Hearing Instruments and Devices Including Wearable, Bone-Anchored, and Semi-Implantable (for Kentucky Only)

Policy Number: CS052KY.10
Effective Date: April 1, 2025

Ü Instructions for Use

Table of Contents **Page**

Related Policy

- Durable Medical Equipment, Orthotics, Medical Supplies, and Repairs/Replacements (for Kentucky Only)

Application

This Medical Policy only applies to the state of Kentucky.

Coverage Rationale

For program coverage provisions and requirements, refer to the Kentucky Administrative Regulations (KAR), Title 907,Chapter 001, Regulation 038: Hearing program coverage provisions and requirements.

Wearable Air-Conduction Hearing Aids

Wearable air-conduction Hearing Aids required for the correction of a Hearing Impairment are proven and medically necessary. For medical necessity clinical coverage criteria, refer to the InterQual® CP: Durable Medical Equipment, Hearing Aids.

Click here to view the InterQual® criteria.

Bone Anchored Hearing Aid/Bone Conduction Hearing Aid

For medical necessity clinical coverage criteria, refer to the InterQual® CP: Procedures:

- Hearing Device, Bone Anchored or Bone Conduction
- Hearing Device, Bone Anchored or Bone Conduction (Pediatric)

Click here to view the InterQual® criteria.

Semi-Implantable Hearing Aids

For medical necessity clinical coverage criteria, refer to the InterQual® CP: Procedures, Hearing Device, Middle Ear.

Click here to view the InterQual® criteria.

The following are unproven and not medically necessary for treating hearing loss due to insufficient evidence of efficacy:

- Intraoral bone conduction Hearing Instruments
- Laser or light-based Hearing Instruments
- Totally implanted middle ear Hearing Instruments

Definitions

Conductive Hearing Loss: Occurs when sound is not conducted efficiently through the outer ear canal to the eardrum and the tiny bones (ossicles) of the middle ear. Conductive Hearing Loss usually involves a reduction in sound level or the ability to hear faint sounds. This type of hearing loss can often be corrected medically or surgically.

Degree of Hearing Loss:

Degree of Hearing Loss	Range (dBHL = decibels hearing level)
Normal Hearing	-10 to 15 dBHL
Slight Loss	16 to 25 dBHL
Mild Loss	26 to 40 dBHL
Moderate Loss	41 to 55 dBHL
Moderately Severe Loss	56 to 70 dBHL
Severe Loss	71 to 90 dBHL
Profound Loss	91 dBHL or more

(ASHA, Type, Degree, and Configuration of Hearing Loss; Clark, 1981)

Hearing Aids: Hearing Aids are sound-amplifying devices designed to aid people who have a Hearing Impairment. Most Hearing Aids share several similar electronic components, and technology used for amplification may be analog or digital. Semi-implantable electromagnetic Hearing Aids and bone-anchored Hearing Aids are classified by the U.S. Food and Drug Administration (FDA) as Hearing Aids. Some non-wearable hearing devices are described as hearing devices or hearing systems. Because their function is to bring sound more effectively into the ear of a person with hearing loss, for the purposes of this policy, they are Hearing Aids.

Hearing Impairment: A reduction in the ability to perceive sound which may range from slight to complete deafness.

Hearing Instruments: Any wearable instrument or device designed for or represented as aiding or improving defective human hearing and any parts, attachments, or accessories of such an instrument or device (907 KAR 1:038).

Mixed Hearing Loss: Occurs when a Conductive Hearing Loss occurs in combination with a Sensorineural Hearing Loss (SNHL). In other words, there may be damage in the outer or middle ear and in the inner ear (cochlea) or auditory nerve.

Sensorineural Hearing Loss (SNHL): Occurs when there is damage to the inner ear (cochlea), or to the nerve pathways from the inner ear to the brain. Most of the time, SNHL cannot be medically or surgically corrected. This is the most common type of permanent hearing loss.

Applicable Codes

The following list(s) of procedure and/or diagnosis codes is provided for reference purposes only and may not be all inclusive. Listing of a code in this policy does not imply that the service described by the code is a covered or non-covered health service. Benefit coverage for health services is determined by federal, state, or contractual requirements and applicable laws that may require coverage for a specific service. The inclusion of a code does not imply any right to reimbursement or guarantee claim payment. Other Policies and Guidelines may apply.

CPT Code	Description
Fitting and Testing of Hearing Aids	
92590	Hearing aid examination and selection; monaural
92591	Hearing aid examination and selection; binaural

CPT Code	Description
Fitting and Testing of Hearing Aids	
92592	Hearing aid check; monaural
92593	Hearing aid check; binaural
92594	Electroacoustic evaluation for hearing aid; monaural
92595	Electroacoustic evaluation for hearing aid; binaural
Semi-Implantable Electromagnetic Hearing Aids (SEHA)	
69799	Unlisted procedure, middle ear
Bone Anchored Hearing Aids (BAHA)	
69710	Implantation or replacement 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	Revision or 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
69729	Implantation, osseointegrated implant, skull; with magnetic transcutaneous attachment to external speech processor, outside of the mastoid and resulting in removal of greater than or equal to 100 sq mm surface area of bone deep to the outer cranial cortex
69730	Replacement (including removal of existing device), osseointegrated implant, skull; with magnetic transcutaneous attachment to external speech processor, outside the mastoid and involving a bony defect greater than or equal to 100 sq mm surface area of bone deep to the outer cranial cortex

HCPCS Code	Description
Fitting and Testing of Hearing Aids	
S0618	Audiometry for hearing aid evaluation to determine the level and degree of hearing loss
V5010	Assessment for hearing aid
V5011	Fitting/orientation/checking of hearing aid
V5014	Repair/modification of a hearing aid
V5020	Conformity Evaluation
V5264	Ear mold/insert, not disposable, any type
V5265	Ear mold/insert, disposable, any type
V5275	Ear impression, each
Semi-Implantable Electromagnetic Hearing Aids (SEHA)	
S2230	Implantation of magnetic component of semi-implantable hearing device on ossicles in middle ear
V5095	Semi-implantable middle ear hearing prosthesis
Bone Anchored Hearing Aids (BAHA)	
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

