




Innovations in glaucoma care: Targeting pathophysiology to expand treatment options

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The mechanics of glaucoma: Exploring aqueous humour flow and trabecular meshwork pathways

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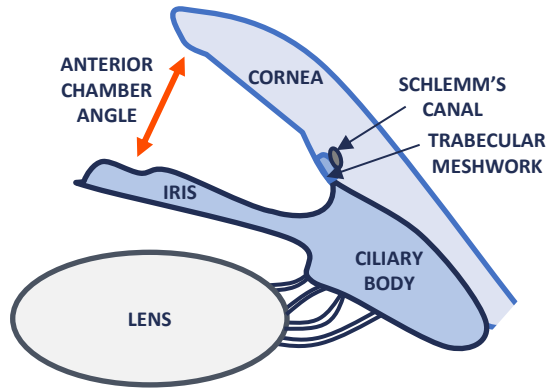


What is glaucoma and how does it present?

Overview of glaucoma

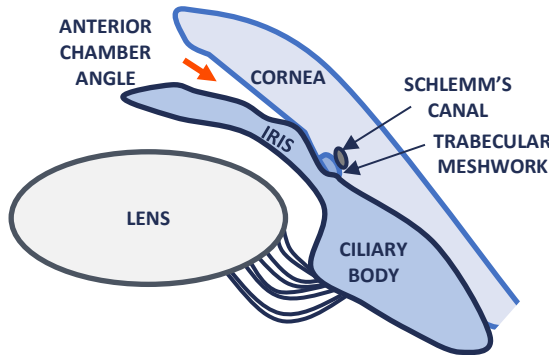
Glaucoma is a leading cause of vision loss that is characterized by optic nerve damage^{1,2}

Open-angle glaucoma^{3,4}



Increased resistance to AH outflow resulting in elevated IOP and nerve damage over time⁵

Angle-closure glaucoma^{3,4}



Characterized by narrowing or obstruction of anterior chamber angle, leading to severe IOP elevation⁵

Prevalence^{6,7}

- Globally: 80 million
- A leading cause of blindness worldwide
- USA: 3 million
- Canada: >450,000

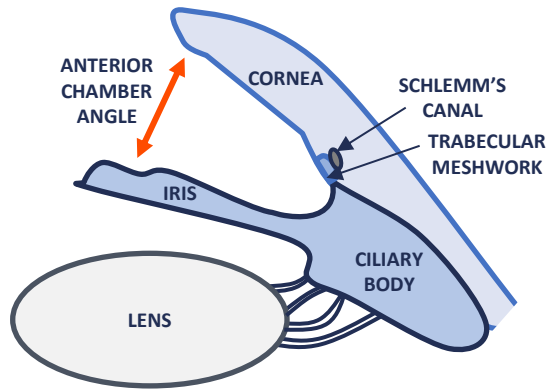
AH, aqueous humour; IOP, intraocular pressure.

1. Kang JM, Tanna AP. Glaucoma. *Med Clin North Am*. 2021;105:493–510; 2. American Academy of Ophthalmology. What Is Glaucoma? Symptoms, Causes, Diagnosis, Treatment. 2023. Available at: www.aaopt.org/eye-health/diseases/what-is-glaucoma (accessed 5 September 2024); 3. Petsas A, et al. *J Intensive Care Soc*. 2017;18:244–6; 4. Schmidl D, et al. *J Ocul Pharmacol Ther*. 2015;31:63–77; 5. Weinreb RN, et al. *JAMA*. 2014;311:1901–11; 6. Davuluru SS, et al. *Transl Vis Sci Technol*. 2023;12:18; 7. Canadian Association of Optometrists. Glaucoma. 2023. Available at: <https://opto.ca/eye-health-library/glaucoma> (accessed 5 September 2024).

Overview of glaucoma

Glaucoma is a leading cause of vision loss that is characterized by optic nerve damage^{1,2}

Open-angle glaucoma^{3,4}



Increased resistance to AH outflow resulting in elevated IOP and nerve damage over time⁵

Key risk factors for developing OAG⁶⁻¹⁰



IOP
(continuous risk factors)



Older age



Family history



Central corneal thickness



Myopia



Steroids



African/Caribbean descent (4x ↑ risk + earlier onset from 40 years) or Hispanic descent



Comorbidities
(e.g., diabetes, abnormal BP)

Clinical presentation^{8,11}



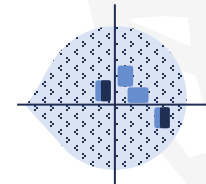
Typically asymptomatic until late in the disease stage



Optic nerve structural damage



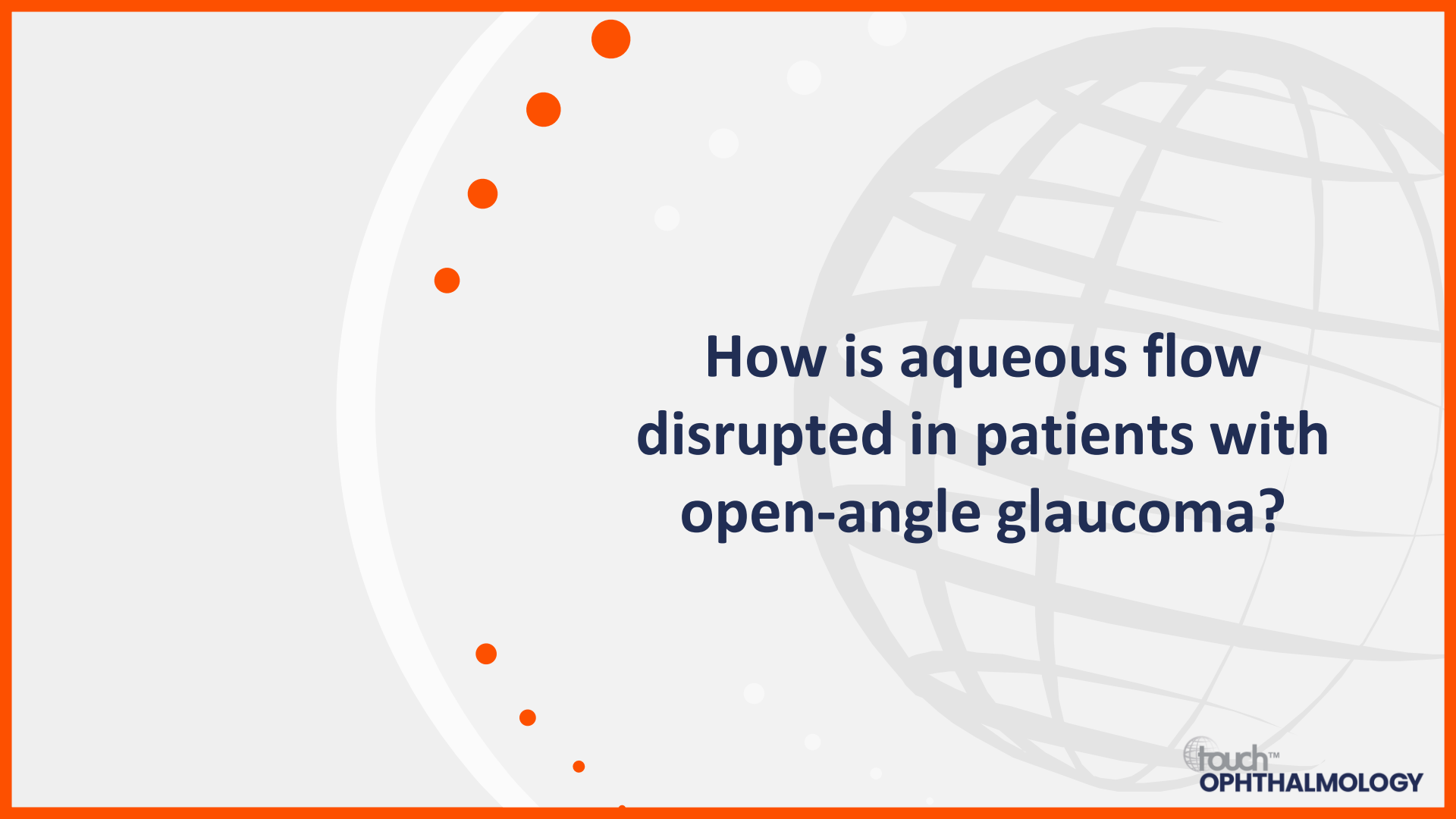
IOP often elevated but can be normal too



