# Cost-utility analysis of latanoprostene bunod eye drops in glaucoma treatment from the perspective of the Brazilian Unified Health System

## Análise de custo-utilidade do colírio latanoprosteno bunode no tratamento do glaucoma sob a perspectiva do Sistema Único de Saúde

**Vanessa Fernandes Ferreira**[1], **Ricardo Augusto Paletta Guedes**[1], **Alfredo Chaoubah**[1]

[1] Programa de Pós-Graduação de Saúde Coletiva, Universidade Federal de Juiz de Fora, Juiz de Fora, MG, Brasil.

**Como citar:**
Ferreira VF, Paletta Guedes RA, Chaoubah A. Cost-utility analysis of latanoprostene bunod eye drops in glaucoma treatment from the perspective of the Brazilian Unified Health System. Rev Bras Oftalmol. 2025;84:e0084.

**doi:**
https://doi.org/10.37039/1982.8551.20250084

**Descritores:**
Glaucoma, open-angle; Cost-effectiveness analysis; Unified Health System; Prostaglandins; Clinical protocols; Ophthalmic solutions

**Keywords:**
Glaucoma de ângulo aberto; Análise de custo-efetividade; Sistema Único de Saúde; Prostaglandinas; Protocolos clínicos; Soluções oftálmicas

**Received on:**
September 12, 2025

**Accepted on:**
September 29, 2025

**Corresponding author:**
Vanessa Fernandes Ferreira
E-mail: vanessafernandesfer@gmail.com

**Institution:**
Universidade Federal de Juiz de Fora, Juiz de Fora, MG, Brasil.

**Conflict of interest:**
no conflict of interest.

**Financial support:**
no financial support for this work.

**Data Availability Statement:**
The datasets generated and/or analyzed during the current study are included in the manuscript.

**Related academic work:**
Article derived from a master's thesis entitled Cost-Utility Analysis of Latanoprostene Bunod Eye Drops in the Primary Open-Angle Glaucoma Treatment from the Perspective of the Unified Health System, defended by Vanessa Fernandes Ferreira in the Graduate Program in Public Health at the Federal University of Juiz de Fora, in 2025.



## ABSTRACT

**Objective:** To evaluate the cost-utility of latanoprostene bunod 0.024% as first-line therapy compared to the strategy recommended by the Clinical Protocol and Therapeutic Guidelines for primary open-angle glaucoma of the Brazilian Unified Health System.

**Methods:** A cost-utility analysis was conducted using a hypothetical cohort and a Markov model. In the base-case scenario, the treatment strategy recommended by the Clinical Protocol and Therapeutic Guidelines was adopted, initiating therapy with timolol 0.5%. If the target intraocular pressure was not achieved, dorzolamide 2% and prostaglandin analogue were added. The comparator scenario considered latanoprostene bunod 0.024% as the initial treatment option, followed, when required, by the sequential addition of timolol 0.5% and dorzolamide 2%.

**Results:** The model analysis showed a cost-utility ratio of BRL 31,244.98 per Quality-Adjusted Life-Years for the latanoprostene bunod 0.024% strategy compared to the Brazilian Unified Health System strategy. Age at model entry was the parameter with the greatest impact on cost-utility ratio, resulting in a range from BRL 24,953.82 to BRL 50,284.30 per Quality-Adjusted Life-Years.

**Conclusion:** Both strategies provide gains in quality of life, and the incorporation of latanoprostene bunod 0.024% as a first-line medication for clinical management of primary open-angle glaucoma is considered cost-effective from the Brazilian Unified Health System perspective.

## RESUMO

**Objetivo:** Avaliar a relação de custo-utilidade incremental do colírio latanoprosteno bunode 0,024% como primeira linha terapêutica no glaucoma primário de ângulo aberto, em comparação ao tratamento atualmente recomendado pelo Protocolo Clínico e Diretrizes Terapêuticas do Sistema Único de Saúde.

