NICE National Institute for Health and Care Excellence

NICE guidance

Auditory brain stem implants

HealthTech guidance
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www.nice.org.uk/guidance/htg65

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, and specifically any special arrangements relating to the introduction of new interventional procedures. 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.

All problems (adverse events) related to a medicine or medical device used for treatment or in a procedure should be reported to the Medicines and Healthcare products Regulatory Agency using the Yellow Card Scheme.

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. Providers should ensure that governance structures are in place to review, authorise and monitor the introduction of new devices and procedures.

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.

Contents

This guidance replaces IPG108.

1 Recommendations

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, see the overview.

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, see the overview.

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.

3 Further information

Sources of evidence

The evidence considered by the committee is in the overview.

Information for patients

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

Update information

Minor changes since publication

January 2026: Interventional procedures guidance 108 has been migrated to HealthTech guidance 65. The recommendations and accompanying content remain unchanged.

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Endorsing organisation

This guidance has been endorsed by Healthcare Improvement Scotland.