Paracentral visual field may be impacted first

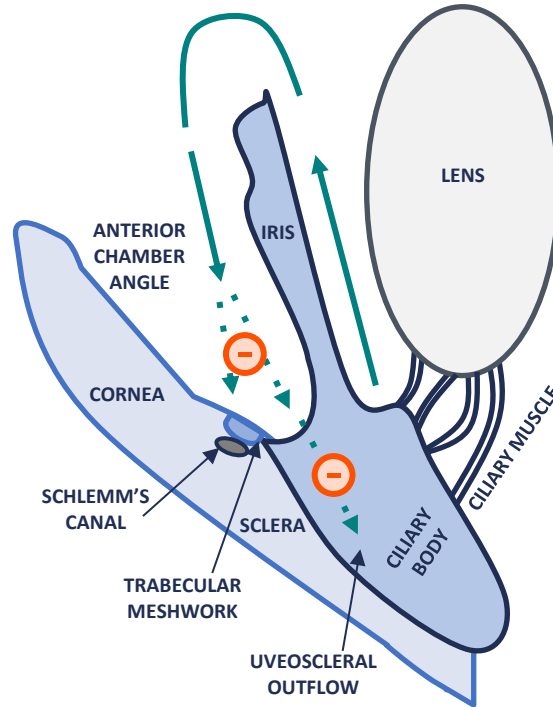
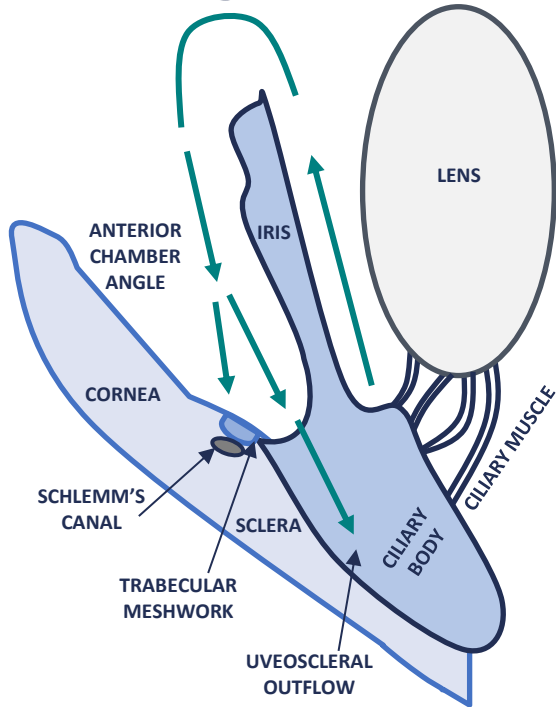
AH, aqueous humour; BP, blood pressure; IOP, intraocular pressure; OAG, open-angle glaucoma.

1. Kang JM, Tanna AP. *Med Clin North Am.* 2021;105:493–510; 2. American Academy of Ophthalmology. What Is Glaucoma? Symptoms, Causes, Diagnosis, Treatment. 2023. Available at: www.aao.org/eye-health/diseases/what-is-glaucoma (accessed 5 September 2024); 3. Petsas A, et al. *J Intensive Care Soc.* 2017;18:244–6; 4. Schmid D, et al. *J Ocul Pharmacol Ther.* 2015;31:63–77; 5. Weinreb RN, et al. *JAMA.* 2014;311:1901–11; 6. Tanna AP. *JAMA Ophthalmol.* 2023;141:258–9; 7. American Academy of Ophthalmology. Primary Open-Angle Glaucoma. 2023. https://eyewiki.org/Primary_Open-Angle_Glaucoma (accessed 5 September 2024); 8. Jóhannesson G, et al. *Acta Ophthalmol.* 2024;102:135–50; 9. Distelhorst JS, Hughes GM. *Am Fam Physician.* 2003;67:1937–44; 10. Jammal AA, et al. *Ophthalmology.* 2022;129:161–70; 11. Wagner IV, et al. *Mayo Clin Proc Innov Qual Outcomes.* 2022;6:618–35.



**How is aqueous flow
disrupted in patients with
open-angle glaucoma?**

Changes to AH flow in OAG^{1,2}



Aqueous humour (AH)



Supplies nutrients and O₂ to avascular tissues and removes waste products³

Normal conditions



IOP is regulated by the movement of AH through the eye²



OAG

Increased resistance to AH outflow via conventional pathway at a cellular and ultrastructural level²

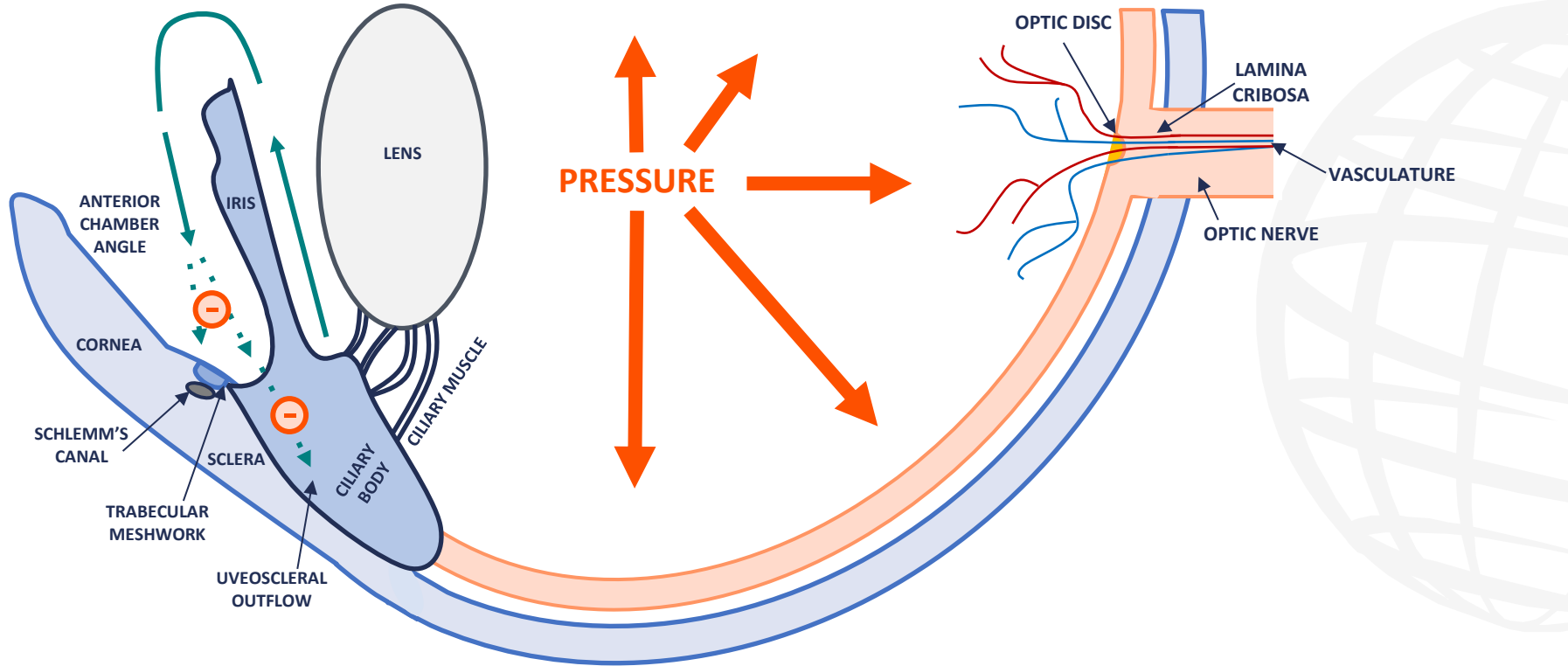
AH, aqueous humour; IOP, intraocular pressure; OAG, open angle glaucoma.

1. Križaj D. What is glaucoma? 2019. In: Kolb H, Fernandez E, Nelson R, editors. Webvision: The Organization of the Retina and Visual System [Internet].

Available at: www.ncbi.nlm.nih.gov/books/NBK543075/ (accessed 5 September 2024); 2. Schmid D, et al. *J Ocul Pharmacol Ther.* 2015;31:63–77;

