

## Best Evidence Statement (BEST)

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### Topic and/or question as originally asked

Should children with aural atresia get an atresiaplasty or should they use amplification such as the Baha system (with or without the implant)? Which has the better hearing outcome?

### Clinical Question

P (population/problem) Among pediatric patients with aural atresia  
I (intervention) does an atresiaplasty  
C (comparison) versus a Baha system  
O (outcome) improve post-surgical aided and/or unaided hearing levels?

**Recommendation** (See Table of Recommendation Strength following references)

There is insufficient evidence and a lack of consensus to make an audiologic recommendation for atresiaplasty versus the Baha system.

### Research agenda:

It is recommended that data collection among children who have had atresiaplasties and children who have had Baha surgery be done to provide more information about options for children with aural atresia.

### Discussion/summary of evidence

While there is some preliminary evidence to suggest that there are better hearing outcomes from the use of an osseointegrated Baha system, the number of subjects included in the published studies is very small. (Evans and Kazahaya, 2007 [4a], Yellon, 2007 [4b], Lustig, et al., 2001 [4b]) Audiometric analysis for those subjects who had atresiaplasty varied considerably in the published literature, with definitions of success that are not consistent with pediatric management. (Digoy & Cueva 2007 [4b], Chang, Choi, & Hur 2006 [4b], De La Cruz & Teufert 2003 [4a], and Lambert 1998 [4a], Yellon, 2009 [4b]; ). Audiologists often define success for children as having a 15dB speech reception threshold or better in order to function in a classroom without amplification (Flexer, 2004 [5], Bess, Dodd, and Parker 1998 [3a]). Surgeon proficiency (Patel and Shelton, 2007 [4b]) quality of surgical candidacy (De Alarcon and Choo, 2007 [5], Jarhsdoerfer, et al., 1992 [4b]) and cost should also be taken into consideration (Evans and Kazahaya, 2007 [4a]). The group consensus is that this body of evidence has a moderate grade. There are multiple studies that address this clinical question but the study designs are weak and results are inconsistent and do not provide strong evidence for a recommendation.

### Health Benefits, Side Effects and Risks

Some improved access to hearing has been found with both atresiaplasty and Baha, but low level evidence shows better hearing outcome with Baha (Evans and Kazahaya, 2007 [4a], Yellon, 2007 [4b], Lustig, et al., 2001 [4b]). Atresiaplasty may not result in an ear canal that can retain a hearing aid or earmold. (De Alarcon and Choo, 2007 [5]) Repeat surgery/revision may be necessary to achieve optimal results with both atresiaplasty and Baha. (De Alarcon and Choo, 2007 [5], Yellon, 2007 [4b]) Anesthesia risks and risk of infection must be considered when surgery is involved. This is true for both atresiaplasty and Baha.

## References/citations

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Note: Full tables of evidence grading system available in separate document:

- [Table of Evidence Levels of Individual Studies by Domain, Study Design, & Quality](#) (abbreviated table below)
- [Grading a Body of Evidence to Answer a Clinical Question](#)
- [Judging the Strength of a Recommendation](#) (abbreviated table below)

**Table of Evidence Levels** (see note above)

<i>Quality level</i>	<i>Definition</i>
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain
3a or 3b	Fair study design for domain
4a or 4b	Weak study design for domain
5	Other: General review, expert opinion, case report, consensus report, or guideline

†a = good quality study; b = lesser quality study

**Table of Recommendation Strength** (see note above)

<i>Strength</i>	<i>Definition</i>
“Strongly recommended”	There is consensus that benefits clearly outweigh risks and burdens (or visa-versa for negative recommendations).
“Recommended”	There is consensus that benefits are closely balanced with risks and burdens.
No recommendation made	There is lack of consensus to direct development of a recommendation.

**Dimensions:** In determining the strength of a recommendation, the development group makes a considered judgment in a consensus process that incorporates critically appraised evidence, clinical experience, and other dimensions as listed below.

1. Grade of the Body of Evidence (see note above)
2. Safety / Harm
3. Health benefit to patient (*direct benefit*)
4. Burden to patient of adherence to recommendation (*cost, hassle, discomfort, pain, motivation, ability to adhere, time*)
5. Cost-effectiveness to healthcare system (*balance of cost / savings of resources, staff time, and supplies based on published studies or onsite analysis*)
6. Directness (*the extent to which the body of evidence directly answers the clinical question [population/problem, intervention, comparison, outcome]*)
7. Impact on morbidity/mortality or quality of life

## Supporting information

### Introductory/background information

Parents of children born with aural atresia eventually make a choice about treatment options for their child. In choosing to treat the atresia, they may opt for a traditional bone conduction hearing aid, a Baha system, atresioplasty to create an ear canal/middle ear, or no interventions at all. In the course of making this decision they may ask their child’s audiologist for treatment outcome information to aid them in making the decision. At CCHMC, the treatment options most often pursued are either the Baha system or an atresioplasty. What evidence exists to show that one treatment may be better than another?

### Group/team members

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### **Search strategy**

**Databases:** Ovid MEDLINE ®, PubMed Clinical Queries and Google

**Search Terms:** Atresia, microtia, atresioplasty, hearing, children, Baha, hearing aids

**Limits:** English language and humans

**Known conflicts of interest:** Group members have no conflicts of interest to declare.

Copies of this Best Evidence Statement (BEST) are available online and may be distributed by any organization for the global purpose of improving child health outcomes. Website address: <http://www.cincinnatichildrens.org/svc/alpha/h/health-policy/ev-based/default.htm>

Examples of approved uses of the BEST include the following:

- copies may be provided to anyone involved in the organization's process for developing and implementing evidence based care;
- hyperlinks to the CCHMC website may be placed on the organization's website;
- the BEST may be adopted or adapted for use within the organization, provided that CCHMC receives appropriate attribution on all written or electronic documents; and
- copies may be provided to patients and the clinicians who manage their care.

Notification of CCHMC at [HPCEInfo@cchmc.org](mailto:HPCEInfo@cchmc.org) for any BEST adopted, adapted, implemented or hyperlinked by the organization is appreciated.

*Additionally for more information about CCHMC Best Evidence Statements and the development process, contact Center for Professional Excellence/Research and Evidence-based Practice office at [CPE-EBP-Group@chmcc.org](mailto:CPE-EBP-Group@chmcc.org)*

### **Note**

**This Best Evidence Statement addresses only key points of care for the target population; it is not intended to be a comprehensive practice guideline. These recommendations result from review of literature and practices current at the time of their formulation. This Best Evidence Statement does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the recommendations to meet the specific and unique requirements of individual patients. Adherence to this Statement is voluntary. The clinician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.**

**Reviewed against quality criteria by 2 independent reviewers**