**Métodos:** Foi realizada uma análise de custo-utilidade, por meio de uma coorte hipotética, utilizando modelo de Markov, na perspectiva orçamentária do sistema público de saúde. No cenário base, adotou-se a estratégia recomendada pelo Protocolo Clínico e Diretrizes Terapêuticas do glaucoma, assumindo início de tratamento com timolol 0,05%. Em caso de falha em atingir a pressão intraocular-alvo foram adicionados os colírios dorzolamida 2% e um análogo de prostaglandina. O cenário comparador considerou o uso do colírio latanoprosteno bunode 0,024% como a primeira opção terapêutica, seguido das associações de timolol 0,05% e dorzolamida 2%.

**Resultados:** Após a análise do modelo, verificou-se custo-utilidade incremental de R$ 31.244,98 por Anos de Vida Ajustados pela Qualidade para a estratégia com latanoprosteno bunode 0,024%, em comparação à estratégia do Sistema Único de Saúde. A idade de entrada no modelo foi o parâmetro que apresentou maior impacto no custo-utilidade incremental, gerando intervalo entre R$ 24.953,82 e R$ 50.284,30 por Anos de Vida Ajustados pela Qualidade.

**Conclusão:** Ambas as estratégias promovem ganhos em qualidade de vida, sendo a incorporação do colírio latanoprosteno bunode 0,024% como medicamento de primeira linha no tratamento clínico do glaucoma primário de ângulo aberto considerada custo-efetiva sob a perspectiva do Sistema Único de Saúde.

## INTRODUCTION

Glaucoma encompasses a group of progressive optic neuropathies marked by degeneration of retinal ganglion cells and their axons, leading to variable but characteristic and irreversible visual field loss.[1] Globally, glaucoma affects approximately 67 million people, of whom 10% are blind due to the disease.[2,3] In Latin America, according to estimates, cases of primary open-angle glaucoma (POAG) will increase from 6.22 million in 2020 to 10.20 million by 2040, because of the increase in life expectancy.[4]

Currently, the most clinically effective eye drops available under Brazil's Unified Health System (SUS) for treating POAG — namely, prostaglandin analogues — are, according to the Clinical Protocol and Therapeutic Guidelines for Glaucoma (PCDT), typically reserved for more advanced cases and are not initiated in the early stages unless prior treatments have failed.[2] Nonetheless, these medications remain the most frequently used in clinical practice according to DATASUS data and are also recommended as first-line therapy in other countries, indicating a need for more effective intraocular pressure (IOP) lowering eye drops.[5-7]

Medications play a critical role in healthcare systems; ensuring their availability, accessibility, rational use, cost-effectiveness and sustainability presents a challenge for many countries, particularly given increasing demand driven by population aging, unhealthy lifestyle habits, associated chronic conditions, medicalization, and pharmaceutical market pressures.[8]

Health Technology Assessment (HTA) studies offer formal decision-making frameworks to assist health managers in decisions regarding the incorporation and monitoring of medications.[9,10] Health Technology Assessment includes various study types, such as cost-utility analyses, which express outcomes in terms of both life span (mortality) and quality of life (morbidity). Quality-Adjusted Life-Years (QALYs) are a principal measure of effectiveness in such studies, and the associated health-related quality of life measures are termed utility measures.[11]

Latanoprostene bunod (LBN) is an emerging therapeutic alternative for POAG, currently unavailable in the SUS, and its cost-utility ratio remains unknown. It is a nitric oxide (NO)-donating prostaglandin analogue that, when applied topically, is metabolized into latanoprost acid and a NO-donating moiety (butanediol mononitrate). Latanoprost acid reduces IOP by increasing uveoscleral outflow, while NO facilitates trabecular outflow by relaxing the trabecular meshwork and Schlemm's canal. Studies have shown reduced NO markers in the aqueous humor of POAG patients, suggesting that low NO levels may contribute to elevated IOP. Adverse effects of LBN are similar to those of traditional prostaglandin analogues.[12]

The objective of this study was to evaluate the cost-utility of LBN 0.024% as first-line therapy compared to the strategy recommended by the PCDT for primary open-angle glaucoma, from the perspective of the Brazilian SUS as payer.