3. Goel M, et al. *Open Ophthalmol J.* 2010;4:52–9.

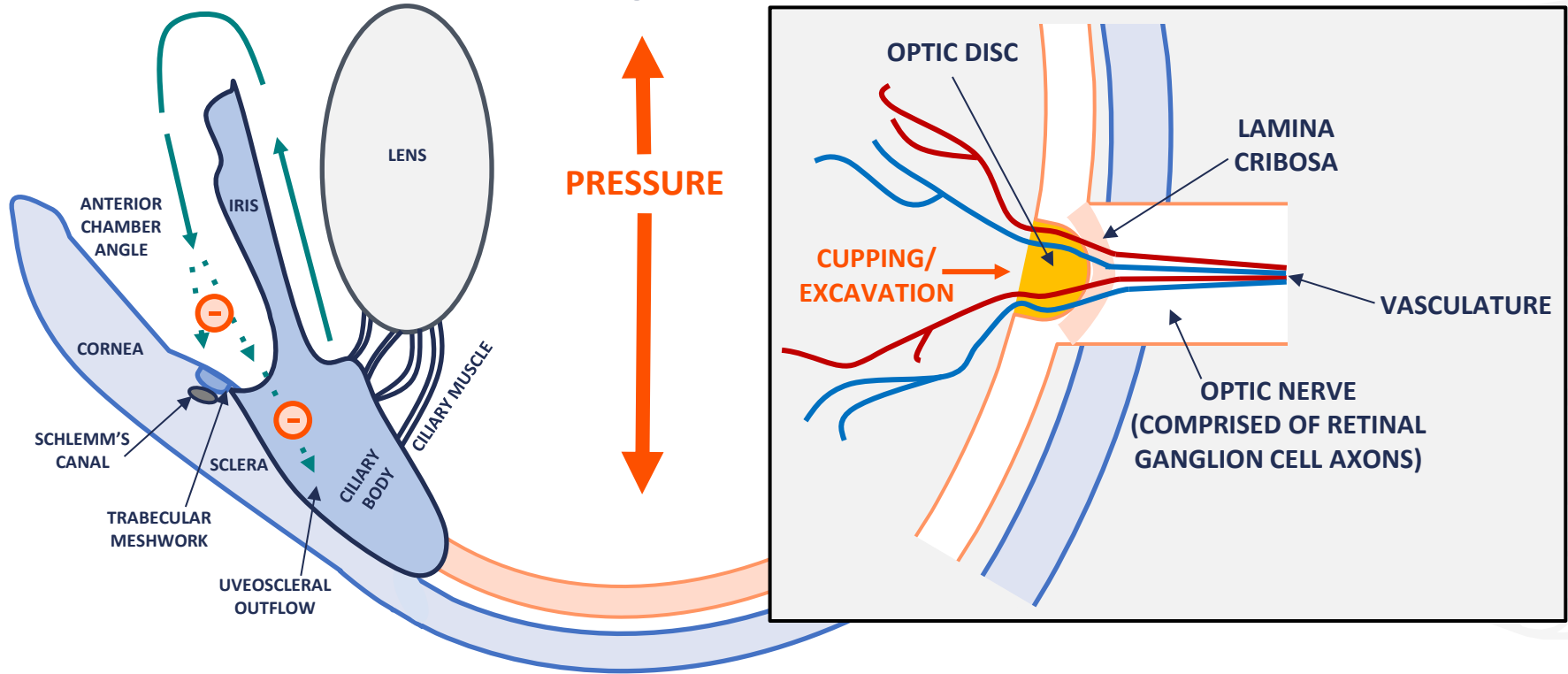
Resistance to AH outflow leads to elevated IOP¹⁻³



AH, aqueous humour; IOP, intraocular pressure.

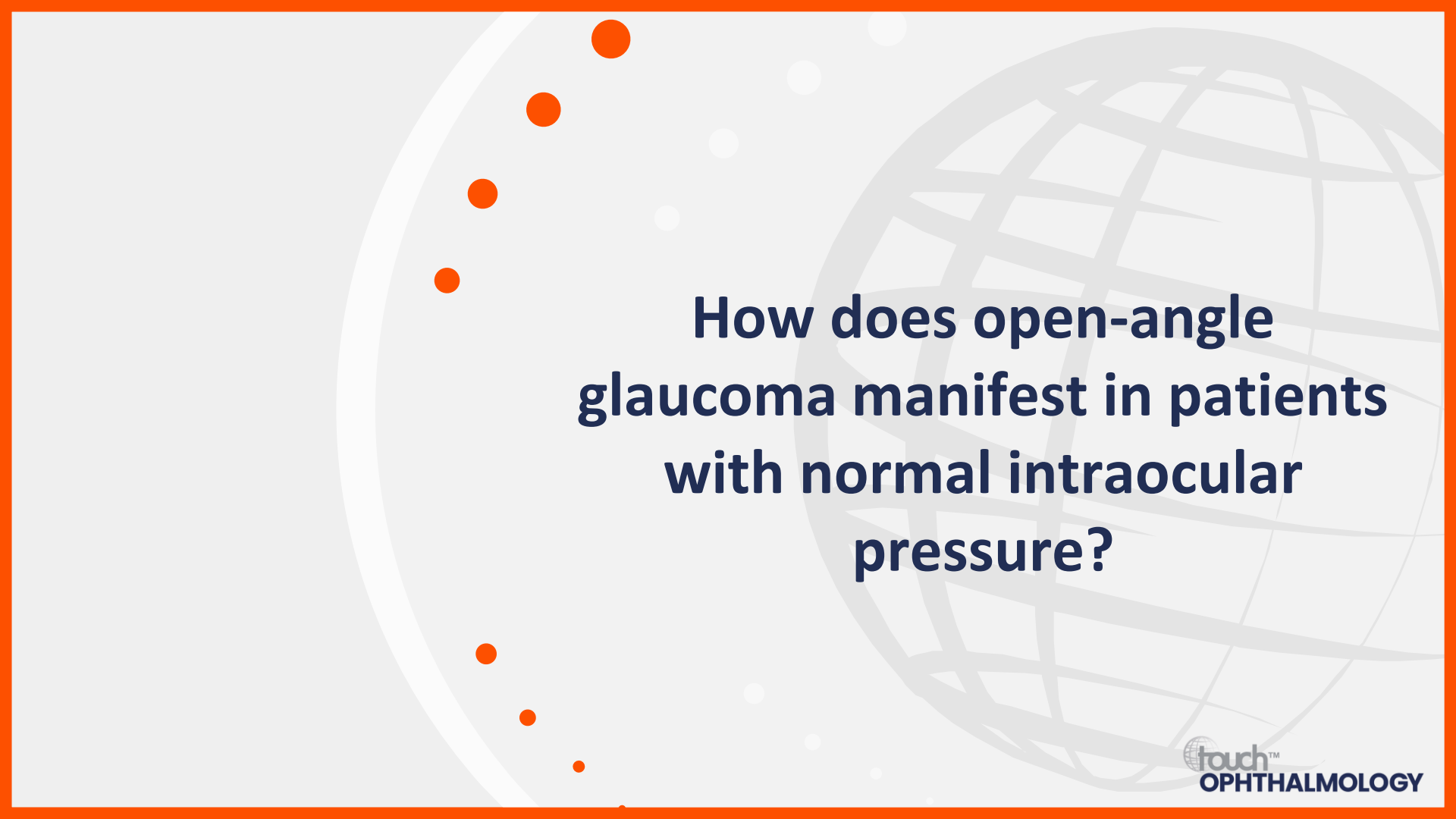
1. Križaj D. What is glaucoma? 2019. In: Kolb H, Fernandez E, Nelson R, editors. *Webvision: The Organization of the Retina and Visual System* [Internet]. Available at: www.ncbi.nlm.nih.gov/books/NBK543075/ (accessed 5 September 2024);
2. Schmid D, et al. *J Ocul Pharmacol Ther.* 2015;31:63–77;
3. Al-khafaj WS, et al. *UK J Pharm Biosci.* 2018;6:11–18.

Downstream consequences of elevated IOP¹⁻⁴



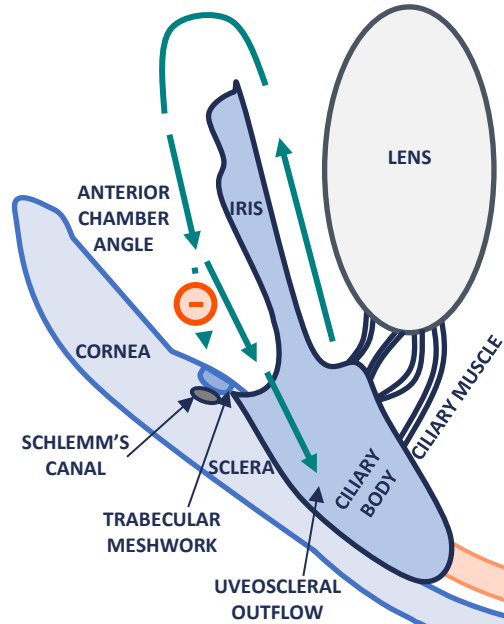
IOP, intraocular pressure.

1. Križaj D. What is glaucoma? 2019. In: Kolb H, Fernandez E, Nelson R, editors. *Webvision: The Organization of the Retina and Visual System* [Internet]. Available at: www.ncbi.nlm.nih.gov/books/NBK543075/ (accessed 5 September 2024); 2. Schmid D, et al. *J Ocul Pharmacol Ther.* 2015;31:63–77;
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4. Weinreb RN, et al. *Nat Rev Dis Primers.* 2016;2:16067.

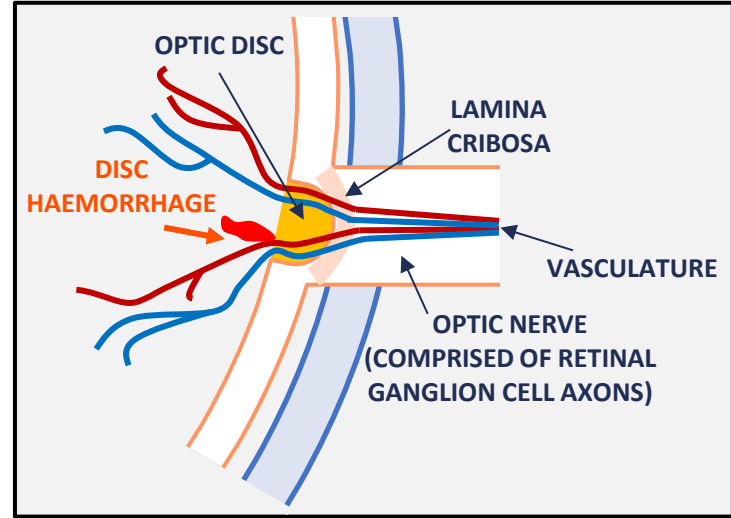
The background features a large, faint globe with a grid of latitude and longitude lines. To the left of the globe, there is a vertical line of seven orange dots of varying sizes. The entire scene is set against a light gray background with a subtle gradient and some faint white circular patterns.