HCPCS Code	Description
Wearable Hearing Aids	
L8692	Auditory osseointegrated device, external sound processor, used without osseointegration, body worn, includes headband or other means of external attachment
V5030	Hearing aid, monaural, body worn, air conduction
V5040	Hearing aid, monaural, body worn, bone conduction
V5050	Hearing aid, monaural, in the ear
V5060	Hearing aid, monaural, behind the ear
V5070	Glasses, air conduction
V5080	Glasses, bone conduction
V5100	Hearing aid, bilateral, body worn
V5120	Binaural, body
V5130	Binaural, in the ear
V5140	Binaural, behind the ear
V5150	Binaural, glasses
V5171	Hearing aid, contralateral routing device, monaural, in the ear (ITE)
V5172	Hearing aid, contralateral routing device, monaural, in the canal (ITC)
V5181	Hearing aid, contralateral routing device, monaural, behind the ear (BTE)
V5190	Hearing aid, contralateral routing, monaural, glasses
V5211	Hearing aid, contralateral routing system, binaural, ITE/ITE
V5212	Hearing aid, contralateral routing system, binaural, ITE/ITC
V5213	Hearing aid, contralateral routing system, binaural, ITE/BTE
V5214	Hearing aid, contralateral routing system, binaural, ITC/ITC
V5215	Hearing aid, contralateral routing system, binaural, ITC/BTE
V5221	Hearing aid, contralateral routing system, binaural, BTE/BTE
V5230	Hearing aid, contralateral routing system, binaural, glasses
V5242	Hearing aid, analog, monaural, CIC (completely in the ear canal)
V5243	Hearing aid, analog, monaural, ITC (in the canal)
V5244	Hearing aid, digitally programmable analog, monaural, CIC
V5245	Hearing aid, digitally programmable, analog, monaural, ITC
V5246	Hearing aid, digitally programmable analog, monaural, ITE (in the ear)
V5247	Hearing aid, digitally programmable analog, monaural, BTE (behind the ear)
V5248	Hearing aid, analog, binaural, CIC
V5249	Hearing aid, analog, binaural, ITC
V5250	Hearing aid, digitally programmable analog, binaural, CIC
V5251	Hearing aid, digitally programmable analog, binaural, ITC
V5252	Hearing aid, digitally programmable, binaural, ITE
V5253	Hearing aid, digitally programmable, binaural, BTE
V5254	Hearing aid, digital, monaural, CIC
V5255	Hearing aid, digital, monaural, ITC
V5256	Hearing aid, digital, monaural, ITE
V5257	Hearing aid, digital, monaural, BTE
V5258	Hearing aid, digital, binaural, CIC
V5259	Hearing aid, digital, binaural, ITC
V5260	Hearing aid, digital, binaural, ITE

HCPCS Code	Description
Wearable Hearing Aids	
V5261	Hearing aid, digital, binaural, BTE
V5262	Hearing aid, disposable, any type, monaural
V5263	Hearing aid, disposable, any type, binaural
V5267	Hearing Aid or assistive listening device/supplies/accessories, not otherwise specified (Note: For plans that cover hearing aids, this code requires manual review to determine what the item is before a coverage determination can be made).
V5298	Hearing aid, not otherwise classified

Description of Services

Intraoral Bone Conduction Hearing Aids

The SoundBite™ Hearing System is a non-surgical intraoral bone conduction Hearing Aid that was developed for individuals with single-sided deafness. It consists of a behind the ear device (which houses the receiver, wireless transmitter, and microphone) and a removable, custom-fit oral retainer-like device. According to the manufacturer, the device allows sound to travel via the teeth, through the bones, to both cochleae, bypassing the middle and outer ear. As of January 1, 2015, Sonitus Medical, Inc. filed bankruptcy and is no longer manufacturing the Soundbite Hearing System. There is no new information concerning production of this or a similar device.

Laser or Light-Based Hearing Aids

Laser or light-based Hearing Aids such as the Earlens Contact Hearing Device (CHD) uses light to transmit sound, unlike traditional Hearing Aids that simply amplify air-conducted sound. The Earlens CHD consists of 2 components: a light-based behind-the-ear (BTE) sound processor; and a removable, custom-made tympanic membrane transducer, which is non-surgically placed deep in the ear canal. The BTE processor uses a microphone and a digital signal processor to pick up sound and convert it to infrared light. Light pulses are transmitted to the transducer and are converted into vibrations that are directly applied to the tympanic membrane and perceived as sound.

Totally Implanted Middle Ear Hearing Systems

Totally implantable middle ear hearing systems are also being evaluated in individuals with hearing loss. The Esteem prosthetic hearing restoration device (Envoy Medical Corporation) is totally implanted behind the outer ear and in the middle ear. Unlike other Hearing Aids, the Esteem device does not use a microphone or a speaker. Three implanted components comprise the system: a sound processor, a sensor, and a driver that converts electrical signals transmitted by the sound processor to the inner ear, where they are perceived as sound. The device is powered with a maintenance-free battery that may last up to nine years and requires no recharging. The Carina Fully Implantable Hearing Device (Cochlear, Ltd) is another totally implantable active middle ear device that was in development in the United States by Otologics, LLC but did not receive FDA approval. In September of 2012, Cochlear, Ltd, an Australian based company, purchased the hearing related assets of Otologics LLC.

Clinical Evidence

Intraoral Bone Conduction Hearing Aid

There is insufficient quality evidence to support the use of intraoral bone conduction hearing aids to treat hearing loss. The quality of the studies was low due to small study populations, short follow-up, and lack of randomization and appropriate control groups.

In a prospective cases series, Gurgel et al. (2015) assessed the safety and efficacy of an intraoral bone conduction (IOBC) hearing prosthesis (SoundBite) after 12 months of use. At the end of 6 months and 12 months, patients were asked to complete the Abbreviated Profile of Hearing Aid Benefit (APHAB) questionnaire and SSD questionnaire in addition to audiometric testing. Eighty-one patients aged 18 years or older with single-sided deafness (SSD) completed the study. Hearing thresholds remained the same throughout the study. APHAB results showed a significant benefit in categories of ease of communication, reverberation, background noise, and global score. The SSD questionnaire showed a high satisfaction among participants, with 93.8% of patients likely to recommend the IOBC. Dissatisfaction was highest with regard to patient's ability to eat with device, with only 55.6% satisfied. No serious adverse events were reported during the study. The authors concluded that the IOBC is a safe and effective alternative to percutaneous osseointegrated