## METHODS

This study is based on a hypothetical cohort of individuals diagnosed with POAG. A cost-utility analysis was conducted using a Markov model, comparing two treatment strategies:

- Strategy 1 – SUS (current PCDT-recommended approach): initiation of treatment with first-line medication (timolol 0.05%). If target IOP was not achieved, second-line treatment was added (dorzolamide 2%), followed by third-line medications consisting of prostaglandin and prostamide analogues.
- Strategy 2 – LBN: initiation with LBN 0.024% as the first-line therapy, followed, in case of insufficient IOP reduction, by combinations with timolol 0.05% and dorzolamide 2%.

Glaucoma was classified into four progressive stages: early, moderate, advanced, and blindness, based on visual field defects (mean deviation index, MD) and optic neuropathy, according to Hodapp et al. (MD > –6 dB for early; –6 to –12 dB for moderate; < –12 dB for severe).[13]

The model follows disease progression starting at the early stage, sequentially advancing to moderate, advanced, and blindness. Transitions can only proceed forward (no regression or skipping of stages); all states, including blindness, can transition directly to death based on Brazil's age-specific annual mortality rates. Transition probabilities each year were derived from each treatment's IOP-lowering effect. Markov cycles were set at one year.

The analysis was conducted from the SUS's perspective. The time horizon extended from an initial cohort aged 60 until the average life expectancy of the Brazilian population, as reported by Brazilian Institute of Geography and Statistics (IBGE).

Model parameters were sourced from literature, DATASUS, IBGE and the Chamber of Regulation of the Medicines Market (CMED).

Efficacy values for IOP reduction (in mmHg) were extracted from meta-analyses by Harasymowycz et

al.[14], Cheng et al.[15], and Hartleben-Matkin et al.[16] These values were translated into percentage reductions relative to a baseline IOP of 20.60 mmHg. Efficacy for combination therapies (timolol + LBN; timolol + dorzolamide + LBN) were estimated using data from prostaglandin-based combinations plus an additional 0.12 mmHg benefit, reflecting the difference between LBN and latanoprost (4.20 *versus* 4.08 mmHg). These data are compiled in table 1.

**Table 1.** Adjusted intraocular pressure reduction and annual visual field progression reduction

| Strategy | IOP reduction (adjusted for baseline IOP = 20.60 mmHg) | Annual visual field progression reduction (%) |
|---|---|---|
| SUS | | |
| Timolol | 3.06 | 29.16 |
| Timolol + dorzolamide | 6.15 | 58.61 |
| Timolol + dorzolamide + PTG* | 7.90 | 75.29 |
| LBN | | |
| LBN | 4.20 | 40.03 |
| Timolol + LBN | 7.20 | 68.62 |
| Timolol + dorzolamide + LBN | 8.02 | 76.43 |

Source: author's calculation based on Harasymowycz et al.[14], Cheng et al.[15], and Hartleben-Matkin et al.[16]
* Mean reduction in daytime intraocular pressure in mmHg from the eye drops bimatoprost, latanoprost, and travoprost.
SUS: Unified Health System; LNB: latanoprostene bunod; PTG: prostaglandin and prostamide analog eye drops; IOP: intraocular pressure.

For each stage of glaucoma (early, moderate, advanced, and blindness), a proportion of the number of eye drops used was adopted based on data from a cohort published by Guedes et al.[17]

According to the IOP lowering capacity of each eye drop or combination of eye drops, the reduction in disease progression was calculated based on visual field progression. For this calculation, the finding from the Early Manifest Glaucoma Trial study was considered, where a 1 mmHg reduction in IOP corresponds to a 9.53% reduction in visual field damage.[18] Subsequently, the following calculation was performed:

1 mmHg – 9.53% reduction in visual field loss
XXmHg – Y% reduction in visual field loss

A baseline visual field value of -3.4 decibels and an untreated annual visual field decline of -0.6 dB in glaucoma patients were adopted according to the study by Samuelson et al.[19]

Thus, the annual visual field loss was calculated for each treatment line as follows:

usual untreated visual field loss (-0.6) × (1 – reduction in visual field loss due to medication)

Subsequently, the weighted average of visual field loss values was calculated according to the treatment type, based on the proportion of eye drops used for each glaucoma stage.