**How does open-angle
glaucoma manifest in patients
with normal intraocular
pressure?**

Changes more frequently observed in NTG¹⁻⁵



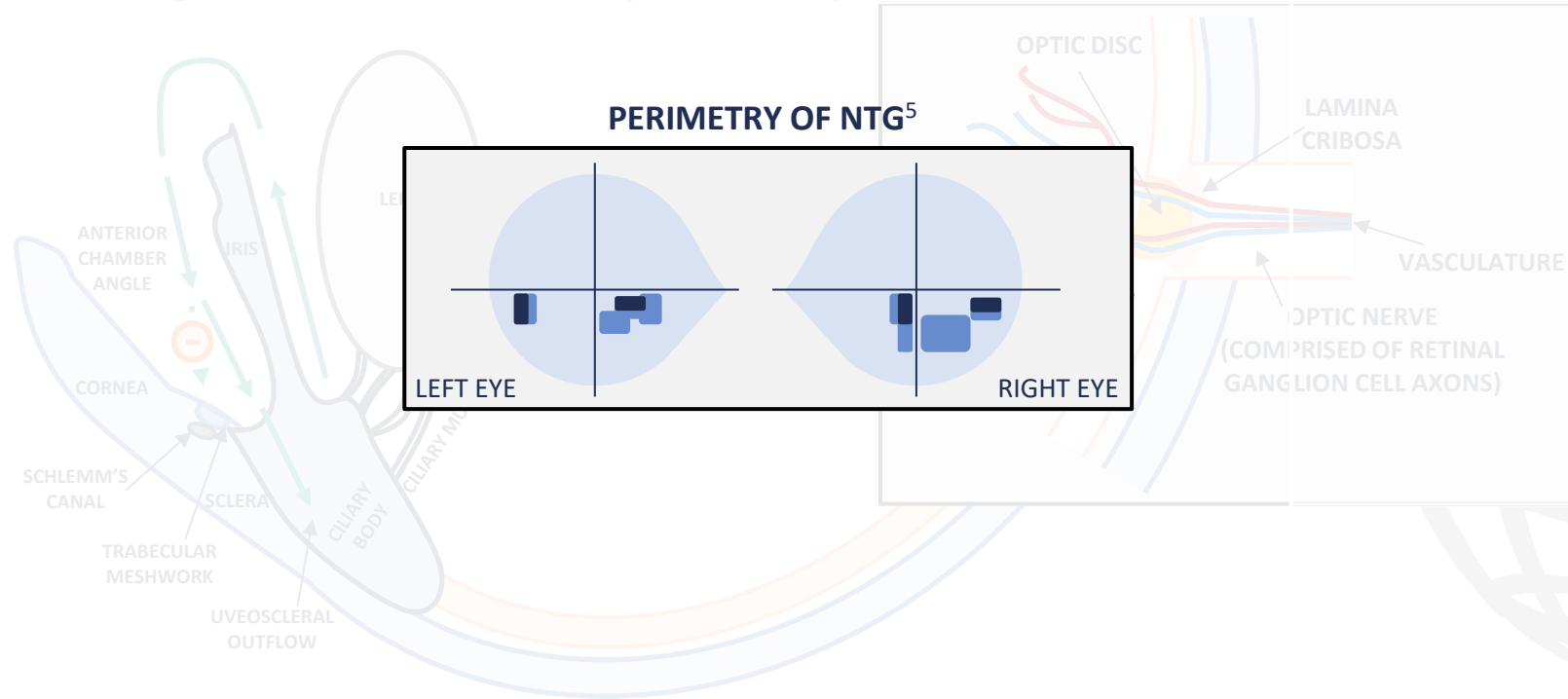
**NORMAL
PRESSURE**



NTG, normal-tension glaucoma.

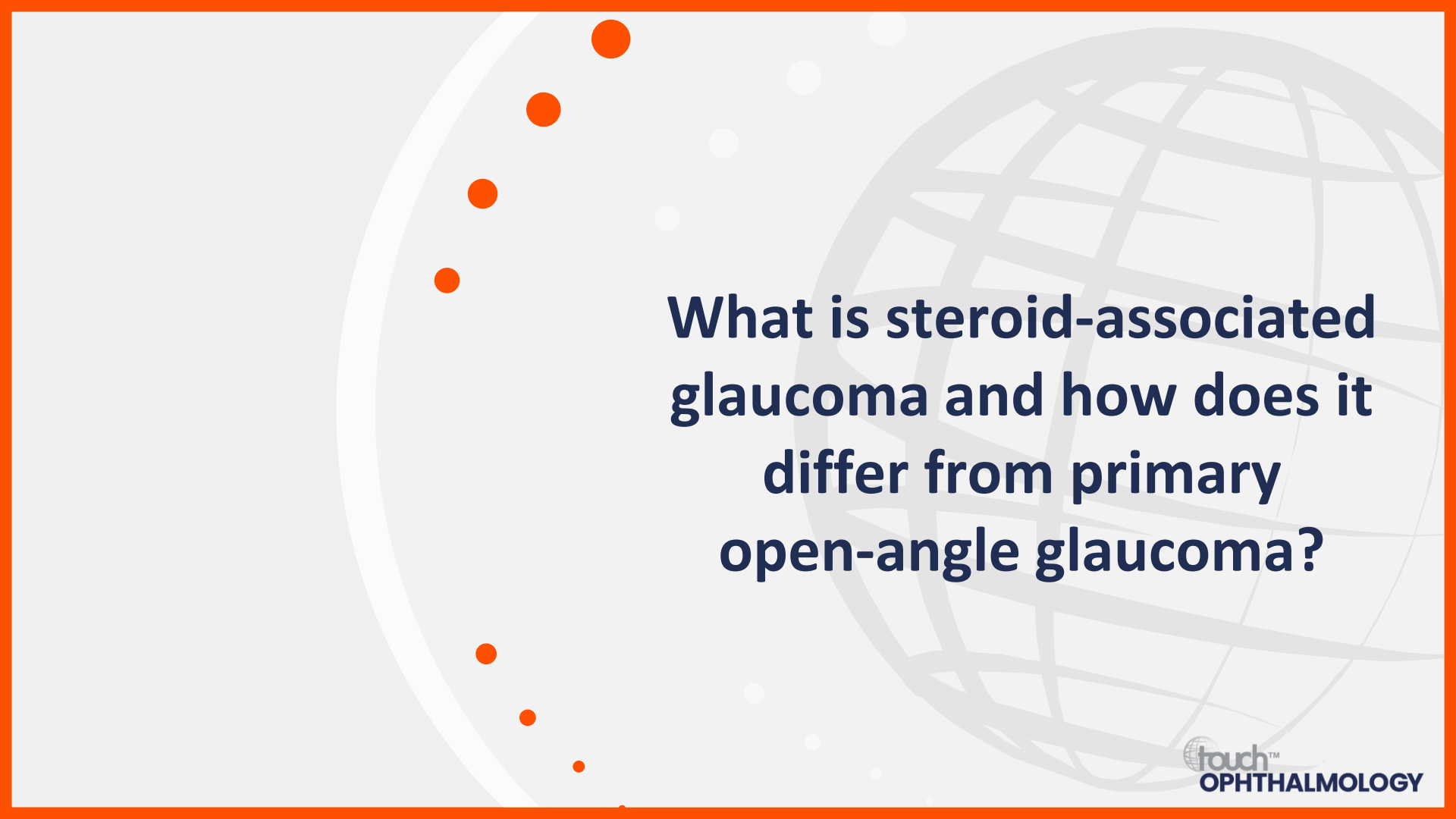
1. Križaj D. What is glaucoma? 2019. In: Kolb H, Fernandez E, Nelson R, editors. Webvision: The Organization of the Retina and Visual System [Internet]. Available at: www.ncbi.nlm.nih.gov/books/NBK543075/ (accessed 5 September 2024);
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3. Al-khfajy WS, et al. *UK J Pharm Biosci.* 2018;6:11–18;
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5. American Academy of Ophthalmology. Normal Tension Glaucoma. 2024. Available at: https://eyewiki.org/Normal_Tension_Glaucoma (accessed 5 September 2024).

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4. Weinreb RN, et al. *Nat Rev Dis Primers.* 2016;2:16067;
5. American Academy of Ophthalmology. Normal Tension Glaucoma. 2024. Available at: https://eyewiki.org/Normal_Tension_Glaucoma (accessed 5 September 2024).