hearing implants for patients with SSD. Patient satisfaction and improved hearing benefit are observed after 1 year of using the device. According to the authors, the IOBC significantly benefited patients in APHAB categories of ease of communication, reverberation, background noise, and the overall global hearing score. The authors stated that the in-the-mouth transducer is the least-liked feature for some patients, particularly with regard to eating; however, the majority of patients are willing to deal with the size of the device for the hearing benefit gained. The lack of a control group limits the validity of the results of this study. Author reported study limitations include the following: 1) Despite the APHAB being a well-validated way to assess the benefit of hearing prosthesis, the questionnaire responses are subjective and subject to bias. 2) When comparisons were made between the 6- and 12-month APHAB results, 65 and 80 patients filled out the two questionnaires, respectively. The 6-month visit was not a required follow-up time, which explains the difference in participation. The study results have some potential to be skewed because of the differential participation at the two time points, but the 6- and 12-month APHAB results were very similar, with no statistically significant differences. 3) A selection bias is also possible in those patients who were willing to participate in the study as well as providers who have incorporated the IOBC into their practice. These patients and providers may feel more strongly for or against the device than more objective users. 4) More than 90% of patients responded that they preferred the device compared with no device and would likely recommend the device. This percentage may be artificially high because nine subjects withdrew from the study secondary to device-related problems and did not complete the evaluation.

Moore and Popelka (2013) compared the effectiveness of two types of treatment for unilateral hearing loss (UHL), bone-anchored hearing instruments (BAHI) and a dental device (SoundBite). Nine adult BAHI wearers with UHL were included in the study. Either BAHI or SoundBite were worn for 30 days, and then the devices were swapped, and the second device was worn for 30 days. Measures included unaided and aided sound-field thresholds, sound localization, and perception of speech in babble. The APHAB questionnaire was administered for each trial period. Both devices gave benefits for localization after 30 days, but there was no difference between devices. Speech perception was better for both devices than for unaided listening when the target speech came from the poorer hearing side or in front, and the interfering babble came from the better-hearing side. There was no consistent difference between devices. APHAB scores were better for SoundBite than for BAHI. The authors concluded that speech perception and sound localization were similar for the two types of devices, but the SoundBite led to lower aided thresholds and better APHAB scores than the BAHI. The significance of this study is limited by small sample size, which could have limited the ability to detect clinically significant differences, and short follow-up period.

Laser or Light-Based Hearing Aids

The evidence assessing the effectiveness of laser or light-based hearing aids is limited by lack of concurrent control group.

Arbogast et al. (2019) evaluated the benefit of extended high-frequency amplification in a real-world use scenario, with a device that restores audibility for frequencies up to 10 kHz. A total of 78 participants (149 ears) with mild to moderately severe sensorineural hearing loss completed one of two studies conducted across eight clinical sites. Participants were fitted with a light-driven contact hearing aid (the Earlens system) that directly drives the tympanic membrane, allowing extended high-frequency output and amplification with minimal acoustic feedback. Participants wore the devices for an extended period. Prescribed versus adjusted output and gain, frequency-specific FG, and self-perceived benefit assessed with the Abbreviated Profile of Hearing Aid Benefit, and a custom questionnaire were documented. Abbreviated Profile of Hearing Aid Benefit results revealed a significant improvement in communication relative to unaided listening, averaging 28 to 32 percentage points for the background noise, reverberation, and ease of communication subscales. Relative to participants' own hearing aids, the subscales ease of communication and aversiveness showed small but significant improvements for Earlens ranging from 6 to 7 percentage points. For the custom satisfaction questionnaire, most participants rated the Earlens system as better than their own hearing aids in most situations. The investigators concluded that the results of the two studies show that the Earlens system can provide the gains and output levels prescribed by the CAM2 fitting method over the whole frequency range up to 10kHz for participants with a wide range of hearing losses. The current two clinical trials have the limitation that they were not blinded, so the satisfaction measures may have been affected by placebo effects or biases. The lack of a concurrent comparison group is another weakness of this study.

In a single-arm, open-label investigational-device clinical trial, Gantz et al. (2017) evaluated the safety and effectiveness of the light-driven contact hearing aid to support FDA clearance. The trial included 43 subjects (86 ears) with mild-to-severe bilateral sensorineural hearing impairment. The intervention was treatment of the hearing impairment using amplification provided by the Earlens contact hearing aid (CHA) for a duration of 120 days. The primary safety endpoint was a determination of "no change" (PTA4 < 10 dB) in residual unaided hearing at the 120-day measurement interval. The results for the 86 ears in the study determined a mean change of -0.40 dB in PTA4, indicating no change in residual hearing. There was no serious device- or procedure-related adverse events, or unanticipated adverse events. Word recognition aided with the Earlens improved significantly over the unaided performance, by 35% rationalized arcsine units

on average. Mean functional gain was 31 dB across 2 to 10 kHz. The average speech-recognition threshold improvement over the unaided case for the Hearing in Noise Test was 0.75 dB and 3.14 dB for the omnidirectional and directional microphone modes, respectively. The authors concluded that the safety and effectiveness data supported a de novo 510(k) submission that received clearance from the FDA. According to the authors, future studies should perform careful comparisons between other devices and the CHA, to establish whether the broad-spectrum amplification of the CHA provides additional benefits over those devices in terms of sound quality and speech understanding.

Totally Implanted Middle Ear Hearing Systems

There is insufficient quality evidence demonstrating the efficacy of totally implanted middle ear hearing systems for treating hearing loss. Identified evidence described below are limited by lack of concurrent comparison group and conflicting findings, including identification of adverse events.

In a 2023 retrospective, single-arm observational study, Peixoto et al. assessed the outcomes of a fully implantable active middle ear device, the Cochlear™ Carina® System. Fifteen participants and 16 ears underwent device implantation, and pre and post-operative air conduction (AC) and bone conduction (BC) thresholds were evaluated. Functional gain, speech perception in silence and in noise, and localization abilities were also analyzed. The results showed no differences in AC and BC thresholds pre-operatively and post-operatively with device turned off. This suggests the surgery and the device did not change middle ear or cochlear functions. The results for device function showed no loss of external communication or device malfunction. Sound feedback was present to different degrees in all participants and required several appointments for fitting adjustments. Auditory outcomes showed a gain of 15-20 dB one year after implantations with better gains seen in individuals with mixed hearing loss (MHL) compared to those with sensorineural hearing loss (SNHL). Speech discrimination in silence showed a significant improvement of 29 dB in speech recognition threshold (SRT) in individuals with MHL 1 year after surgery with a progressive improvement seen in the first 6 months. This improvement was lower in individuals with SNHL. Speech discrimination in noisy environments showed improvement but was not statistically significant. The authors concluded that a fully implantable active middle ear device is a viable treatment option for individuals that cannot or do not wish to use traditional hearing aids. This study is limited by a small number of participants, short follow up time and lack of a comparison group.