To estimate the transition probabilities between disease severity stages, they were calculated as the inverse of the number of months required for a patient to transition from one health state to another. The number of months for transition between states is given by the ratio between the difference in decibels (referring to the visual field) between the midpoint of the range of values of one state and the lower limit of the subsequent state, and the rate of visual field loss progression for the strategy in question (which in turn was based on the adjusted efficacy of monthly visual field decline).[20]

A baseline visual field value of -3 dB was adopted for early glaucoma, from -6 to -12 dB for moderate glaucoma, less than -12 dB for advanced glaucoma, and less than -20 dB for blindness. For example, to calculate the transition probability from the early to moderate stage in strategy 1 – SUS, the cohort starts with patients with a visual field loss of 3 dB (early stage). The transition time to the next stage is given by 3 (the difference between the midpoint of the early stage, -3 dB, and the lower limit of the moderate stage, -6 dB) divided by the progression rate of the early stage, 0.3227679162, resulting in 9.294604. The inverse of 9.294604 is 1/9.294604, corresponding to 0.107589, approximately 11%.

Utility values to calculate the ICUR were based on the studies by Paletta Guedes et al.[21] and Brown et al.[22]

Direct costs involved in the monitoring and treatment of glaucoma in the SUS, including medical consultations, exams, and medications, were obtained through consultation of the Management System of the SUS Table of Procedures, Medications, Orthoses, Prostheses, and Special Materials (*Table* SIGTAP), referring to the year 2024.[23]

Regarding the cost of the LBN 0.024% eye drop, the maximum price table from the CMED was consulted.[24] As it is a drug class possibly belonging to the Specialized Component of Pharmaceutical Assistance (for treatment of chronic-degenerative diseases, based on PCDTs), a discount is applied, called the Price Adjustment Coefficient (CAP). From this discount and the Factory Price (PF) of the medication, the Maximum Government Sale Price (PMVG) was calculated as follows: PMVG = PF × (1 – CAP).[25] The PMVG was considered based on the Tax on Circulation of Goods and Services (ICMS) of 17%, referring to the state that imports and sells the medication in Brazil, assuming a direct sale to the public sector.

All data on annual direct costs are presented in table 2.

**Table 2.** Direct costs

| Procedures | Interval (months) | SUS code | Cost per quarter (BRL) | Annual cost (BRL) |
|---|---|---|---|---|
| Initial patient evaluation* | 12 | 03.01.01.010-2 | 57.74 | 57.74 |
| Follow-up visit‡ | 3 | 03.03.05.001-2 | 17.74 | 70.96 |
| Timolol 0.5% | 3 | 03.03.05.003-9 | 18.66 | 74.64 |
| Timolol 0.5% + Dorzolamide 2% | 3 | 03.03.05.016-0 | 98.04 | 392.16 |
| Timolol 0.5% + Dorzolamide 2% + PTG† | 3 | 03.03.05.022-5 | 226.02 | 904.08 |
| LBN 0.024%‡ | 3 | x | 171.9 | 687.60 |
| LBN 0.024% + timolol 0.5% | 3 | x | 190.56 | 762.24 |
| LBN 0.024% + timolol 0.5% + dorzolamide 2% | 3 | x | 269.94 | 1,079.76 |