**What is steroid-associated
glaucoma and how does it
differ from primary
open-angle glaucoma?**

Changes observed in steroid-associated OAG

Primary OAG

1

Progressive optic neuropathy with a multifactorial disease process¹

Secondary OAG




2

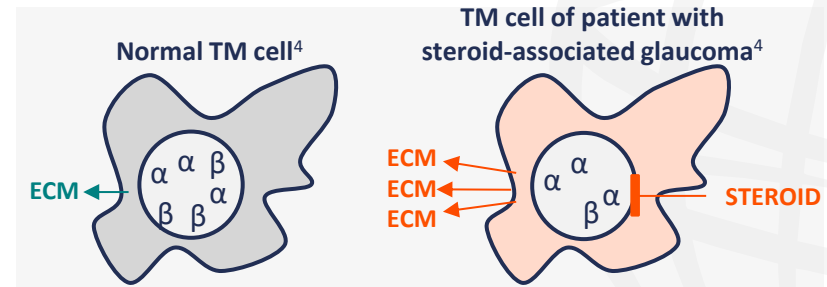
Associated with predisposing events:²

- **Drug therapy**
- Developmental defects
- Systemic disorders
- Trauma to the eye



Steroid-associated OAG

-  Steroids are used for many ocular conditions³
-  Up to 40% of patients are 'steroid responders' who have raised IOP and steroid-associated glaucoma³
-  Clinically mimics primary OAG³



- ECM contains glycosaminoglycans and other proteins, which when increased, may contribute to TM resistance⁵
- TM and Schlemm's canal cells stiffen, reducing their ability to form pores for efficient AH outflow^{5,6}

AH, aqueous humour; ECM, extracellular matrix; IOP, intraocular pressure; OAG, open-angle glaucoma; TM, trabecular meshwork.

1. Kang JM, Tanna AP. *Med Clin North Am.* 2021;105:493–510; 2. Wiggs JL. Glaucoma. In: *Reference Module in Biomedical Sciences.* Elsevier, 2014; 3. Patel PD, et al. *Cells.* 2023;12:2452; 4. Fellman RL. Steroids for Glaucoma: Both Friend and Foe. 2015. Available at: www.reviewofophthalmology.com/article/steroids-for-glaucoma--both-friend-and-foe (accessed 5 September 2024); 5. Raghunathan VK, et al. *Invest Ophthalmol Vis Sci.* 2015;56:4447–59; 6. Kelly RA, et al. *Int J Mol Sci.* 2021;22:9446.




Mechanistic perspectives on glaucoma treatment: From conventional to innovative therapies

Courtney E Bovee, MD

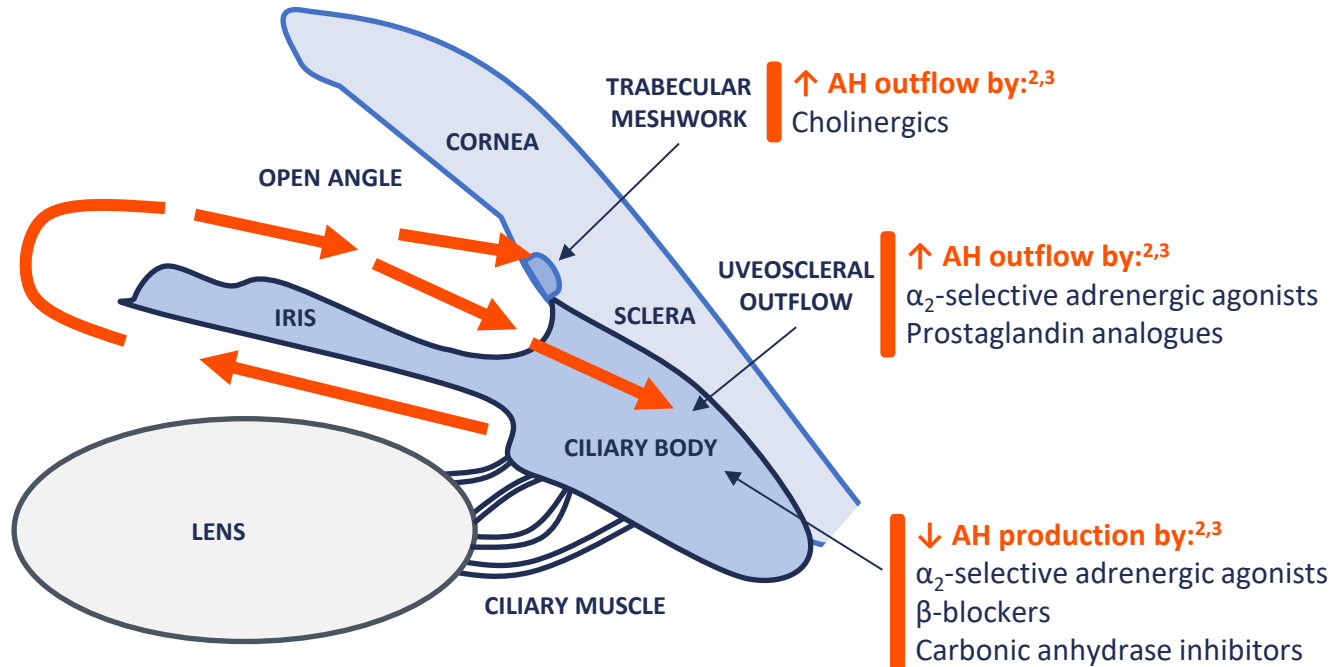
Bovee Eye,
Tampa Bay, FL, USA





What are the conventional drug therapies that are available for open-angle glaucoma and how do they work?

MOA of conventional topical therapies^{1,2}



α₂-selective adrenergic agonists³

- Apraclonidine
- Brimonidine

β-blockers³

- Timolol (non-selective)
- Betaxolol (β₁-selective)

Carbonic anhydrase inhibitors³

- Dorzolamide
- Brinzolamide

Cholinergics³

- Pilocarpine

Prostaglandin analogues³

- Latanoprost
- Travoprost
- Bimatoprost
- Tafluprost

AH, aqueous humour; MOA, mechanism of action.





















1. Križaj D. What is glaucoma? 2019 May 30. In: Kolb H, Fernandez E, Nelson R, editors. Webvision: The Organization of the Retina and Visual System [Internet]. Salt Lake City (UT): University of Utah Health Sciences Center; 1995-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK543075/> (accessed 5 September 2024);

2. Schmidl D, et al. *J Ocul Pharmacol Ther.* 2015;31:63–77; 3. Jóhannesson G, et al. *Acta Ophthalmol.* 2024;102:135–50.



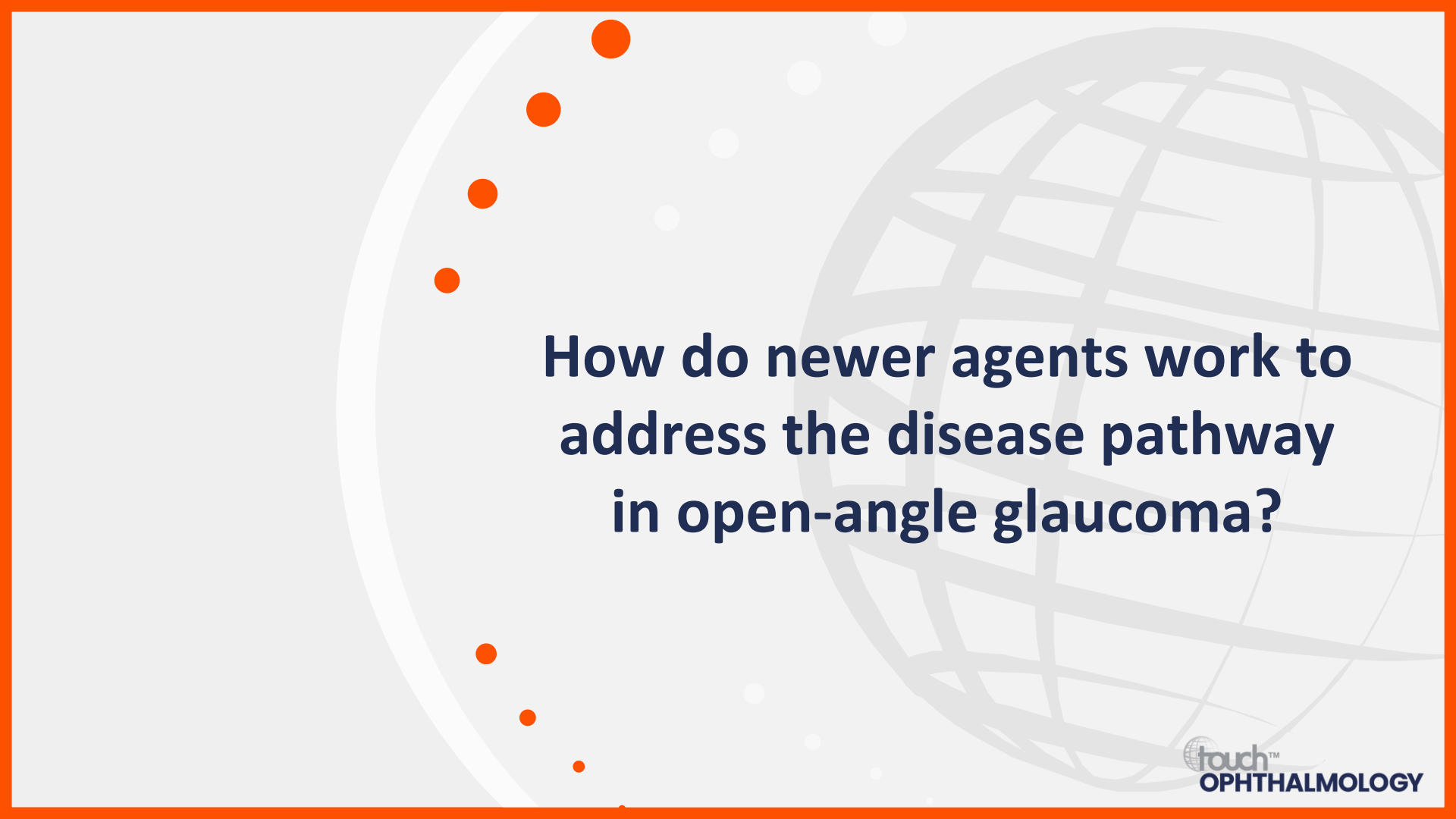
**What are the clinical efficacy
and safety data for conventional
glaucoma treatments?**

