-5.
69. Peters JP, Smit AL, Stegeman I, et al. Review: Bone conduction devices and contralateral routing of sound systems in single-sided deafness. Laryngoscope. Jan 2015; 125(1): 218-26.
70. Powell HR, Rolfe AM, Birman CS. A Comparative Study of Audiologic Outcomes for Two Transcutaneous Bone-Anchored Hearing Devices. Otol Neurotol. Sep 2015; 36(9):1525-1531.
71. Priwin C, Stenfelt S, Granström G, et al. Bilateral bone-anchored hearing aids (BAHAs): an audiometric evaluation. Laryngoscope. Jan 2004; 114(1): 77-84.
72. Rahne T, Seiwerth I, Gotze G, et al. Functional results after Bonebridge implantation in adults and children with conductive and mixed hearing loss. Eur Arch Otorhinolaryngol. Nov 2015; 272(11):3263-3269.
73. Ramakrishnan Y, Marley S, Leese D, et al. Bone-anchored hearing aids in children and young adults: the Freeman Hospital experience. J Laryngol Otol. Feb 2011; 125(2):153-157.
74. Rebol J. Soft tissue reactions in patients with bone anchored hearing aids. Ir J Med Sci. Jun 2015; 184(2): 487-91.
75. Reddy-Kolanu R, Gan R, Marshall AH. A case series of a magnetic bone conduction hearing implant. Ann R Coll Surg Engl. Nov 2016; 98(8):552-553.

76. Riss D, Arnoldner C, Baumgartner WD, et al. Indication criteria and outcomes with the Bonebridge transcutaneous bone-conduction implant. Laryngoscope. Dec 2014; 124(12):2802-2806.
77. Roplekar R, Lim A, Hussain SS. Has the use of the linear incision reduced skin complications in bone-anchored hearing aid implantation? J Laryngol Otol. Jun 2016; 130(6):541-544.
78. Saroul N, Akkari M, Pavier Y, et al. Long-term benefit and sound localization in patients with single-sided deafness rehabilitated with an osseointegrated bone-conduction device. Otol Neurotol. Jan 2013; 34(1): 111-4.
79. Schmerber S, Deguine O, Marx M, et al. Safety and effectiveness of the Bonebridge transcutaneous active direct-drive bone-conduction hearing implant at 1-year device use. Eur Arch Otorhinolaryngol. Apr 2017; 274(4): 1835-1851.
80. Schwab B, Wimmer W, Severens JL, et al. Adverse events associated with bone-conduction and middle-ear implants: a systematic review. Eur Arch Otorhinolaryngol. Feb 2020; 277(2): 423-438.
81. Seiwerth I, Fröhlich L, Schilde S, et al. Clinical and functional results after implantation of the bonebridge, a semi-implantable, active transcutaneous bone conduction device, in children and adults. Eur Arch Otorhinolaryngol. Jan 2022; 279(1): 101-113.
82. Siegert R. Partially implantable bone conduction hearing aids without a percutaneous abutment (Otomag): technique and preliminary clinical results. Adv Otorhinolaryngol 2011; 71:41-6.
83. Šikolová S, Urík M, Hošnová D, et al. Two Bonebridge bone conduction hearing implant generations: audiological benefit and quality of hearing in children. Eur Arch Otorhinolaryngol. Jul 2022; 279(7): 3387-3398.
84. Singam S, Williams R, Saxby C, et al. Percutaneous bone-anchored hearing implant surgery without soft-tissue reduction: up to 42 months of follow-up. Otol Neurotol. Oct 2014; 35(9): 1596-600.
85. Snapp HA, Holt FD, Liu X, et al. Comparison of Speech-in-Noise and Localization Benefits in Unilateral Hearing Loss Subjects Using Contralateral Routing of Signal Hearing Aids or Bone-Anchored Implants. Otol Neurotol. Jan 2017; 38(1):11-18.
86. Snik AF, Mylanus EA, Proops DW, et al. Consensus statements on the BAHA system: where do we stand at present?. Ann Otol Rhinol Laryngol Suppl. Dec 2005; 195: 2-12.
87. Verheij E, Bezdjian A, Grolman W, et al. A Systematic Review on Complications of Tissue Preservation Surgical Techniques in Percutaneous Bone Conduction Hearing Devices. Otol Neurotol. Aug 2016; 37(7):829-837.
88. Wallberg E, Granström G, Tjellström A, et al. Implant survival rate in bone-anchored hearing aid users: long-term results. J Laryngol Otol. Nov 2011; 125(11): 1131-5.
89. Zeitler DM, Snapp HA, Telischi FF et al. Bone-anchored implantation for single-sided deafness in patients with less than profound hearing loss. Otolaryngol Head Neck Surg 2012; 147(1):105-11.