Source: The costs of initial and follow-up consultations, as well as timolol, dorzolamide, and PTG eye drops, were extracted from the SIGTAP reimbursement table (SUS Procedure, Medication, and OPM Management System) (accessed August 12, 2024). The cost of LBN 0.024% was obtained from Anvisa's Drug Price Consultation Panel for the Maximum Government Purchase Price (accessed August 12, 2024).
*Initial consultation: it includes comprehensive ophthalmologic exam with tonometry, fundoscopy, and visual field test; ‡ follow-up consultation: it includes comprehensive ophthalmologic exam with tonometry and fundoscopy; † PTG: prostaglandin and prostamide analog eye drops; ‡ LBN 0.024%: latanoprostene bunod 0.024% eye drop; SUS: Unified Health System

Adverse effect costs were considered for beta-blocker eye drops due to the higher risk of bronchospasm, as this is a systemic and more severe event. A risk ratio of 2.29 (95%CI 1.71 to 3.07) was estimated for individuals using beta-blocker eye drops requiring treatment for bronchospasm. Based on a model of glaucoma cost impacts in Australia, an average additional final cost of 23.8% per patient was added to this therapeutic line, according to the increased costs of glaucoma treatment due to beta-blocker eye drop use.[26]

Costs and utilities were discounted at 5%, as recommended by the Ministry of Health.[10] Microsoft Excel 2010 was used for data collection, and cost-effectiveness and sensitivity analyses were performed using TreeAge Pro 2011 Healthcare software.

A deterministic univariate sensitivity analysis was conducted to identify the parameters that most influence the model outcomes. Scenarios with ±50% variation in the annual glaucoma progression rates were analyzed for the different glaucoma stages (early, moderate, advanced, and blindness), for both strategy 1 (reference – usual SUS therapy) and strategy 2 (alternative 2).

Since this study was based on a hypothetical cohort using secondary public domain data, such as scientific articles and DATASUS data, it did not require review by the Research Ethics Committee, according to legislation (resolution No. 510/16).

## RESULTS

The annual costs of strategy 1 ranged from BRL 555.30 to BRL 955.48 per individual, while strategy 2, which started treatment with LBN eye drops, generated costs ranging from BRL 1,127.10 to BRL 1,309.29 for the initial and blindness stages, respectively (Table 3).

**Table 3.** Annual costs of each strategy by glaucoma disease stage

| Treatment strategy and glaucoma stage | Annual cost (BRL) | Sensitivity analysis (± 20%) (BRL) |
|---|---|---|
| SUS | | |
| Early glaucoma | 555.30 | 444.24-666.37 |
| Moderate glaucoma | 713.78 | 571.03-856.54 |
| Advanced glaucoma | 847.79 | 678.23-1,017.35 |
| Blindness | 955.48 | 764.38-1,146.57 |
| LBN | | |
| Early glaucoma | 1,127.10 | 901.68-1,352.52 |
| Moderate glaucoma | 1,187.55 | 950.04-1,425.05 |
| Advanced glaucoma | 1,265.48 | 1,012.38-1,518.57 |
| Blindness | 1,309.29 | 1,047.44-1,571.15 |

SUS: Unified Health System; LBN: latanoprostene bunod.

The values for incremental costs, utilities, and the incremental cost-utility ratio (ICUR) are presented in table 4.

**Table 4.** Total Costs, Incremental Cost, Effectiveness (Quality-Adjusted Life-Years), and Incremental Cost-Utility Ratio (ICUR)

| Strategy | Cost (BRL) | Incremental cost (BRL) | Effectiveness (QALY) | Incremental effectiveness (QALY) | ICUR (BRL/QALY) |
|---|---|---|---|---|---|
| SUS | 8,868.20 | 0 | 10.18 | 0 | 0 |
| LBN | 15,321.79 | 6,453.59 | 10.39 | 0.21 | 31,244.98 |

QALY; Quality-Adjusted Life-Years; SUS: Unified Health System; LBN: latanoprostene bunod; ICUR: incremental cost-utility ratio.

After performing the deterministic sensitivity analysis, age was found to have the greatest impact on the model (Figure 1), while costs and other parameters showed less influence on the model outcomes.