Efficacy and safety of conventional therapies¹⁻³

	α_2 -selective adrenergic agonists	β -blockers	Carbonic anhydrase inhibitors*	Cholinergics	Prostaglandin analogues
Dosing	2–3x daily	1–2x daily	2–3x daily	3x daily	1x daily
IOP reduction	18–35%	20–25%	15–20%	20–25%	25–35%
Selected AEs [†]	 Dry mouth	 Bronchospasm	 Corneal oedema	 Myopia	 Lash changes
	 Headache	 Bradycardia/CHF	 Keratitis	 Reduced vision	 Pigmentation
	 Follicular conjunctivitis	 Hypotension	 Punctate cornea	 Miosis	 Hyperaemia
	 Fatigue/drowsiness	 Hyperaemia	 Metallic taste	 Headache	 Burning/stinging
	Allergic conjunctivitis/contact dermatitis reported with all drug classes				
Key contra-indications	<ul style="list-style-type: none"> MAOi Children (brimonidine) 	<ul style="list-style-type: none"> COPD and asthma CHF, bradycardia, hypotension >1st-degree heart block 	<ul style="list-style-type: none"> Sulfonamide allergy Kidney stones Aplastic anaemia, SCD, thrombocytopenia 	<ul style="list-style-type: none"> Neovascular, uveitic, or malignant glaucoma 	<ul style="list-style-type: none"> Macular oedema Herpetic keratitis Active uveitis

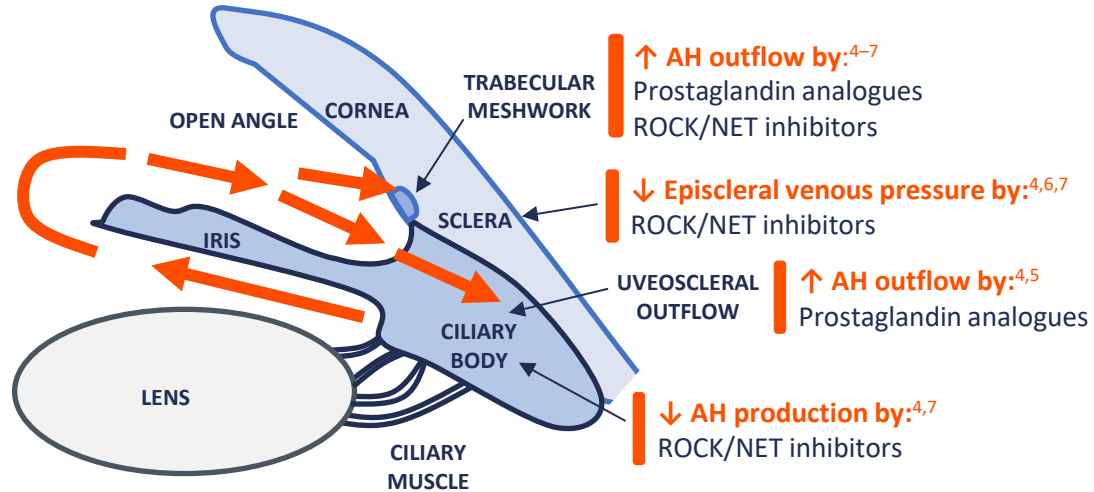
*Values shown are for treatment with topical therapy. [†]AEs listed are a selection of those commonly reported/observed in practice; for an exhaustive list, please refer to the prescribing information for individual agents per drug class. AE, adverse event; CHF, chronic heart failure; COPD, chronic obstructive pulmonary disease; IOP, intraocular pressure; MAOi, monoamine oxidase inhibitor; SCD, sickle cell disease.

1. Jóhannesson G, et al. *Acta Ophthal* International Agency for the Prevention of Blindness (IAPB). Latin America Guide to Primary Open Angle Glaucoma, 2019. *mol*. 2024;102:135–50; 2. Gedde SJ, et al. *Ophthalmology*. 2021;128:71–150; 3. Available at: www.iapb.org/learn/resources/latin-america-guide-to-primary-open-angle-glaucoma/ (accessed 15 August 2024).



**How do newer agents work to
address the disease pathway
in open-angle glaucoma?**

Newer topical therapies offer alternative MOAs¹⁻³



Prostaglandin analogues (new)^{4,5}

- Latanoprostene bunod
*Metabolized to NO donating moiety
BDMN and latanoprost acid*

ROCK/NET inhibitors^{6,7}

- Netarsudil
ROCK and NET inhibition









AH, aqueous humor; BDMN, 4-hydroxybutyl nitrate; MOA, mechanism of action; NET, norepinephrine transporter; NO, nitric oxide; ROCK, Rho kinase.

1. Križaj D. What is glaucoma? 2019 May 30. In: Kolb H, Fernandez E, Nelson R, editors. Webvision: The Organization of the Retina and Visual System [Internet]. Salt Lake City (UT): University of Utah Health Sciences Center; 1995-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK543075/> (accessed 5 September 2024);
2. Schmid D, et al. *J Ocul Pharmacol Ther.* 2015;31:63-77; 3. Hurley DJ, et al. *Antioxidants.* 2022;11:886; 4. Jóhannesson G, et al. *Acta Ophthalmol.* 2024;102:135-50; 5. Cavet ME, et al. *Invest Ophthalmol Vis Sci.* 2015;56:4108-16; 6. Ren R, et al. *Invest Ophthalmol Vis Sci.* 2016;57:6197-209; 7. National Center for Biotechnology Information. PubChem Compound Summary for CID 66599893, Netarsudil. 2024. <https://pubchem.ncbi.nlm.nih.gov/compound/Netarsudil> (accessed 5 September 2024).



**What clinical outcomes have
been observed with newer
agents in patients who
have open-angle glaucoma?**

Efficacy and safety of newer topical therapies¹⁻⁵

	Latanoprostene bunod	Netarsudil
Dosing	1x daily	1x daily
IOP reduction	≥25%*, ⁶	20% ^{†,7}
Selected AEs	 Conjunctival hyperaemia	 Conjunctival hyperaemia
	 Eye irritation	 Corneal verticillata
	 Eye pain	 Conjunctival haemorrhage
	 Instillation site pain	 Instillation site pain

Findings versus other agents of the same class

Latanoprostene bunod

- Topical latanoprostene bunod lowered IOP more effectively than latanoprost⁸

Netarsudil

- Netarsudil was superior to another ROCK inhibitor, ripasudil (approved in Japan), in lowering IOP in Japanese patients⁹

No contraindications reported for either agent

*Based on a pooled analysis of two phase III randomized trials comparing latanoprost bunod with timolol; [†]Based on a pooled efficacy analysis of three phase III randomized trials comparing netarsudil with timolol.

AE, adverse event; IOP, intraocular pressure; ROCK, Rho kinase.

1. Jóhannesson G, et al. *Acta Ophthalmol.* 2024;102:135–50; 2. Gedde SJ, et al. *Ophthalmology.* 2021;128:P71–150; 3. International Agency for the Prevention of Blindness (IAPB). Latin America Guide to Primary Open Angle Glaucoma, 2019. Available at: www.iapb.org/learn/resources/latin-america-guide-to-primary-open-angle-glaucoma/ (accessed 15 August 2024); 4. FDA. Latanoprostene bunod PI. 2018. Available at: www.accessdata.fda.gov/scripts/cder/daf/index.cfm (accessed 5 September 2024); 5. FDA. Netarsudil PI. 2017. Available at: www.accessdata.fda.gov/scripts/cder/daf/index.cfm (accessed 5 September 2024); 6. Weinreb RN, et al. *J Glaucoma.* 2018;27:7–15; 7. Singh IP, et al. *J Glaucoma.* 2020;29:878–84; 8. Weinreb RN, et al. *Br J Ophthalmol.* 2015;99:738–45; 9. Araie M, et al. *Adv Ther.* 2023;40:4639–56.



