

MONITORING OCULAR HYPERTENSION



Balancing patients' preferences with cost-effective care.

BY ALMIQDAD SAEED, MD; RITHAMBARA RAMACHANDRAN, MD, MSC;
AND LAMA A. AL-ASWAD, MD, MPH

PATIENT PREFERENCES FOR OCULAR HYPERTENSION MONITORING: A DISCRETE CHOICE EXPERIMENT

Wu H, Hernández R, Crabb DP, et al¹
Industry support for this study: None

ABSTRACT SUMMARY

This multicenter study, conducted at four National Health Service sites across the United Kingdom, examined patients' preferences for monitoring their ocular hypertension (OHT). A total of 357 OHT patients participated; their mean age was 69 years.

The study employed a discrete choice experiment methodology. Participants received a mail survey that presented hypothetical monitoring scenarios to assess their preferences and estimate their willingness to pay (WTP). Key attributes included the type of health care provider (face-to-face hospital clinic, hospital-based virtual clinic, or community optometrist), monitoring frequency (6–24 months), travel time (15–60 minutes), use of a risk calculator, 10-year glaucoma risk (5%–20%), and cost (£40–£240).

The greatest influence on patients' decisions was the prospect of reducing their risk of developing glaucoma. Participants strongly preferred face-to-face hospital clinics and hospital-based virtual services over care led by a community optometrist. Patients who had a history of receiving care from community optometrists preferred community settings, however, highlighting the influence of prior care experiences. Participants favored a 12-month follow-up interval over the 6-, 18-, and 24-month options, and

STUDY IN BRIEF

- A multicenter study underscored the importance of incorporating patients' preferences into monitoring strategies for ocular hypertension to support their care, improve their level of engagement, and optimize their health outcomes. Factors that influenced participants' preferences included testing frequency, travel time, the type of health professional, and the cost of service. Patients exhibited a greater willingness to pay for services that reduced their risk of developing glaucoma.

WHY IT MATTERS

The highest priority of the patients with ocular hypertension in this study was to reduce their risk of conversion to glaucoma. Their willingness-to-pay threshold varied, however, based on service attributes. Aligning patients' preferences with efficient care models could therefore improve their visit attendance and their adherence to prescribed care while maintaining its cost-effectiveness.

they consistently preferred shorter travel times.

DISCUSSION

What are the current US guidelines for monitoring patients with OHT?

In the United States, OHT is typically defined as an IOP greater than 21 mm Hg without optic nerve damage. Accurate IOP measurements, however, can be difficult to obtain owing to variability in devices, corneal biomechanics, and optic nerve tolerance. In addition, IOP alone is a limited predictor of glaucomatous progression, making standardized monitoring guidelines difficult to establish. The US Preferred Practice Pattern for OHT recommends following up based on the individual's risk profile, with consideration given to comorbidities, family history, age, and other factors.² Low-risk patients may be seen annually or biennially, whereas high-risk patients

require more frequent visits. These recommendations align with the findings of Wu et al that most patients preferred a 12-month interval to more frequent monitoring.¹

There are no established guidelines on the relative weighting of risk factors, the provider type for follow-up, or how often visual field testing and optic nerve imaging should be performed.

How was WTP calculated and used in the study?

The marginal utility of each attribute—such as monitoring frequency, location, and glaucoma risk reduction—was estimated using a random utility framework. This multinomial logit model quantified the monetary value patients assigned to various aspects of their monitoring experience. WTP was calculated by dividing the marginal utility of each attribute by the negative coefficient of cost. The patients with OHT placed

a high value on reducing their risk of developing glaucoma (WTP £628 over 2 years for a 10% risk reduction) and preferred annual hospital-based monitoring (WTP £557 over 2 years for annual vs biennial visits).

A discrete choice experiment by Lu et al examined glaucoma patients'

preferences and calculated their WTP based on multiple routine care attributes.³ In that study, patients were willing to pay more to see a senior clinician and for continuity of care with the same provider. Unlike Wu et al,¹ Lu et al avoided bundling features, which reduced the risk of

masking individual preferences. The study by Wu et al, however, included actual price attributes, thus better capturing real-world cost-quality trade-offs. Understanding the different WTP methodologies is essential for accurately interpreting the studies' findings.

COST-EFFECTIVENESS OF MONITORING OCULAR HYPERTENSION BASED ON A RISK PREDICTION TOOL

Wu H, Gazzard G, King A, et al⁴

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ABSTRACT SUMMARY

A discrete event simulation model was constructed to compare the cost-effectiveness of a risk prediction (RP) strategy for monitoring OHT versus standard care in the United Kingdom. The RP approach employed a Cox proportional hazards model to estimate each patient's risk of conversion from OHT to open-angle glaucoma. The RP approach incorporated multiple clinical factors, including IOP, age, central corneal thickness (CCT), cup-to-disc ratio, pattern standard deviation, family history, and other relevant variables, to estimate each patient's risk of conversion from OHT to open-angle glaucoma. In contrast, treatment decisions in the standard care strategy were based solely on IOP, age, and CCT.