Starting treatment at age 40 results in increased costs but also in gains in QALYs, leading to an ICUR of BRL 24,953.82/QALY. Conversely, initiating treatment later at age 70 results in lower costs and fewer QALYs gained, generating an ICUR of BRL 50,284.30/QALY for strategy 2 – LBN (Table 5).

Due to conflicting reports in the literature regarding the relationship between glaucoma stage and its impact on disease progression rate, a univariate analysis was conducted to assess scenarios in which the more advanced stages progressed faster in visual field loss compared to the initial stage. No significant variations in costs were observed after applying a ±50% variation in the transition probabilities between different stages across the different treatment strategies.

## DISCUSSION

Cost-effectiveness and cost-utility analyses are fundamental tools to support healthcare decision-making

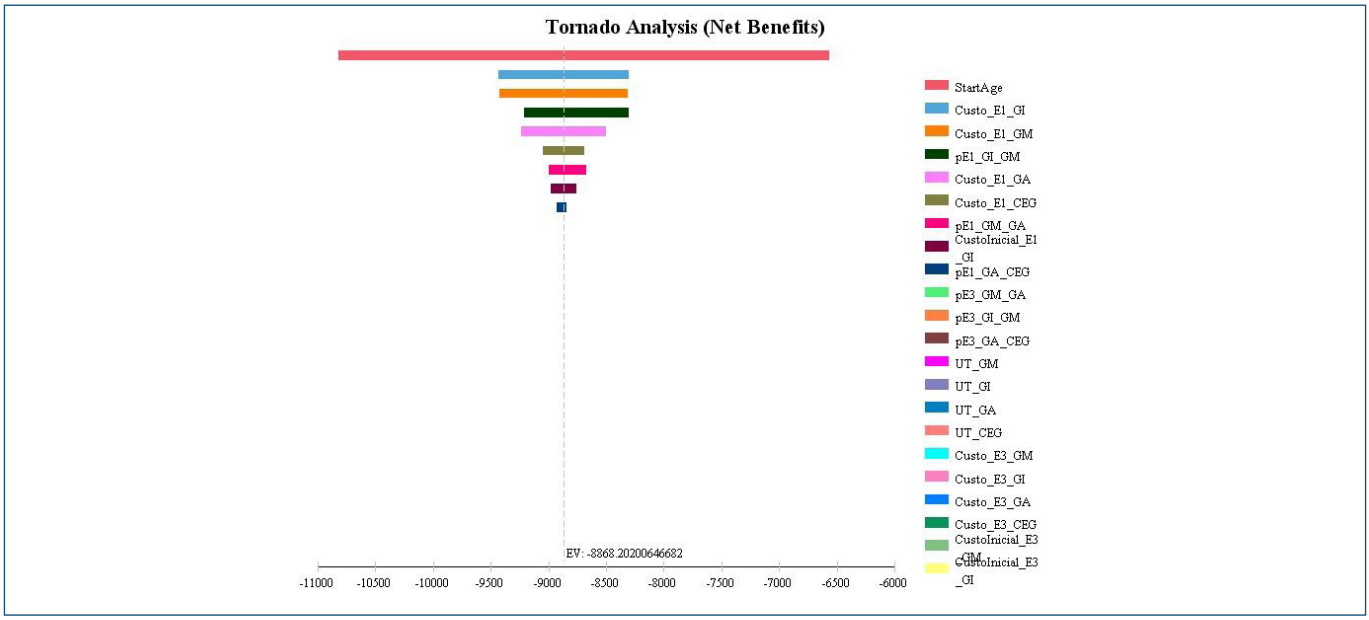


**Figure 1.** Sensitivity analysis.

**Table 5.** Sensitivity analysis: treatment start age

| Age (years) | Strategy | Cost (BRL) | Incremental cost (BRL) | Effectiveness (QALY) | Incremental effectiveness (QALY) | ICUR (BRL/QALY) |
|---|---|---|---|---|---|---|
| 40 | SUS | 10,815.96 | 0 | 11.84 | 0 | 0 |
| | LBN | 18,337.97 | 7,522.01 | 12.14 | 0.30 | 24,953.82 |
| 47.5 | SUS | 10,370.24 | 0 | 11.47 | 0 | 0 |
| | LBN | 17,650.49 | 7,280.24 | 11.74 | 0.28 | 26,073.43 |
| 55 | SUS | 9,615.10 | 0 | 10.82 | 0 | 0 |
| | LBN | 16,481.70 | 6,866.60 | 11.07 | 0.24 | 28,337.24 |
| 62.5 | SUS | 8,316.33 | 0 | 9.72 | 0 | 0 |
| | LBN | 14,470.11 | 6,153.79 | 9.90 | 0.18 | 34,387.91 |
| 70 | SUS | 6,566.37 | 0 | 8.14 | 0 | 0 |
| | LBN | 11,717.41 | 5,151.03 | 8.24 | 0.10 | 50,284.30 |

SUS: Unified Health System; LBN: latanoprostene bunod.

by providing robust evidence on the benefits of medical interventions relative to their costs.[27] In this model, the average cost per individual using strategy 1 was BRL 8,868.20, resulting in 10.18 QALYs and an incremental cost-effectiveness ratio (ICER) of BRL 870.99 per QALY gained. For strategy 2, a cost of BRL 15,321.79 was observed, yielding 10.39 QALYs and an ICER of BRL 1,474.90 per QALY gained.

