

# Treatment or monitoring for people with ocular hypertension?

## Key Findings

People with ocular hypertension are at risk of developing glaucoma, a sight threatening condition. Current monitoring practice of repeat testing to detect early signs of glaucoma may overburden those affected and health services.

- We modelled alternative monitoring pathways. Our data suggest that service redesign focused on primary treatment with subsequent monitoring to assess treatment responsiveness rather than more testing to detect glaucoma should be considered.
- There is uncertainty regarding the optimal glaucoma risk threshold for initiating treatment.
- Further data to refine existing 5-year glaucoma risk prediction models and assess patient preferences for treatment are needed.

## What problem was this research addressing?

- Avoiding sight loss is a public health priority<sup>1</sup>. In the UK, around 24,000 people are newly registered with sight loss each year (blind and partial sight), with glaucoma being the second leading cause.<sup>2</sup> Ocular hypertension (OHT) is the main and only modifiable risk factor for glaucoma.<sup>3</sup> This prompts the question about how to best organise a monitoring programme for intraocular pressure (IOP) and thus prevent glaucoma.
- Current practice for monitoring involves measurement of IOP and testing to detect glaucoma, namely an assessment of the optic nerve and measurement of the visual field (hereafter referred to as a glaucoma testing).
- Treatment, usually long term daily eye drops, is initiated as a preventative treatment based on the level of IOP and the thickness of the cornea (the front window of the eye) which are recognised risk factors for developing glaucoma.

The UK National Institute for Health and Care Excellence (NICE) recommends long-term monitoring of OHT in a specialist-led service either in secondary care (consultant-led hospital eye service) or primary care (community optometry).<sup>4</sup> Thresholds for initiating treatment are related to glaucoma risk and recommended intervals for glaucoma assessment were informed by a budget impact analysis and expert opinion.<sup>4,5</sup> However, concerns have been raised that glaucoma services are overburdened with monitoring low-risk disease.<sup>6</sup>

## What this research adds

This study compares plausible alternative monitoring programmes for individuals with OHT (varying the types of glaucoma tests and test intervals, setting and treatment thresholds). The work reported here is part of a wider programme commissioned by the National Institute of Health Research, Health Technology Assessment programme to determine the optimum surveillance for people with OHT and is reported elsewhere in full.<sup>7</sup>

## Methods

Five alternative care pathways were compared using a discrete event simulation model. The pathways were: i) treatment at OHT diagnosis, irrespective of 5-year glaucoma risk, with annual IOP assessment and no glaucoma testing; ii & iii) biennial monitoring (either in primary or secondary care setting) with treatment initiated if baseline predicted 5-year glaucoma risk is  $\geq 6\%$ , IOP responsiveness assessment and subsequent two yearly glaucoma testing; iv & v) Pathways aligned to NICE glaucoma guidance<sup>4</sup>: Treatment thresholds defined by a NICE algorithm for glaucoma risk stratification and either conservative or intensive schedules for IOP measurement and glaucoma testing. Results were presented as average costs, number of individuals with glaucoma being detected and average quality-adjusted life years (QALYs) over a 20-year period.

## Policy relevance of research findings

For people with confirmed OHT, glaucoma testing more frequently than every 2 years is unlikely to be worthwhile. Treatment of OHT on diagnosis (e.g. with eye drops) and minimal monitoring (assessing treatment responsiveness in terms of IOP rather than repeat glaucoma testing) could be considered. However, further data to refine current 5-year glaucoma risk prediction models and to value patient preferences for treatment are needed.

## Research Findings

- Treating OHT at diagnosis was the least costly but least effective strategy in avoiding glaucoma and glaucoma progression (pathway i).
- Intensive monitoring aligned to NICE guidance was the most costly and most effective strategy (pathway v).
- Biennial monitoring (pathway iii) was less costly than intensive monitoring and provided more QALYs than the NICE pathways, but was unlikely to be cost-effective compared with treating OHT at diagnosis with a cost per QALY of £86,717 per additional QALY gained (with the NICE threshold being around £30,000).<sup>8</sup>

Findings were robust to risk thresholds for initiating monitoring but were sensitive to treatment threshold, NHS costs and treatment adherence.

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Further details of the project: <https://www.abdn.ac.uk/hsru/research/assessment/ophthalmology/optimal-surveillance-regimes/>

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