

NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Interventional procedures consultation document

Stereotactic radiosurgery for trigeminal neuralgia

Typical trigeminal neuralgia is sudden, severe facial pain, usually affecting one side of the face and lasting for a few seconds to about 2 minutes. Some people have a more continuous aching, throbbing, or burning sensation. It can be caused by pressure on the trigeminal nerve, which carries pain signals from the face to the brain. In this procedure, radiation is focused at the trigeminal nerve to damage it and stop it carrying pain signals. The aim is to relieve pain.

NICE is looking at stereotactic radiosurgery for trigeminal neuralgia. This is a review of NICE's interventional procedures guidance on stereotactic radiosurgery for trigeminal neuralgia using the gamma knife.

NICE's interventional procedures advisory committee met to consider the evidence and the opinions of professional experts, who are consultants with knowledge of the procedure.

This document contains the [draft guidance for consultation](#). Your views are welcome, particularly:

- comments on the draft recommendations
- information about factual inaccuracies
- additional relevant evidence, with references if possible.

NICE is committed to promoting equality of opportunity, eliminating unlawful discrimination and fostering good relations between people with particular protected characteristics and others.

This is not NICE's final guidance on this procedure. The draft guidance may change after this consultation.

After consultation ends, the committee will:

- meet again to consider the consultation comments, review the evidence and make appropriate changes to the draft guidance
- prepare a second draft, which will go through a [resolution process](#) before the final guidance is agreed.

Please note that we reserve the right to summarise and edit comments received during consultation or not to publish them at all if, in the reasonable opinion of NICE, there are a lot of comments or if publishing the comments would be unlawful or otherwise inappropriate.

Closing date for comments: 18 October 2021

Target date for publication of guidance: January 2022

1 Draft recommendations

- 1.1 Evidence on the safety and efficacy of stereotactic radiosurgery for trigeminal neuralgia is adequate to support using this procedure provided that standard arrangements are in place for clinical governance, consent and audit. Find out [what standard arrangements mean on the NICE interventional procedures guidance page](#).
- 1.2 For auditing the outcomes of this procedure, the main efficacy and safety outcomes identified in this guidance can be entered into [NICE's interventional procedure outcomes audit tool](#) (for use at local discretion).
- 1.3 Patient selection should be done by a multidisciplinary team experienced in managing trigeminal neuralgia.
- 1.4 The procedure should only be done in specialist centres.

2 The condition, current treatments and procedure

The condition

- 2.1 Trigeminal neuralgia is a chronic pain condition that affects the trigeminal (fifth) cranial nerve, one of the most widely distributed nerves in the head. The pain occurs in areas supplied by the trigeminal nerve: the cheeks, jaw, teeth, gums, lips and around the eye or forehead. The typical form, type 1, causes sudden and severe facial pain, usually affecting 1 side of the face and lasting for a few seconds or minutes. It may be triggered by touch, talking, eating or brushing teeth. Atypical trigeminal neuralgia (type 2) is characterised by constant aching, burning, or stabbing pain of lower intensity than type 1. Some people have both types.

- 2.2 Trigeminal neuralgia can be idiopathic or may be caused by pressure on the trigeminal nerve from an artery or a vein (primary trigeminal neuralgia). It can also result from a medical condition such as a tumour, multiple sclerosis or injury (secondary trigeminal neuralgia).

Current treatments

- 2.3 Medication is the first-line treatment for trigeminal neuralgia. Other treatment options are considered for people who experience severe pain despite medication, or who have side effects from medication.
- 2.4 Percutaneous treatments include glycerol injection, radiofrequency lesioning (applying short bursts of radiofrequency to the nerve through a needle), and balloon microcompression (inflating a balloon near the nerve). The aim being to damage the trigeminal nerve and stop the transmission of pain signals. These procedures typically have high recurrence rates.
- 2.5 Microvascular decompression is a more invasive procedure involving opening the skull to relieve the pressure on the trigeminal nerve. This can provide longer lasting relief but carries a risk of potentially serious complications such as facial numbness, hearing loss, stroke and death.

The procedure

- 2.6 Stereotactic radiosurgery for trigeminal neuralgia uses precisely focused multiple beams aimed at the trigeminal nerve where it enters the brainstem, to deliver a high dose of ionising radiation in a single treatment session. It does not require open surgery, needle insertion or general anaesthesia. The aim is to damage the trigeminal nerve and stop the transmission of pain signals as with other percutaneous techniques.

- 2.7 There are different systems available for stereotactic radiosurgery and details of the techniques vary. In one system, a metal frame is attached to the patient's head with 4 pins inserted through the scalp under local anaesthetic. An imaging procedure (usually MRI) is used to accurately locate the target area for treatment. The patient lies with their head in a treatment machine for 20 minutes to 2 hours while the radiation is given. The frame and pins are removed before the patient goes home. In another system, a thermoplastic mask that covers the face is made for each patient. CT and MRI scans are used to locate the target. The radiosurgery is done using a robotic arm positioned over the patient, and takes about 40 to 50 minutes.
- 2.8 It can take a few weeks or months for the patient to notice any change after stereotactic radiosurgery.

3 Committee considerations

The evidence

- 3.1 NICE did a rapid review of the published literature on the efficacy and safety of this procedure. This comprised a comprehensive literature search and detailed review of the evidence from 19 sources, which was discussed by the committee. The evidence included 4 systematic reviews, 1 randomised controlled trial, 2 case series, 1 cohort study and 11 case reports. It is presented in [the summary of key evidence section in the interventional procedures overview](#). Other relevant literature is in the appendix of the overview.
- 3.2 The professional experts and the committee considered the key efficacy outcomes to be: pain relief, improved quality of life, and need for retreatment.

- 3.3 The professional experts and the committee considered the key safety outcomes to be: dysaesthesia, damage to nerves and other surrounding structures, and radiation-induced malignancy.

Committee comments

- 3.4 The committee was pleased to receive a detailed submission from a patient organisation which outlined how trigeminal neuralgia can adversely affect the lives of people with multiple sclerosis. It noted the positive benefit that some people with trigeminal neuralgia secondary to multiple sclerosis have had from this procedure.
- 3.5 The committee noted that trigeminal neuralgia is a very painful condition that can negatively affect a person's quality of life.
- 3.6 The committee noted that some people experience relapse but retreatment is possible.
- 3.7 There are different devices available for the procedure, which use different targeting techniques.
- 3.8 None of the evidence considered by the committee used proton beam therapy.

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Vice chair, interventional procedures advisory committee

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