Shohet et al. (2018) conducted a prospective, multicenter case series to provide long-term hearing outcome measures of a totally implantable hearing system (implant) and compare to the baseline unaided (BLU) and baseline aided (BLA) conditions, and to discuss relevant safety measures. Fifty-one subjects with mild to severe sensorineural hearing loss were implanted between 2008 and 2009 and enrolled in this post-market approval study in the setting of private and hospital-based practices. Forty-nine of these subjects completed the 5-year study, which included annual follow-ups. Primary effectiveness endpoints were speech reception threshold (SRT) and word recognition scores at 50 dB (WRS50s). Secondary effectiveness endpoints were WRSs and the Abbreviated Profile of Hearing Aid Benefit (APHAB) scores. Adverse Device Effects (ADEs) and Serious Adverse Device Effects (SADEs) reported during the study period and a comparison of bone conduction scores were submitted as safety measures. The results showed that compared to the BLA condition, SRT scores were improved at every annual follow-up; WRS50s were better in 49%, and the same in 41% at the 5-year follow-up; WRSs were improved by 17% at the 5-year follow-up; and APHAB scores were improved in most subscales at every annual follow-up. There were three SADEs in three subjects and 15 ADEs in 11 subjects. Bone conduction scores increased by 3.7 dB at the 5-year follow-up. Average battery life was 4.9 years. The authors concluded that the implant compared favorably to the subjects' hearing aid throughout the 5-year period in all of the areas measured and was found to be safe. Further research with randomized controlled trials is needed to validate these findings. The findings are limited by the lack of comparison group.

Barbara et al. (2018) evaluated the long-term benefits of a totally implantable active middle ear implant (AMEI) that has been used in a single implanting center for over 10 years. Forty-one subjects who underwent implantation with an Esteem AMEI during a 10-years period were evaluated on the auditory benefits, as derived from pure tone and speech audiometry tests. The analysis included a comparison with a conventional hearing aid, but no concurrent comparison group, the problematics related to the battery duration and surgical replacement and, finally, the complication rate. Over 80% of the implanted subjects maintained over time a satisfactory auditory gain, ranging from 10 to over 30 dB in respect to the unaided situation, as mean at 0.5, 1, 2 and 4 kHz. In more than 60% of them, an improvement has also been found at 4 and 8 kHz. Battery duration varied according to the severity of the hearing loss and to the daily use of the device. No major post-operative complications were recorded, while explanation was necessary in five subjects, although none for device failure. The authors concluded that the Esteem can be considered a reliable device for rehabilitation of sensorineural hearing loss in alternative to conventional hearing aids. The findings of this study need to be validated by well-designed controlled studies with larger sample sizes.

In a systematic review, Pulcherio et al. (2014) reviewed the outcomes of the fully implantable middle ear devices (MEDs) Carina and Esteem for treatment of hearing loss. Twenty-two studies and two literature reviews in English directly addressing the results of Carina and Esteem were included in the review. There was a total of 244 patients ranging from 18 to 88 years. One hundred and 10 patients were implanted with Carina and 134 with Esteem. There were registered 92 males and 67 females. Five studies provided no information about patients' age or gender. From the data available, the follow-up ranged from 2 to 29.4 months. The comparison of the results about word recognition is difficult as there was no standardization of measurement. The results were obtained from various sound intensities and different frequencies. The studies included in the review showed improvement of sound field threshold from unaided to aided conditions with a fully implantable middle ear device. However, there were conflicting results among the different studies regarding functional gain. Some of the studies had no statistical significance and some studies reported a functional gain but with a limited benefit on frequencies above 3 kHz. According to the authors, the use of fully implantable MEDs is promising for those dissatisfied with their current conventional air-conduction hearing aids. The authors concluded that due to the relatively few publications available and small sample sizes, one must be careful in extrapolating these results to a broader population. Additionally, none of these studies represented level high levels of evidence (i.e., randomized controlled trials) or controlled studies.

Klein et al. (2012) conducted a review to examine the safety and effectiveness of fully implantable middle ear devices in the treatment of hearing loss. Thirty articles were selected for full review, of which 7 articles on the Esteem (n = 105 patients) and 13 on the Carina (n = 68 patients) met the study's eligibility criteria. Because of heterogeneity across studies, meta-analysis was not performed, and comparisons were made by structured review. Complication rates with the Esteem were higher than with the Carina. The most common adverse effects with the Esteem were chorda tympani nerve damage or taste disturbance, occurring in 30 percent of patients. Facial weakness was also reported in eight percent of the patients and was permanent in two patients. Seven explants and five revision surgeries were reported with the Esteem device. Device failure was common with the Carina, predominately related to charging difficulties. For both devices, clinically significant improvements in functional gain, speech reception, and speech recognition over the unaided condition were found. According to the authors, most of the studies included in the review were quasi-experimental pre-post comparisons of aided and unaided conditions. In addition, the studies had significant limitations including lack of a control group, and no strict inclusion and exclusion criteria.

Clinical Practice Guidelines

American Academy of Otolaryngology-Head and Neck Surgery (AAO-HNS)

The AAO-HNS considers active middle ear implants as appropriate treatment for adults with moderate to severe hearing loss when performed by a qualified otolaryngologist-head and neck surgeon. Based on available literature demonstrating that clinically selected adults receive substantial benefit, implanting active middle ear implants is accepted medical practice in those who benefit from amplification but are unable to benefit from the amplification provided by conventional hearing aids. Use of active middle ear implants, which have been Food and Drug Administration (FDA)-approved for these indications, should adhere to the restrictions and guidelines specified by the appropriate governing agency, such as the FDA in the United States and other similar regulatory agencies in countries other than the United States (AAO-HNS, Active Middle Ear Implants Position Statement 2016).

The AAO-HNS 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 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. (AAO-HNS, Bone Conduction Hearing Devices Position Statement 2016, Revised 2021).