The above results are generally consistent with other Brazilian studies adopting the perspective of the SUS and a time horizon corresponding to the population's average life expectancy. Guedes et al. (2022) reported direct costs for 2019 and 2020 based on PCDT recommendations, with total treatment costs reaching BRL 8,564.02, including medications, consultations, trabeculectomy, and related complications, resulting in an ICUR of BRL 890.23/QALY. The same study considered a real-world scenario, where treatment started with prostaglandins, followed by second-line medications (dorzolamide/brinzolamide/brimonidine) and timolol, yielding a total cost of BRL 11,520.39 and 9.63 QALYs gained, with an ICUR of BRL 1,196.30/QALY; this strategy also included costs related to consultations, trabeculectomy, and procedural complications.[28]

In the model by Gravina et al., using SIGTAP cost data for 2022, the total cost for treatment according to PCDT guidelines plus trabeculectomy was BRL 6,838.63, producing 9.52 QALYs and an ICUR of BRL 718.03/QALY gained.[29]

As with many cost-effectiveness and cost-utility studies, some assumptions were adopted in the model construction, which complicates direct comparisons with other studies due to differences in perspectives, time horizons, transition probabilities between disease stages, costs, and treatment types. Furthermore, few recent pharmacoeconomic studies have analyzed the cost-utility relationship comparing clinical glaucoma treatments, with most focusing on comparisons between clinical treatments and technologies such as trabeculectomy, laser, and stents.

In this model, 100% treatment adherence was assumed, considering that both strategies—consisting of clinical treatment with eye drops—are equally affected by adherence. Another relevant variable is the probability of transition between disease stages, which in this model decreases as the disease progresses. This reduction results from the calculation methodology, since advanced stages involve the use of multiple eye drops.

According to a literature review by Palakkamanil et al., no clear association has yet been established between

disease stage and the rate of visual field loss progression, necessitating close patient monitoring to identify "rapid progressors" who exhibit losses greater than 1 dB/year. The comparison of the visual field loss data from the present study with those of Palakkamanil et al. shows values within the range reported in that review (-0.10 to -0.48 dB/year and -0.88 to +0.03 dB/year, respectively).[30]

Key elements in HTA include cost-effectiveness thresholds, discount rates, and clinical effectiveness parameters. Specifically, cost-effectiveness thresholds represent the maximum amount a society is willing to pay for an additional unit of health benefit, commonly measured as a quality-adjusted life year (QALY).[27]

