

# Auditory brain stem implants

Interventional procedures guidance

Published: 26 January 2005

[nice.org.uk/guidance/ipg108](https://www.nice.org.uk/guidance/ipg108)

## Your responsibility

This guidance represents the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, healthcare professionals are expected to take this guidance fully into account. However, the guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

Commissioners and/or providers have a responsibility to implement the guidance, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations. Nothing in this guidance should be interpreted in a way that would be inconsistent with compliance with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

## 1 Guidance

- 1.1 Current evidence on the safety and efficacy of auditory brain stem implants appears adequate to support the use of this procedure by surgical teams experienced in this technique, provided that normal arrangements are in place for consent, audit and clinical governance.

## 2 The procedure

### 2.1 *Indications*

- 2.1.1 This procedure is used to treat total deafness in both ears caused by damage to the vestibulocochlear nerve as a result of tumours or surgery.
- 2.1.2 In people with vestibulocochlear nerve damage, hearing is not improved by hearing aids or cochlear implants.

### 2.2 *Outline of the procedure*

- 2.2.1 The cochlear nucleus lies in the brain stem and is responsible for processing sound signals carried from the ear through the vestibulocochlear nerve. Auditory brain stem implants are electrodes placed in the cochlear nucleus.
- 2.2.2 Removal of vestibulocochlear nerve tumours and placement of auditory brain stem implants are often done at the same time. An incision is made in the skin on the side of the head and some of the bone behind the ear is removed. This exposes the tumour so that it can be removed and also allows access to the brain stem beneath it. The electrodes can then be implanted into the cochlear nucleus. The brain stem may sometimes be approached through the back of the head. People with auditory brain stem implants wear an external receiver and speech processor. This device converts sounds into electrical signals, which are then sent to the implant.

### 2.3 *Efficacy*

- 2.3.1 The evidence was limited to case series data. One study reported that 85% (75/88) of patients received auditory sensations when their implants were activated. In another study, some hearing was reported in 94% (51/54) of patients. For more details, refer to the Sources of evidence section.
- 2.3.2 One Specialist Advisor commented that results were unpredictable.

## 2.4 *Safety*

- 2.4.1 The main complications reported in the identified studies were: cerebrospinal fluid leak 3% (2/61); meningitis 2% (1/61); and pulmonary embolism 2% (1/54). A study of 61 patients reported no severe or serious non-auditory sensations. Tingling in various parts of the body was reported to be 'not uncommon' in a study of 88 patients. For more details, refer to the Sources of evidence section.
- 2.4.2 The Specialist Advisors listed the potential adverse effects of the procedure as death, damage to lower cranial nerves, intracranial haematoma/brainstem stroke, meningitis, and implant-related infection.

## 2.5 *Other comments*

- 2.5.1 This procedure is suitable for a small proportion of patients who have complete hearing loss for whom no alternative treatment would restore hearing. In the UK, this procedure has been performed on only a small number of patients in a limited number of hospitals.
- 2.5.2 Long-term data are needed for this procedure.

Andrew Dillon  
Chief Executive  
January 2005

## 3 Further information

### *Sources of evidence*

The evidence considered by the Interventional Procedures Advisory Committee is described in the following document.

'Interventional procedure overview of auditory brain stem implants', December 2002.

## *Information for patients*

NICE has produced [information on this procedure for patients and carers](#) ('Understanding NICE guidance'). It explains the nature of the procedure and the guidance issued by NICE, and has been written with patient consent in mind.

### **4 About this guidance**

NICE interventional procedure guidance makes recommendations on the safety and efficacy of the procedure. It does not cover whether or not the NHS should fund a procedure. Funding decisions are taken by local NHS bodies after considering the clinical effectiveness of the procedure and whether it represents value for money for the NHS. It is for healthcare professionals and people using the NHS in England, Wales, Scotland and Northern Ireland, and is endorsed by Healthcare Improvement Scotland for implementation by NHSScotland.

This guidance was developed using the NICE [interventional procedure guidance](#) process.

We have produced a [summary of this guidance for patients and carers](#). Information about the evidence it is based on is also [available](#).

#### **Changes since publication**

26 January 2012: minor maintenance.

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Implementation of this guidance is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement the guidance, in their local context, in light of their duties to avoid unlawful discrimination and to have regard to promoting equality of opportunity. Nothing in this guidance should be interpreted in a way which would be inconsistent with compliance with those duties.

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## *Endorsing organisation*

This guidance has been endorsed by [Healthcare Improvement Scotland](#).