Ontario Health Technology (OHT)

Following a systematic review of the literature, the Ontario Health Technology Advisory Committee (2020) recommendations for patients with conductive or mixed hearing loss stated that bone-conduction implants when compared with no intervention are likely to result in a large improvement in hearing thresholds, improve speech perception in noise and improve hearing-specific quality of life. In comparison to no treatment, bone-conduction implants for patients with single-sided deafness who are contraindicated for cochlear implantation, it is likely to result in a large improvement in hearing thresholds, improve speech perception in noise and improve hearing-specific quality of life; however, it is not likely to improve sound localization.

U.S. Food and Drug Administration (FDA)

This section is to be used for informational purposes only. FDA approval alone is not a basis for coverage.

Semi-Implantable Electromagnetic Hearing Aid

Two semi-implantable, electromagnetic, direct-drive, middle ear hearing devices have received FDA approval.

Vibrant® received FDA approval on August 31, 2000. According to the FDA, Vibrant Soundbridge is utilized for providing a useful level of sound perception to individuals via mechanical stimulation of the ossicles.

According to the professional labeling information on the FDA website, the selection criteria for Vibrant Soundbridge include the following:

- Adults aged 18 or older
- Audiologic results consistent with moderate to severe sensorineural hearing loss
- Pure tone air conduction threshold levels within the following ranges:
  - 500 Hz: 30-65 dB
  - 1000 Hz: 40-75 dB
  - 1500 Hz: 45-80 dB
  - 2000 Hz: 45-80 dB
  - 3000 Hz: 50-85 dB
  - 4000 Hz: 50-85 dB
- Word recognition score of 50% or better using recorded material
- Normal middle ear anatomy
- Psychologically and motivationally suitable with realistic expectations of the benefits and limitations of the device

Refer to the following website for more information:
https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpma/pma_template.cfm?id=p990052.
(Accessed September 23, 2024)

Maxum Hearing Implant® was approved by the FDA on September 7, 2001. This device was manufactured initially under the name Soundtec Direct System by Ototronix and is currently manufactured under the name Maxum Hearing Implant®. According to the professional labeling information on the FDA website, the selection criteria for Maxum Hearing Implant® include the following:

- Adults aged 18 or older
- Audiologic results consistent with moderate to severe sensorineural hearing loss
- Patients with a desire for an alternative to an acoustic hearing device
- Patients should have experience with appropriately fit hearing aids

Refer to the following website for more information:
https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpma/pma.cfm?id=P010023. (Accessed September 23, 2024)

Bone-Anchored Hearing Aids

Fully Implantable Bone Anchored Hearing Aids

In 1995, the FDA granted clearance to Nobelpharm USA to market the Branemark Bone-Anchored Hearing Aid (BAHA) System. Note: since 1995, the device was acquired by Entific Medical Systems and then in 2005, it was acquired by Cochlear Corp and is now marketed as the Cochlear™ Baha System®. The device is indicated for adult patients with malformations of the external ear, chronically draining ear, a pure tone threshold hearing loss of ≥ 45 decibels (dB), and/or inability or unwillingness to use an air conduction hearing aid. In 1999, this clearance was extended for use in children 5 years of age or older. Refer to the following website for more information:
http://www.accessdata.fda.gov/cdrh_docs/pdf/K984162.pdf. (Accessed September 23, 2024)

The indications for the BAHA System have broadened since the initial FDA clearance. In 2001, the BAHA system was cleared for bilateral implantation. For bilateral implantation of bone-anchored hearing aids, patients must have moderate to severe bilateral symmetrical conductive hearing loss (defined as less than 10 dB difference in average or less than 15 dB in bone-conduction thresholds at 500, 1000, 2000, and 4000 Hz) or mixed hearing loss with average bone conduction thresholds better than 45 dB hearing loss.

In 2002, the BAHA system was cleared for single sided deafness (SSD) or unilateral sensorineural hearing loss. According to the FDA, the use of BAHA hearing aid for SSD is intended to improve speech recognition. The SSD indication for BAHA hearing aid is intended for patients who suffer from unilateral sensorineural deafness on one ear while the other ear has normal hearing. Normal hearing is defined as PTA AC threshold equal to or better than 20dB measured at 0.5, 1,2, and 3 kHz. BAHA for SSD is also indicated for patients who are indicated for an AC Contra-lateral Routing of Signals (CROS) but who for some reason cannot or will not use an AC CROS. Refer to the following website for more information: http://www.accessdata.fda.gov/cdrh_docs/pdf2/k021837.pdf. (Accessed September 23, 2024)

BAHA system models include the following:

- BAHA BP100 (2009). Refer to the following website for more information:
  - http://www.accessdata.fda.gov/cdrh_docs/pdf9/K090720.pdf
- BAHA Cordelle II (2008). Refer to the following websites for more information:
  - http://www.accessdata.fda.gov/cdrh_docs/pdf8/K080363.pdf
  - https://www.accessdata.fda.gov/cdrh_docs/pdf/K992872.pdf
- BAHA Intenso (2008). Refer to the following website for more information:
  - http://www.accessdata.fda.gov/cdrh_docs/pdf8/K081606.pdf
- BAHA Divino (2004). Refer to the following website for more information:
  - http://www.accessdata.fda.gov/cdrh_docs/pdf4/K042017.pdf
- BAHA auditory osseointegrated implant system using model B31300 implant and model BA300 abutment (2010). Refer to the following website for more information:
  - http://www.accessdata.fda.gov/cdrh_docs/pdf10/K100360.pdf

  (Accessed September 23, 2024)

In November 2008, the OBC Bone Anchored Hearing Aid System (Oticon Medical) was cleared by the FDA for marketing through the 510(k) process. The FDA determined that this device was substantially equivalent to existing devices. Refer to the following website for more information: http://www.accessdata.fda.gov/cdrh_docs/pdf8/k082108.pdf. (Accessed September 23, 2024)

In September 2012, the Ponto Bone Anchored Hearing System (Oticon Medical) was cleared by the FDA for marketing through the 510(k) process. Refer to the following website for more information: https://www.accessdata.fda.gov/cdrh_docs/pdf12/K121228.pdf. (Accessed October 2, 2024)

In August 2021, the Ponto 5 Mini (Oticon Medical) was cleared by the FDA for marketing through the 510(k) process. Refer to the following website for more information: https://www.accessdata.fda.gov/cdrh_docs/pdf21/K211640.pdf. (Accessed October 2, 2024)

Other bone anchored hearing aid devices have also been cleared by the FDA. Refer to the following website for more information (use product code LXB or MAH): http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMN/pmn.cfm. (Accessed October 2, 2024)