The definition of a cost-effectiveness threshold is a critical methodological resource in economic evaluations in health, as it provides interpretative meaning to these analyses' results. By allowing direct comparison between incremental cost-effectiveness/utility ratios (ICER/ICUR) and a predefined reference value, the threshold enables critical appraisal of resource allocation efficiency, aiding decision-making on technology adoption within the health system.[31]

The most widely used cost-utility threshold in HTA studies is that published by the WHO Commission on Macroeconomics and Health in 2001, which is based on gross domestic product (GDP) per capita and estimates the economic value of a healthy life year. Given the scientific context at the time, the threshold suggests that interventions preventing one disability-adjusted life year (DALY) at less than one GDP per capita are very cost-effective; between one and three times GDP per capita, they are cost-effective; and above three times GDP per capita, they are not considered cost-effective.[32]

Despite reservations in the literature about using GDP per capita thresholds, research has identified implicit thresholds (inferred from analyses of past technology adoption decisions) within the range of one to three times GDP per capita per life year gained in Brazilian HTA processes.[32] In 2022, the Brazilian Ministry of Health issued a report on the use of cost-effectiveness thresholds in health decisions: recommendations from the National Committee for Health Technology Incorporation (CONITEC).[31]

Based on theoretical studies and Brazilian data showing increased life expectancy alongside the capacity for investment and rising health expenditures over time, cost-effectiveness threshold values were estimated through public consultation. These values were aligned proportionally to GDP per capita to create a benchmark reflecting the country's investment capacity, which may fluctuate according to economic performance measured by GDP.[31]

Based on these discussions, CONITEC recommended a cost-effectiveness threshold of BRL 40,000 per QALY for 2022, allowing up to three times this reference value. The reference value corresponds approximately to the 2022 GDP per capita. According to CONITEC, these values should be updated annually in accordance with changes in GDP per capita.[31]

In the present study, an ICUR of BRL 31,244.98 was found for Strategy 2 – LBN. According to IBGE data, the GDP per capita in 2024 was BRL 55,247.45.[33] Following this benchmark, the strategy can be considered cost-effective across all age groups analyzed in the sensitivity analysis (40 to 70 years), which is the parameter with the greatest impact on costs.

The adoption of cost-effectiveness/utility thresholds is not considered the sole criterion for technology incorporation; positive and negative modifiers are also evaluated. Economically, this criterion constitutes one of several domains used in HTA. Although the decision-making process is deliberative and does not assign explicit weights to each criterion, it is based on transparency, promoting publicity and social participation at all stages.[31]

This study was developed using a hypothetical Markov model based on the best available scientific evidence. Certain assumptions were necessary for model construction, which may introduce potential uncertainty. However, sensitivity analyses were applied to model parameters to minimize potential biases arising from these assumptions.

It is noteworthy that the generalization of this study's results should be approached with caution, especially regarding application to patients with other types of glaucoma or those receiving care in the supplementary health system or units outside SUS reference centers.

## CONCLUSION

This study contributes to an economic evaluation that analyzes costs alongside quality of life associated with eye drop use. It concludes that the clinical treatment strategy starting with latanoprostene bunod 0.024%, followed by timolol 0.5% and dorzolamide 2%, incurs higher costs but provides greater quality of life compared to the usual treatment recommended by the Clinical Protocol and Therapeutic Guidelines for Glaucoma for primary open-angle glaucoma. Notably, earlier initiation of latanoprostene bunod 0.024% treatment improves the cost-utility ratio of this treatment strategy.

## AUTHORS' CONTRIBUTION

Ferreira VF contributed to the conception and design of the study, the analysis and interpretation of the results, as

well as the writing and critical revision of the manuscript content. Guedes RAP contributed to the conception and design of the study, as well as to the critical review of the manuscript content. Chaoubah A contributed to the conception and design of the study, the analysis and interpretation of the data, and the critical review of the manuscript content. All authors approved the final version of the manuscript and are responsible for all aspects of it, including ensuring its accuracy and integrity.

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