POLICY HISTORY:

Adopted for Blue Advantage, March 2005
Available for comment May 1-June 14, 2005
Medical Policy Group, April 2006

Available for comment May 5-June 20, 2006
Medical Policy Group, August 2007
Available for comment September 4-October 18, 2007
Medical Policy Group, December 2007
Available for comment January 1-February 15, 2008
Medical Policy Group, April 2008
Medical Policy Group, January 2010
Medical Policy Group, December 2010
Medical Policy Group, June 2012
Available for comment June 26 through August 9, 2012
Medical Policy Group, March 2013
Medical Policy Group, August 2013
Available for comment August 22 through October 5, 2013
Medical Policy Group, May 2014
Available for comment May 30 through July 13, 2014
Medical Policy Group, June 2014
Medical Policy Group, January 2015
Medical Policy Group, March 2016
Medical Policy Group, August 2016
Medical Policy Group, September 2016
Medical Policy Group, February 2017
Medical Policy Group, December 2017
Medical Policy Group, March 2018
Medical Policy Group, March 2019
Medical Policy Group, December 2019: Annual Coding Update
Medical Policy Group, March 2020
Medical Policy Group, March 2021
Medical Policy Group, June 2021
Medical Policy Group, December 2021: 2022 Annual Coding Update. Added CPT codes 69716 and 69719 to the Current coding section. Created Previous Coding section to include codes 69715 and 69718 which will be deleted as of 12/31/21. Revised CPT codes 69714 and 69717 to state: For 69714 “temporal bone” replaced with “skull”. “Cochlear stimulator” and “without mastoidectomy” also removed. For 69717 in addition to the changes to 69714, added that 69717 could be used for a revision in addition to a replacement.
Medical Policy Group, February 2022
Medical Policy Group, October 2022
Medical Policy Group, November 2022: 2023 Annual Coding Update. Added CPT codes 69728, 69729, 69730 to Current Coding section. Revised CPT codes 69716, 69717, 69719, 69726, 69727.
Medical Policy Group, February 2023
Medical Policy Group, November 2023: 2024 Annual Coding Update. Added codes 92622 and 92623 to the Current Coding section.
UM Committee, December 2023: Policy approved by UM Committee for use for Blue Advantage business.
Medical Policy Group, March 2024

UM Committee, March 2024: Annual review of policy approved by UM Committee for use for Blue Advantage business.
Medical Policy Group, February 2025
UM Committee, February 2025: Annual review of policy approved by UM Committee for use for Blue Advantage business.

This medical policy is not an authorization, certification, explanation of benefits, or a contract. Eligibility and benefits are determined on a case-by-case basis according to the terms of the member's plan in effect as of the date services are rendered. All medical policies are based on (i) research of current medical literature and (ii) review of common medical practices in the treatment and diagnosis of disease as of the date hereof. Physicians and other providers are solely responsible for all aspects of medical care and treatment, including the type, quality, and levels of care and treatment.

This policy is intended to be used for adjudication of claims (including pre-admission certification, pre-determinations, and pre-procedure review) in Blue Cross and Blue Shield's administration of plan contracts.