Partially Implantable Bone-Anchored Hearing Aids or Devices

The partially implanted Otomag Alpha 1 (M) Bone Conduction Hearing System (Sophono, Inc.) received FDA clearance in May 2011 as a bone conduction hearing aid. The Otomag Alpha 1 Sound Processor is intended for use with the Otomag Headband or Otomag Sofiband (no age limitations), or with the Otomag Magnetic Implant (patients 5 years of age and up) for the following patients and indications:

- Patients with conductive or mixed hearing loss, who can still benefit from amplification of sound. The pure tone average (PTA) bone conduction (BC) threshold for the indicated ear should be better than 45 dB HL (measured at 0.5, 1, 2, and 3 kHz)
- Bilateral fitting is applicable for most patients having a symmetrically conduction or mixed hearing loss. The difference between the left and right sides' BC thresholds should be less than 10 dB on average, measured at 0.5, 1, 2, and 4 kHz, or less than 15 dB at individual frequencies
- Patients who have a profound sensorineural hearing loss in one ear and normal hearing in the opposite ear, who for some reason will not or cannot use an AC CROS. The pure tone average (PTA) air conduction (AC) threshold of the hearing ear should be better than 20 dB HL (measured at 0.5, 1, 2, and 3 ki-z)

Refer to the following websites for more information about FDA clearances for Sophono hearing systems:

- http://www.accessdata.fda.gov/cdrh_docs/pdf10/K102199.pdf
- http://www.accessdata.fda.gov/cdrh_docs/pdf15/K153391.pdf

- https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpmn/pmn.cfm?ID=K132189
- https://www.accessdata.fda.gov/cdrh_docs/pdf12/K123962.pdf

(Accessed October 2, 2024)

The Cochlear Baha Attract System (Cochlear Americas, Centennial, CO) received FDA clearance on November 7, 2013. The Cochlear Baha Attract is intended for the following patients and indications for use:

- Patients aged 5 and older
- Patients who have a conductive or mixed hearing loss and can still benefit from sound amplification. The pure tone average bone-conduction hearing threshold (measured at 0.5, 1, 2, and 3kHz) should be better than or equal to 45 dB3 HL for use with the BP1 00 sound processor, and 55 dB HL for use with the BP1IO0 sound processor
- Bilateral fitting is intended for patients who meet the above criterion in both ears, with bilaterally symmetric moderate to severe conductive or mixed hearing loss
- Symmetrical bone-conductive thresholds are defined as less than a 10 dB3 average difference between ears (measured at 0.5, 1, 2, and 3 kHz), or less than a 15dB difference at individual frequencies
- Patients who suffer from unilateral sensorineural deafness in one ear with normal hearing in the other ear (i.e., Single-sided deafness: SSD). Normal hearing is defined as a pure tone average air-conduction hearing threshold (measured at 0.5, 1, 2, and 3 kHz) of better than or equal to 20d13 HL
- Baha for SSD is also indicated for any patient who is indicated for an air conduction contralateral routing of signals (AC CR08) hearing aid, but who for some reason cannot or will not use an AC CR08

Refer to the following website for more information: http://www.accessdata.fda.gov/cdrh_docs/pdf13/K131240.pdf. (Accessed October 2, 2024)

The Bonebridge (MED-EL), a transcutaneous bone-conduction hearing device was cleared by the FDA via the de novo regulatory pathway on July 20, 2018. The FDA subsequently granted 510(k) marketing clearance (K183373) in March 2019. The Bonebridge bone conduction hearing implant system is intended for the following patients and indications:

- Patients 12 years of age or older
- Patients who have a conductive or mixed hearing loss and can still benefit from sound amplification. The pure tone average (PTA) bone conduction (BC) threshold (measured at 0.5,1, 2, and 3 kHz) should be better than or equal to 45 dB HL
- Bilateral fitting of the Bonebridge is intended for patients having a symmetrically conductive or mixed hearing loss. The difference between the left and right sides' BC thresholds should be less than 10 dB on average measured at 0.5, 1, 2, and 3 kHz, or less than 15 dB at individual frequencies
- Patients who have profound sensorineural hearing loss in one ear and normal hearing in the opposite ear [i.e., single-sided deafness (SSD)]. The pure tone average air conduction hearing thresholds of the hearing ear should be better than or equal to 20 dB HL (measured at 0.5, 1, 2, and 3 kHz)
- The Bonebridge for SSD is also indicated for any patient who is indicated for an air-conduction contralateral routing of signals (AC CROS) hearing aid, but who for some reason cannot or will not use an AC CROS
- Before receiving the device, it is recommended that an individual have experience with appropriately fit air conduction or bone conduction hearing aids

Refer to the following websites for more information:

- https://www.accessdata.fda.gov/cdrh_docs/pdf17/DEN170009.pdf
- https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMN/pmn.cfm?ID=K183373

(Accessed October 2, 2024)

In 2019, Cochlear's Osia System and Cochlear's™ Osia 2 System (Cochlear Americas, Englewood, CO) were FDA 510(k) approved as Class II devices (K190589, K191921) as active implantable bone conduction hearing systems. Both the Osia System and the Osia 2 System are made up of several components. The Osia Implant (OSI100) consists of a receiver/stimulator and an actuator (vibrator) which is surgically implanted on the skull bone. The Osia 2 Implant (OSI200) consists of a receiver/coil and an actuator/stimulator (vibrator) which is also surgically implanted on the skull bone. The external component of the Osia System is a sound processor, worn off-the-ear, which picks up the sound from the environment, and sends, after processing, the information to the implant via a transcutaneous inductive link. This link is also referred to as a radiofrequency (RF) link. Each Osia System or Osia 2 System is configured to meet an individual's hearing needs, using dedicated fitting software. The Osia System and Osia 2 System use a Piezo Power™ transducer that sits within the OSI100/OSI200 Implant. The transducer is positioned under the skin to send sound to the cochlea. The OSI100/OSI200 Implant is positioned on top of the bone, connected to the BI300 Implant (in the same manner as that used in Baha® Connect/Attract), and osseointegrated into the bone; this gives an important single point of transmission for

sound. The system has a fitting range of 55 dB SNHL. Per the FDA, both the Osia System and the Osia® 2 System are intended for the following patients and indications:

- Patients 12 years of age or older
- Patients who have a conductive or mixed hearing loss and can still benefit from sound amplification. The pure tone average (PTA) bone conduction (BC) threshold (measured at 0.5, 1, 2, and 3 kHz) should be better than or equal to 55 dB HL
- Bilateral fitting of either the Osia System or the Osia® 2 System is intended for patients having a symmetrically conductive or mixed hearing loss. The difference between the left and right sides' BC thresholds should be less than 10 dB on average measured at 0.5, 1, 2, and 3 kHz, or less than 15 dB at individual frequencies
- Patients who have profound sensorineural hearing loss in one ear and normal hearing in the opposite ear (i.e., single-sided deafness or "SSD"). The pure tone average air conduction hearing thresholds of the hearing ear should be better than or equal to 20 dB HL (measured at 0.5, 1, 2, and 3 kHz)
- The Osia System and the Osia® 2 System for SSD are also indicated for any patient who is indicated for an air-conduction contralateral routing of signals (AC CROS) hearing aid, but who for some reason cannot or will not use an AC CROS. Page 9 of 23 Medical Coverage Policy: 0093
- Prior to receiving the device, it is recommended that an individual have experience with appropriately fitted air conduction or bone conduction hearing aids"

The FDA subsequently granted 510(k) marketing clearance for the Class II devices (K190589, K191921) for the Oasis in November 2019. Refer to the following websites for more information. Refer to the following website for more information: https://www.accessdata.fda.gov/cdrh_docs/pdf19/K191921.pdf. (Accessed October 2, 2024)

Non-Implantable Bone-Conduction Hearing Aids

In 2000, the FDA cleared the BAHA headband. The BAHA with headband is intended for patients who suffer from moderate to severe conductive hearing losses. BAHA with headband may be particularly useful for conductive losses compounded by congenital or secondary obstruction of auditory air conduction mechanisms. Refer to the following website for more information: http://www.accessdata.fda.gov/scripts/cdrh/devicesatfda/index.cfm?db=pmn&id=K002913. (Accessed October 2, 2024)

In 2009, the FDA cleared the Cochlear Baha BP100 sound processor that is intended for use with the Baha auditory osseointegrated implant (for children aged 5 and older, or adults), or with the Baha Headband or Baha Softband (no age limitations) for the following patients and indications:

- Patients who have a conductive or mixed hearing loss can still benefit from sound amplification. The pure tone average bone-conduction hearing threshold (measured at 0.5, 1, 2, and 3 kHz) should be better than or equal to 45 dB HL
- Bilateral fitting of the BP100 is intended for patients who meet the above criterion in both ears, with bilaterally symmetric moderate to severe conductive or mixed hearing loss. Symmetrical bone-conduction thresholds are defined as less than a 10 dB average difference between ears (measured at 0.5, 1, 2, and 3 kHz), or less than a 15 dB difference at individual frequencies
- Patients who suffer from unilateral sensorineural deafness in one ear with normal hearing in the other ear (i.e., single-sided deafness or "SSD"). Normal hearing is defined as a pure tone average air-conduction hearing threshold (measured at 0.5, 1, 2, and 3 kHz) of better than or equal to .20 dB HL
- Baha for SSD is also indicated for any patient who is indicated for an air conduction contralateral routing of signals (AC CROS) hearing aid, but who for some reason cannot or will not use an AC CROS

Refer to the following website for more information: http://www.accessdata.fda.gov/cdrh_docs/pdf9/K090720.pdf. (Accessed October 2, 2024).

The BAHA SoundArc received FDA clearance on June 7, 2017. The BAHA SoundArc is intended for patients who cannot or choose not to have an implant for the following indications for use:

- Patients of any age who have a conductive or mixed hearing loss can still benefit from sound amplification. The pure tone average bone-conduction hearing threshold (measured at 0.5, 1, 2, and 3kHz) should be better than or equal to 45 dB HL for use with the BP100, Baha 4 and Baha 5 sound processors, 55 dB HL for use with the BP110 Power and Baha 5 Power sound processors, and better than or equal to 65 dB HL for use with the Cordelle II and Baha 5 SuperPower Sound Processors
- Bilateral fitting is intended for patients who meet the above criterion in both ears, with bilaterally symmetric moderate to severe conductive or mixed hearing loss. Symmetrical bone-conductive thresholds are defined as less than a 10 dB

average difference between ears (measured at 0.5, 1,2, and 3 kHz), or less than a 15dB difference at individual frequencies
- Patients who suffer from unilateral sensorineural deafness in one ear with normal hearing in the other ear (i.e., Single sided deafness: SSDTM). Normal hearing is defined as a pure tone average air-conduction hearing threshold (measured at 0.5, 1, 2, and 3 kHz) of better than or equal to 20 dB HL
- Baha for SSD is also indicated for any patient who is indicated for an air conduction contralateral routing of signals (AC CROS) hearing aid, but who for some reason cannot or will not use an AC CROS

Refer to the following website for more information: https://www.accessdata.fda.gov/cdrh_docs/pdf17/K171088.pdf. (Accessed October 2, 2024)

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 the FDA for use in children younger than 5 years.

In May 2010, the FDA cleared the Otomag Alpha 1(S) Sound Processor for use with the Otomag Headband or Otomag Softband (no age limitations) for the following patients and indications:
- Patients with conductive or mixed hearing losses, who can still benefit from amplification of sound. The pure tone average (PTA) bone conduction (BC) threshold for the indicated ear should be better than 45 dB HL (measured at 0.5, 1, 2, and 3 kHz)
- Bilateral fitting is applicable for most patients having a symmetrically conductive or mixed hearing loss. The difference between the left and right sides' BC thresholds should be less than 10OdB on average measured at 0.5, 1, 2, and 4 kHz, or less than 15 dB at individual frequencies
- Patients who have a profound sensorineural hearing loss in one ear and normal hearing in the opposite ear who for some reason will not or cannot use an AC CR05. The pure tone average (PTA) air conduction (AC) threshold of the hearing ear should be better than 20 dB H-IL (measured at 0.5, 1, 2 and 3 kl-z)

Refer to the following website for more information: http://www.accessdata.fda.gov/cdrh_docs/pdf10/K100193.pdf. (Accessed October 2, 2024)

