

## Primary angle closure glaucoma and the effectiveness of lens extraction

**Researchers at Queen's University Belfast together with University of St Andrews and Aberdeen have found that the procedure used to remove cataracts is more successful than current standard treatments with laser in treating primary angle closure glaucoma – a leading cause of irreversible blindness worldwide.**

Professor Azuara-Blanco at the Centre for Public Health at Queen's led an international trial comparing two treatments for glaucoma – the standard treatment, or 'laser iridotomy', which uses a laser to open a tiny hole in the eye to allow fluid to drain away and reduce the increased eye pressure that causes glaucoma; and 'lens extraction with intraocular lens implantation', a surgical procedure to remove the eye's natural lens and replace it with an artificial plastic lens. The surgical technique of lens extraction and replacement with an artificial plastic lens has been used successfully for decades to restore vision in patients' with cataracts.

The Queen's-led Effectiveness in Angle-closure Glaucoma of Lens Extraction (EAGLE) study, supported by the Efficacy and Mechanism Evaluation (EME) Programme, a Medical Research Council (MRC) and National Institute Health Research (NIHR) partnership, compared the outcomes for 419 patients - 208 of whom received lens extraction treatment and 211 of whom received laser iridotomy. The patients were treated at hospitals in the UK, Singapore, Malaysia, Hong-Kong and Australia.

The results show that at three years, initial clear lens extraction surgery is more effective than standard laser treatment in terms of patient reported health and vision and for lowering eye pressure. Less eye drops are needed to control the glaucoma. Also, balancing costs and benefits, initial clear lens extraction surgery was more efficient for the NHS. The findings have been published in The Lancet Journal in October 2016.

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## Primary angle closure glaucoma

Explaining the condition, Professor Augusto Azuara-Blanco, from the Centre for Public Health at Queen's, who led the trial, said: "There are two major types of glaucoma, depending on the drainage channels that take the fluid outside the eye: open or closed

angle glaucoma. Angle closure glaucoma is less common but more severe. It is most prevalent among people of East Asian origin, and in the UK it accounts approximately for two out of 10 cases of glaucoma.

**It is also more cost-effective than the current standard treatment.**

"In angle closure glaucoma, the iris (coloured part of the eye) moves forward and blocks the

drainage channels that allow fluids to drain away from the eye. When the drainage channels are closed the inner eye pressure increases, and this leads to damage and impaired vision.

"For many years, this has been treated by using lasers to open tiny holes in the iris of the eye and open the drainage channels, allowing fluid to drain away. But we have found that removing the eye's own lens opens up the natural drainage channels more effectively, and patients are happier because many do not need to use glaucoma eye drops and their vision is improved.

This surgical technique has been used successfully for years to restore sight in patients with cataracts. Advances in technology and surgical techniques over the past decade mean that it is quite safe and it can now be used to treat people with this type of glaucoma. This trial is the first in which the two treatments have been compared."

## Improved patient outcomes

Professor Azuara-Blanco continued: "Patients who received the lens extraction and implantation were more likely to report better quality of life and better vision. It is also more cost-effective than the current standard treatment. Both options appear to be equally safe.

"Vision loss is costly to individuals and society and can have a huge impact on an individual's

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quality of life. The superiority of clear-lens extraction in terms of patient outcomes and cost-saving, along with the absence of any serious safety issues with this technique, should help contribute to a case for this approach to be considered as the initial treatment for people with primary angle closure glaucoma.”

## Acknowledgement

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### Editor's note:

The IGA was involved in this study as a patient representative.

## Primary Angle Closure Glaucoma

Our updated leaflet contains information on:

- Acute angle closure attack
- Sub-acute attack
- Chronic angle closure
- Relatives
- Driving

## IGA awards £220,000

The IGA works with a range of professional bodies to provide funding for glaucoma research. This includes the UK and Eire Glaucoma Society, the Royal College of Ophthalmologists, College of Optometrists and the Royal College of Nursing. During 2016 and 2017 the IGA has awarded £220,000 to help with the detection, diagnosis and treatment of glaucoma.

The Autumn 2016 issue included information on the joint award with the Royal College of Nursing whilst this issue provides information on one of two grants awarded with the Royal College of Ophthalmology. More information on the winners for the other grants can be found on our website [www.glaucoma-association.com/research](http://www.glaucoma-association.com/research)

### Professor John Sparrow – Bristol Eye Hospital

**Project:** 'Defining prevalence of chronic open angle glaucoma in a representative UK population: Gold Standard Stereoscopic Photographic Disc Grading'

**Amount:** £14,258.00. **Grant period:** 12 months

Estimates of the prevalence of chronic open angle glaucoma (COAG) vary, current estimates being around two per cent of Caucasians over 40 years of age, with higher prevalence in the elderly and people of black African heritage. Due to the considerable funding and logistical support required to conduct large population studies, relatively few prevalence studies have been performed worldwide. To date, in the United Kingdom only a single COAG prevalence study has been reported which sampled a relatively small sample of elderly individuals over three decades ago. Due to the demography of an ageing population, the widely used two per cent prevalence estimate may therefore no longer accurately represent disease prevalence in the population. Knowledge of current prevalence is of high value for healthcare service planning, in particular for service commissioners, care providers and organisations involved in glaucoma patient support.

Two large sample population studies, the Somerset and Avon Eye Study (SAES) and the Somerset and Avon Glaucoma Extension (SAGE), have been performed in the Bristol area. These collected data on a wealth of ocular characteristics, specifically including measurements key to the diagnosis of COAG on 2500 individuals of 40 years and over, resident in Bristol and the former county of Avon. At the time of data collection these studies had full ethical and regulatory approval.

The IGA's grant will help with the detailed analysis of the stereoscopic optic disc photographic data from these 2500 participants. This will help to provide a worked up and robust population based estimate of the prevalence of COAG.