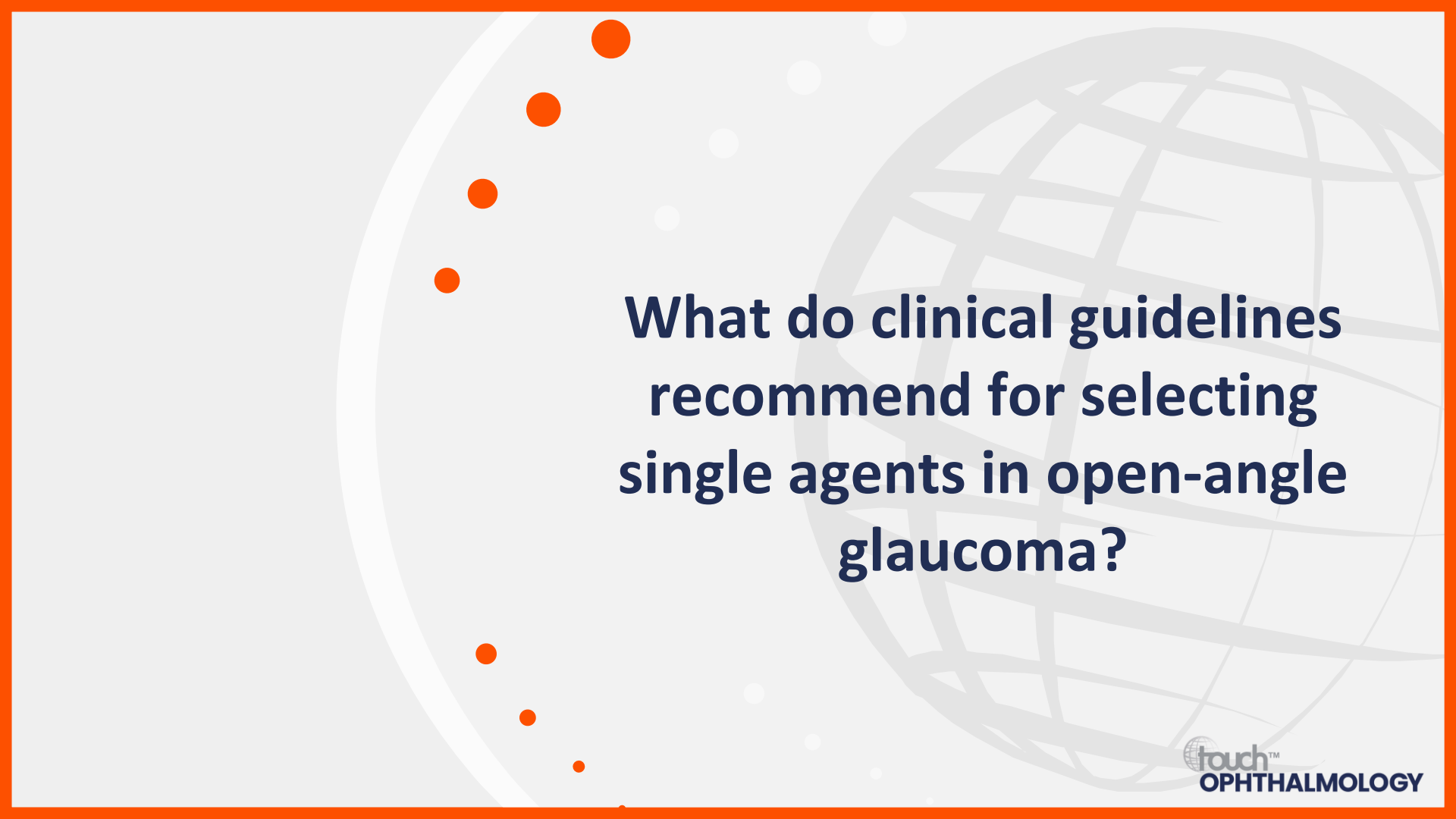
Fine-tuning glaucoma medical care: Optimizing treatment plans for improved outcomes



Joseph F Panarelli, MD

NYU Langone Eye Center,
New York, NY, USA





**What do clinical guidelines
recommend for selecting
single agents in open-angle
glaucoma?**

Selecting topical monotherapy in primary OAG

 **Treatment goals: Control IOP, stabilize optic nerve and visual fields, preserve patient QoL^{1,2}**
Target IOP range to account for disease severity and a visual field loss rate that is unlikely to significantly decrease long-term QoL^{1,2}

1

Prostaglandin analogues¹⁻³

First choice owing to favourable benefit-risk profile and 1x daily dosing

IOP ↓ **25–33%**

Cost, intolerance/AEs, or contraindications may prevent use

2

β -blockers¹⁻³

Frequently used owing to efficacy and safety profile, dosing is 1–2x daily

IOP ↓ **20–25%**

Cardio-selective agents do not eliminate pulmonary AEs in obstructive airway disease

3

Other agents^{1,2}

- **Carbonic anhydrase inhibitors**
- **α_2 -adrenergic agonists**
- **Cholinergics**
- **Rho kinase inhibitors**

LTP and surgery may be considered alongside first-line pharmacotherapy



Patient factors^{3,4}

- Education on disease and importance of continued treatment
- Preferences and priorities
- Adherence in the context of their life
- Relevant comorbidities
- Health-related QoL

AAO and ICO/PAAO/IAPB guidelines recommend use of these two agents first^{1,3}

AAO, American Academy of Ophthalmology; AE, adverse event; IAPB, International Agency for the Prevention of Blindness; ICO, International Council of Ophthalmology; IOP, intraocular pressure; LTP, laser trabeculoplasty; OAG, open-angle glaucoma; PAAO, Pan-American Association of Ophthalmology; QoL, quality of life.

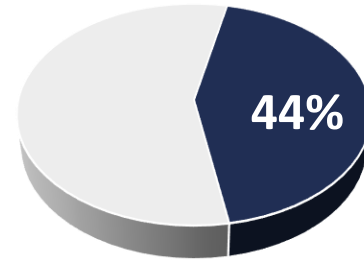
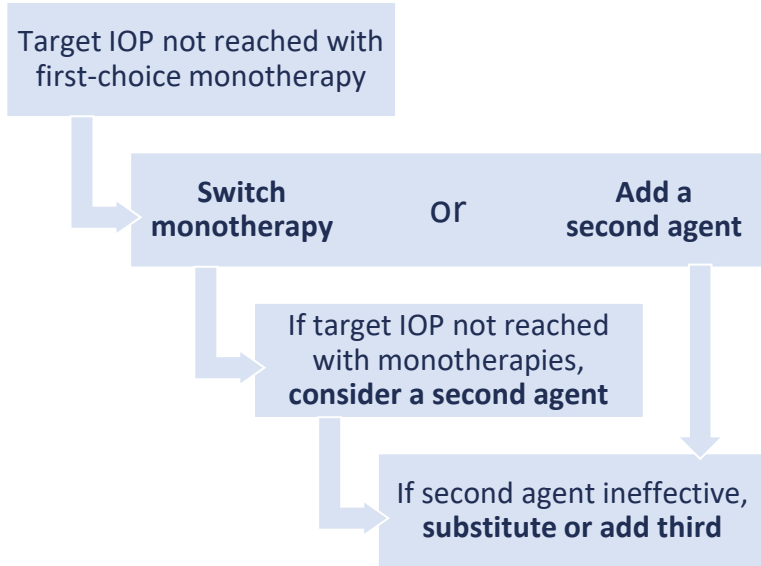
1. Gedde SJ, et al. *Ophthalmology*. 2021;128:71–150; 2. Jóhannesson G, et al. *Acta Ophthalmol*. 2024;102:135–50; 3. IAPB. Latin America Guide to Primary Open Angle Glaucoma. 2019. Available at: www.iapb.org/learn/resources/latin-america-guide-to-primary-open-angle-glaucoma/ (accessed 13 September 2024); 4. European Glaucoma Society Terminology and Guidelines for Glaucoma, 5th Edition. *Br J Ophthalmol*. 2021;105(Suppl. 1):1–169.



**When is the use of multiple
pharmacologic agents
appropriate?**

Use of multiple agents may be necessary

 If monotherapies have failed to adequately lower IOP, the addition of a second agent from another drug class may be needed^{1,2}




of patients required treatment adjustment over 4 years in a US claims study³

IOP, intraocular pressure.



1. European Glaucoma Society Terminology and Guidelines for Glaucoma, 5th Edition. *Br J Ophthalmol*. 2021;105(Suppl. 1):1-169;

2. Jóhannesson G, et al. *Acta Ophthalmol*. 2024;102:135-50; 3. Schwartz GF, et al. *Ophthalmol Glaucoma*. 2021;4:117-25.