In April 2018, the ADHEAR System was cleared by the FDA for marketing through the 510K process. The ADHEAR system is intended to treat patients of all ages with conductive hearing loss or single-sided deafness via bone conduction. The ADHEAR system is a non-invasive bone conduction hearing device which is retained on the patient's head with an elastic headband or an adhesive adapter that is placed behind the auricle.
Indications:
- Unilateral or bilateral conductive hearing loss, either chronic or temporary
  - The pure tone average bone-conduction hearing threshold (measured at 0.5, 1, 2, and 3 kHz) should be better than or equal to 25 dB HL
- Single-sided deafness (i.e., unilateral profound sensorineural deafness) with normal hearing on the contralateral side
  - Normal hearing is defined as a pure tone average air-conduction hearing threshold (measured at 0.5, 1, 2, and 3 kHz) of better than or equal to 20 dB HL

Refer to the following website for more information: https://www.accessdata.fda.gov/cdrh_docs/pdf17/K172460.pdf. (Accessed October 2, 2024)

Other non-implantable bone anchored hearing aid devices have also been cleared by the FDA. Refer to the following website for more information (use product code LXB): http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMN/pmn.cfm. (Accessed October 2, 2024)

Totally Implanted Middle Ear Hearing System

The Esteem® prosthetic hearing restoration device has been approved by the FDA. Refer to the following websites for more information:
- https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMA/pma.cfm?id=P090018
- https://www.accessdata.fda.gov/cdrh_docs/pdf9/p090018c.pdf
- https://www.accessdata.fda.gov/cdrh_docs/pdf9/p090018b.pdf

(Accessed October 2, 2024)

Intraoral Bone Conduction Hearing Aid

The SoundBite Hearing System received FDA clearance in 2011. In 2015, Sonutis Medical filed bankruptcy and manufacturing of this device ceased. Refer to the following websites for more information:

- http://www.accessdata.fda.gov/cdrh_docs/pdf10/K100649.pdf
- http://www.accessdata.fda.gov/cdrh_docs/pdf11/K110831.pdf

(Accessed September 25, 2024)

Laser or Light-Based Contact Hearing Aid

- In April 2016, the FDA cleared the Earlens Contact Hearing Device via 501(k) regulatory pathway. It is indicated for individuals 18 years and older with a mild to severe sensorineural hearing impairment who can benefit from amplification. The device can provide the full spectrum of amplification that includes 125 Hz – 10,000 Hz. Refer to the following websites for more information: https://www.accessdata.fda.gov/cdrh_docs/pdf15/K153634.pdf.

(Accessed October 2, 2024)

References

American Academy of Otolaryngology-Head and Neck Surgery (AAO-HNS). Active Middle Ear Implants Position Statement. 2016. Available at: https://www.entnet.org/resource/position-statement-active-middle-ear-implants/. Accessed September 24, 2024.

American Academy of Otolaryngology-Head and Neck Surgery (AAO-HNS) Bone Conduction Hearing Devices Position Statement. 2016, revised 2021. Available at: http://www.entnet.org/content/position-statement-bone-conduction-hearing-devices. Accessed September 24, 2024.

Arbogast TL, Moore BCJ, Puria S, et al. Achieved gain and subjective outcomes for a wide-bandwidth contact hearing aid fitted using CAM2. Ear Hear. 2019 May/Jun;40(3):741-756.

Barbara M, Filippi C, Covelli E, et al. Ten years of active middle ear implantation for sensorineural hearing loss. Acta Otolaryngol. 2018 May 31:1-8.

Gantz BJ, Perkins R, Murray M, et al. Light-Driven Contact Hearing Aid for Broad-Spectrum Amplification: Safety and Effectiveness Pivotal Study. Otol Neurotol. 2017 Mar;38(3):352-359.

Gurgel RK, Curtis SH, Shelton C. A novel intraoral bone conduction hearing prosthesis: one-year safety and efficacy study. Otol Neurotol. 2015 Jan;36(1):106-10.

Kentucky Administrative Regulations. Cabinet for Health and Family Services - Department for Medicaid Services. 907 KAR 1:038. Hearing Program coverage provisions and requirements. https://apps.legislature.ky.gov/law/kar/907/001/038.pdf. Accessed January 15, 2025.

Klein K, Nardelli A, Stafinski T. A systematic review of the safety and effectiveness of fully implantable middle ear hearing devices: the carina and esteem systems. Otol Neurotol. 2012 Aug;33(6):916-21.

Moore BC, Popelka GR. Preliminary comparison of bone-anchored hearing instruments and a dental device as treatments for unilateral hearing loss. Int J Audiol. 2013 Jul 17.

Ontario Health (Quality). Implantable devices for single-sided deafness and conductive or mixed hearing loss: a health technology assessment. Ont Health Technol Assess Ser. 2020 Mar 6;20(1):1-165.

Pulcherio JO, Bittencourt AG, Burke PR, et al. Carina® and Esteem®: a systematic review of fully implantable hearing devices. PLoS One. 2014 Oct 17;9(10):e110636.

Shohet JA, Kraus EM, Catalano PJ, et al. Totally implantable hearing system: Five-year hearing results. Laryngoscope. 2018 Jan;128(1):210-216.

Policy History/Revision Information

Date	Summary of Changes
04/01/2025	**Definitions** • Removed definition of “Frequency Modulated Systems (Auditory Trainers)” **Supporting Information** • Updated *Description of Services*, *Clinical Evidence*, and *FDA* sections to reflect the most current information

Date	Summary of Changes
	• Archived previous policy version CS052KY.09

Instructions for Use

This Medical Policy provides assistance in interpreting UnitedHealthcare standard benefit plans. When deciding coverage, the federal, state, or contractual requirements for benefit plan coverage must be referenced as the terms of the federal, state, or contractual requirements may differ from the standard plan. In the event of a conflict, federal, state, or contractual requirements govern. Before using this policy, please check the federal, state, or contractual requirements for benefit plan coverage. UnitedHealthcare reserves the right to modify its Policies and Guidelines as necessary. This Medical Policy is provided for informational purposes. It does not constitute medical advice.

UnitedHealthcare uses InterQual® for the primary medical/surgical criteria, and the American Society of Addiction Medicine (ASAM) for substance use, in administering health benefits. If InterQual® does not have applicable criteria, UnitedHealthcare may also use UnitedHealthcare Medical Policies, Coverage Determination Guidelines, and/or Utilization Review Guidelines that have been approved by the Kentucky Department for Medicaid Services. The UnitedHealthcare Medical Policies, Coverage Determination Guidelines, and Utilization Review Guidelines are intended to be used in connection with the independent professional medical judgment of a qualified health care provider and do not constitute the practice of medicine or medical advice.