The analysis included data from 5,740 patients with either newly diagnosed or previously treated OHT (IOP $\geq$ 24 mm Hg). Although the RP strategy incurred higher costs, it generated more quality-adjusted life years, with an incremental cost-effectiveness ratio of £11,522 per quality-adjusted life year—well below the UK threshold of £20,000—making the approach highly cost-effective (96% probability). Increasing the risk threshold for initiating treatment (eg, to $\geq$ 12% over 5 years), however, had a significant impact on cost-effectiveness, which rendered the RP strategy

no longer cost-effective under the same threshold.

DISCUSSION

What did the Ocular Hypertension Treatment Study (OHTS) reveal about the risk of conversion from OHT to glaucoma and associated risk factors?

The OHTS identified elevated IOP, thinner CCT, larger vertical cup-to-disc ratio, older age, and early visual field defects as key glaucoma risk factors.⁵ In the 5-year trial, 9.5% of untreated patients developed glaucoma. Treatment halved the risk to 4.5%, and the 10-year results confirmed a sustained 50% risk reduction with treatment.⁶

The RP tool used in the study by Wu et al⁴ was developed using data from both the OHTS and the European Glaucoma Prevention Study (EGPS). Additional variables such as systemic hypertension, diabetes, and broader clinical factors from a more diverse patient population were incorporated.

How do the results of this study align with those of earlier research on the cost-effectiveness of OHT management?

The findings reported by Wu et al⁴ align with the OHTS results, emphasizing the clinical advantages

and cost-effectiveness of using RP and early intervention compared to a “treat-all” strategy or standard nonpersonalized care.

Additionally, a cost-utility analysis using a Markov model based on OHTS data found that treating only individuals who had an IOP of 24 mm Hg or higher and an annual glaucoma risk of at least 2% was more cost-effective than treating everyone who had elevated IOP.⁷ Similarly, Stewart et al conducted a multivariate regression analysis of the cohort of OHTS participants and found that targeting patients who were 20 years older than the overall cohort's average age of 56 years, had an IOP that was 4 mm Hg above the cohort's average of 25 mm Hg, a CCT that was 40 μ m thinner than the cohort's average of 573 μ m, and a vertical cup-to-disc ratio that was 0.2 larger than the OHTS average of 0.4 was a more cost-effective strategy for preventing glaucoma in OHT patients.⁸

In the study by Wu et al,⁴ although the RP strategy treated more patients (99% vs 47% receiving standard care), it remained more cost-effective in a base-case analysis. Generalizability of this study's results is limited, however, by the higher-risk and older

STUDY IN BRIEF

- ▶ A discrete event simulation model found that using a multifactorial risk prediction tool to guide decisions on the management of ocular hypertension was more cost-effective than standard care.

WHY IT MATTERS

The risk prediction tool cost-effectively prevented blindness in high-risk patients with ocular hypertension by prioritizing early treatment. The strategy's applicability, however, depends on risk thresholds and validation in broader populations.

patient cohort (mean age, 62 years vs 55.4 years in the OHTS). These findings underscore the value of risk-based stratification in guiding treatment decisions for OHT. ■

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JAMES C. TSAI, MD, MBA | SECTION EDITOR

- President, New York Eye and Ear Infirmary of Mount Sinai, and Delafield-Rodgers Professor and System Chair, Department of Ophthalmology, Icahn School of Medicine at Mount Sinai, New York
- Member, *GT* Editorial Advisory Board
- jtsai@nyee.edu
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LAMA A. AL-ASWAD, MD, MPH

- Vice Chair for Quality and Safety, Professor of Ophthalmology, Irene Heinz Given and John La Porte Given II Research Professor of Ophthalmology, and Director of Teleophthalmology, AI, and Innovations, University of Pennsylvania Perelman School of Medicine, Philadelphia
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- Financial disclosure: Consultant (Character); Employee (Envision Health Technologies, Visi Health Technologies); Equity owner (GlobeChek); Grant support and board membership (Save Vision Foundation); Medical advisor (AI Optics)

RITHAMBARA RAMACHANDRAN, MD, MSC

- Assistant Professor, University of Pennsylvania Perelman School of Medicine, Philadelphia
- Financial disclosure: None

ALMIQDAD SAEED, MD

- Postdoctoral ophthalmology innovation fellow, Penn Medicine, University of Pennsylvania Health System, Philadelphia
- Financial disclosure: None