

**NATIONAL INSTITUTE FOR HEALTH AND CARE  
EXCELLENCE**

**Interventional procedures consultation document**

**Repetitive short-pulse transscleral  
cyclophotocoagulation for glaucoma**

Glaucoma is a progressive condition that causes increased pressure in the eye. This damages the optic nerve, which connects the eye to the brain, and can lead to permanent sight loss. In this procedure, some of the cells in the eye that produce fluid are destroyed using repeated short pulses of laser energy (transscleral cyclophotocoagulation). It is done under local or general anaesthesia and usually takes 10 to 20 minutes. The aim is to reduce fluid, and so pressure, in the eye. This may slow or stop damage to sight.

NICE is looking at transscleral cyclophotocoagulation for glaucoma.

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This document contains the [draft guidance for consultation](#).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 The draft guidance may change after this consultation.**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- meet again to consider the consultation comments, review the evidence and make appropriate changes to the draft guidance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: 25 September 2020

Target date for publication of guidance: February 2021

## 1 Draft recommendations

- 1.1 Evidence on the safety of repetitive short-pulse transscleral cyclophotocoagulation for glaucoma shows no major safety concerns. Evidence on efficacy is inadequate in quality. Therefore, this procedure should only be used in the context of research. Find out [what only in research means on the NICE website](#).
- 1.2 Further research should be randomised controlled trials comparing the procedure with standard care. It should report details of patient selection, particularly whether the glaucoma is refractory or non-refractory. Outcomes should include duration of effect.

## 2 The condition, current treatments and procedure

### The condition

- 2.1 Glaucoma is usually a chronic condition associated with raised intraocular pressure. The most common type of glaucoma in the UK is primary (or chronic) open-angle glaucoma. It leads to progressive damage to the optic nerve. Early stages are usually asymptomatic. But, as the condition progresses, it causes visual impairment and, if untreated, blindness.

## Current treatments

2.2 [NICE's guideline on glaucoma](#) describes its diagnosis and management. Treatment is usually eye drops containing drugs that either reduce aqueous humor production or increase its drainage. Surgical procedures such as trabeculectomy, drainage tubes, deep sclerectomy, viscocanalostomy and laser trabeculoplasty may also be used.

## The procedure

2.3 Cyclophotocoagulation (CPC) is a type of cycloablation using laser to treat glaucoma. It involves destroying the ciliary body by targeting the ciliary epithelium and stroma. This causes reduced aqueous secretion and so a fall in intraocular pressure. Standard transscleral CPC uses a continuous wave diode laser to target the melanin in the pigmented ciliary body epithelium. However, the continuous mode can damage collateral tissue and cause post-treatment complications. In repetitive short-pulse transscleral CPC (commonly known as micropulse transscleral CPC), the laser targets the same tissue but is delivered in pulses lasting microseconds. This allows the tissue to cool between pulses, with the aim of reducing collateral damage.

2.4 The procedure is normally done under local or general anaesthesia and usually takes 10 to 20 minutes. A probe is applied to the surface of the eye with firm pressure and moved in a continuous sliding motion over the upper or lower limbus of the eye, or both. To prevent ciliary neurovascular injury, the 3 and 9 o'clock positions are avoided. The device is set to deliver repetitive short-pulse (micropulse) laser energy with specified 'on' and 'off' times. Lower laser settings are used for patients with higher pigments to avoid overtreatment and inflammation. The laser treatment usually lasts between 100 seconds and 360 seconds per session. After the procedure, patients may need to wear an eye patch over the

treated eye for about 24 hours, and may be prescribed topical corticosteroids and antibiotics.

### **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 14 sources, which was discussed by the committee. The evidence included 1 randomised controlled study, 1 non-randomised comparative study, 1 retrospective cohort study, 8 case series and 3 case reports. It is presented in [table 2 of 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: reduced intraocular pressure and maintaining visual fields.
- 3.3 The professional experts and the committee considered the key safety outcomes to be: pain, hypotony and anterior chamber inflammation.
- 3.4 Eight commentaries from patients who have had this procedure were discussed by the committee.

#### **Committee comments**

- 3.5 There is some evidence of efficacy in patients with refractory glaucoma.
- 3.6 The committee was informed that the procedure may need to be repeated in some patients.

3.7 The committee noted that glaucoma is a common condition. It considered that, in this context, there was a lack of controlled studies of sufficient statistical power. This underpinned their recommendation for further research.

Tom Clutton-Brock

Chair, interventional procedures advisory committee

August 2020

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