**What are the challenges of
using multiple topical agents
and how can they be
addressed?**

Balancing efficacy and safety of multiple agents

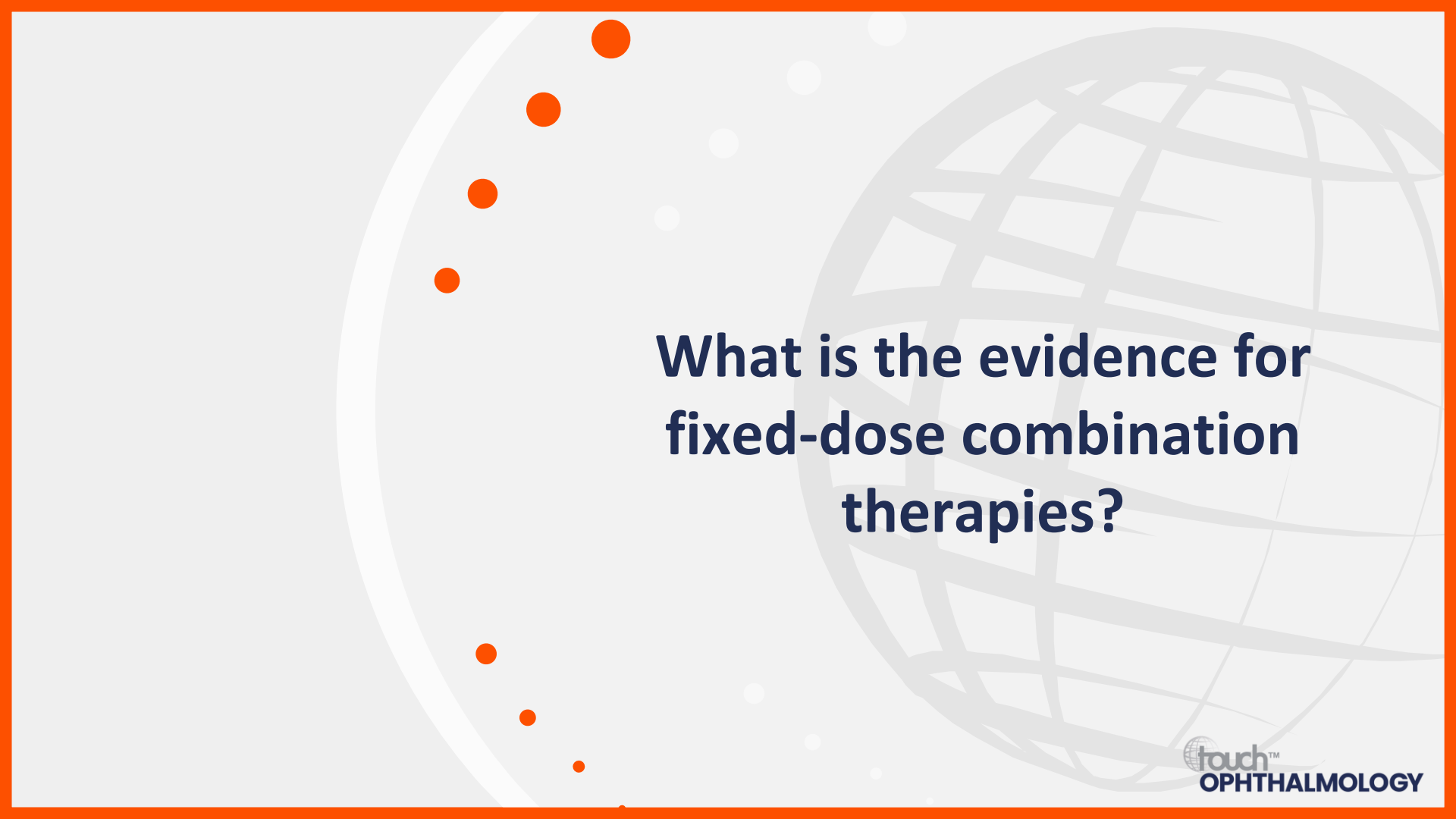
 Efficacy	 Safety
<ul style="list-style-type: none"> • Use of two topical agents improves IOP control¹ • Use of three or four agents can also elicit clinically meaningful reductions in IOP (40–60%)*,² 	<ul style="list-style-type: none"> • Long-term OAG topical therapy use, particularly with preservatives, can cause ocular surface and periorbital changes⁶
<p>However,</p> <ul style="list-style-type: none"> • Ocular drug bioavailability after topical administration is relatively low (<5% even for small lipophilic molecules)³ 	<ul style="list-style-type: none"> • BAC can lead to or worsen ocular surface disease⁷ • The use of BAC-free eye drops can minimize AEs⁸
<ul style="list-style-type: none"> • Must wait 3–5 minutes between applications and improper technique impacts efficacy and adherence^{4,5} 	<ul style="list-style-type: none"> • Patients taking ≥2 topical medications are more likely to experience AEs vs those using monotherapy^{9,10}

FDCs can help to simplify regimens and decrease AEs¹⁰

*Topical and systemic carbonic anhydrase inhibitors were grouped as one class of medication.

AE, adverse event; BAC, benzalkonium chloride; FDC, fixed-dose combination; IOP, intraocular pressure; OAG, open-angle glaucoma.

1. Atey TM, et al. *J Ophthalmol.* 2017;2017:1683430; 2. Neelakantan A, et al. *J Glaucoma.* 2004;13:130–6; 3. Agarwal R, et al. *Drug Deliv.* 2016;23:1075–91;
4. American Academy of Ophthalmology. How to Put in Eye Drops. 2023. Available at: www.aao.org/eye-health/treatments/how-to-put-in-eye-drops (accessed 13 September 2024); 5. Carpenter DM, et al. *Health Commun.* 2016;31:1036–42; 6. Andole S, Senthil S. *Semin Ophthalmol.* 2023;38:158–66;
7. Aguayo Bonniard A, et al. *Expert Opin Drug Metab Toxicol.* 2016;12:1279–89; 8. Inoue K. *Clin Ophthalmol.* 2014;8:903–13;
9. Sleath B, et al. *ISRN Ophthalmol.* 2012;2012:902819; 10. Yu AL, et al. *Clin Ophthalmol.* 2014;8:1221–6.



What is the evidence for fixed-dose combination therapies?

Clinical data for FDCs*

Class	CAI/ β-blocker	CAI/ α ₂ -selective adrenergic agonist	α ₂ -selective adrenergic agonist/ β-blocker	ROCK inhibitor/ PGA
Agents in FDC	Dorzolamide 2%/ timolol 0.5%	Brinzolamide 1%/ brimonidine 0.2%	Brimonidine 0.2%/ timolol 0.5%	Netarsudil 0.02%/ latanoprost 0.005%
Study	• N=335 adults with OAG/OHT ¹	• N=660 adults with OAG/OHT ²	• N=1,159 adults with OAG/OHT ³	• N=750 adults with OAG/OHT ⁴
Efficacy	<p>% IOP reduction at 3 months</p> <p>27.4–32.7 FDC</p> <p>15.5–19.8 Dorzolamide 2%</p> <p>22.2–22.6 Timolol 0.5%</p>	<p>% IOP reduction at 3 months</p> <p>24.1–34.9 FDC</p> <p>16.9–22.6 Brinzolamide 1%</p> <p>14.3–25.8 Brimonidine 0.2%</p>	<p>mm Hg reduction at 12 months</p> <p>-4.4–7.6 FDC</p> <p>-2.7–5.5 Brimonidine 0.2%</p> <p>-3.9–6.2 Timolol 0.5%</p>	<p>% IOP reduction at 3 months</p> <p>30.3–34.8 FDC</p> <p>19.5–23.0 Netarsudil 0.02%</p> <p>23.6–27.3 Latanoprost 0.005%</p>
AEs	<ul style="list-style-type: none"> • TEAEs in 173 patients • Significantly more patients discontinued FDC vs timolol 	<ul style="list-style-type: none"> • TEAEs in 129 patients • One serious AE (chest pain) due to therapy (brinzolamide) 	<ul style="list-style-type: none"> • Incidence of TEAEs lower in FDC vs brimonidine group, but higher in FDC vs timolol group 	<ul style="list-style-type: none"> • Conjunctival hyperaemia was most common • No treatment-related SAEs

FDC of preservative-free therapies, e.g., tafluprost/timolol, may help to decrease side-effects associated with preservatives such as corneal fluorescein staining, dry eye, itching, irritation, foreign body sensation and conjunctival hyperaemia⁵

*Not an exhaustive list of preparations available globally; please check local regulations and guidelines.

AE, adverse event; CAI, carbonic anhydrase inhibitor; FDC, fixed-dose combination; IOP, intraocular pressure; OAG, open-angle glaucoma; OHT, ocular hypertension; PGA, prostaglandin analogue; RCT, randomized controlled trial; ROCK, Rho kinase; SAE, serious AE; TEAE, treatment-emergent AE.

1. Boyle JE, et al. *Ophthalmology*. 1998;105:1945–51. 2. Katz G, et al. *JAMA Ophthalmol*. 2013;131:724–30; 3. Sherwood MB, et al. *Arch Ophthalmol*. 2006;124:1230–8;

4. Walters TR, et al. *Ophthalmol Glaucoma*. 2019;2:280–9; 5. Oddone F, et al. *Adv Ther*. 2020;37:1436–51. Erratum in: *Adv Ther*. 2020;37:3643–44.

Recent studies have aimed to compare FDCs*

Brimonidine 0.1%/timolol 0.5% vs dorzolamide 1%/timolol 0.5%¹

- FDCs compared as adjunct therapy to PGAs
- N=110 adults with OAG/OHT

IOP reduction at 8 weeks

Brimonidine/
timolol

-3.55 mm Hg

Dorzolamide/
timolol

-3.60 mm Hg

- Brimonidine/timolol FDC was non-inferior to dorzolamide/timolol

Netarsudil 0.02%/latanoprost 0.005% vs bimatoprost 0.03%/timolol 0.5%²

- FDCs compared as part of MERCURY-3 RCT
- N=430 adults with OAG/OHT

IOP difference: **≤1.5 mm Hg**

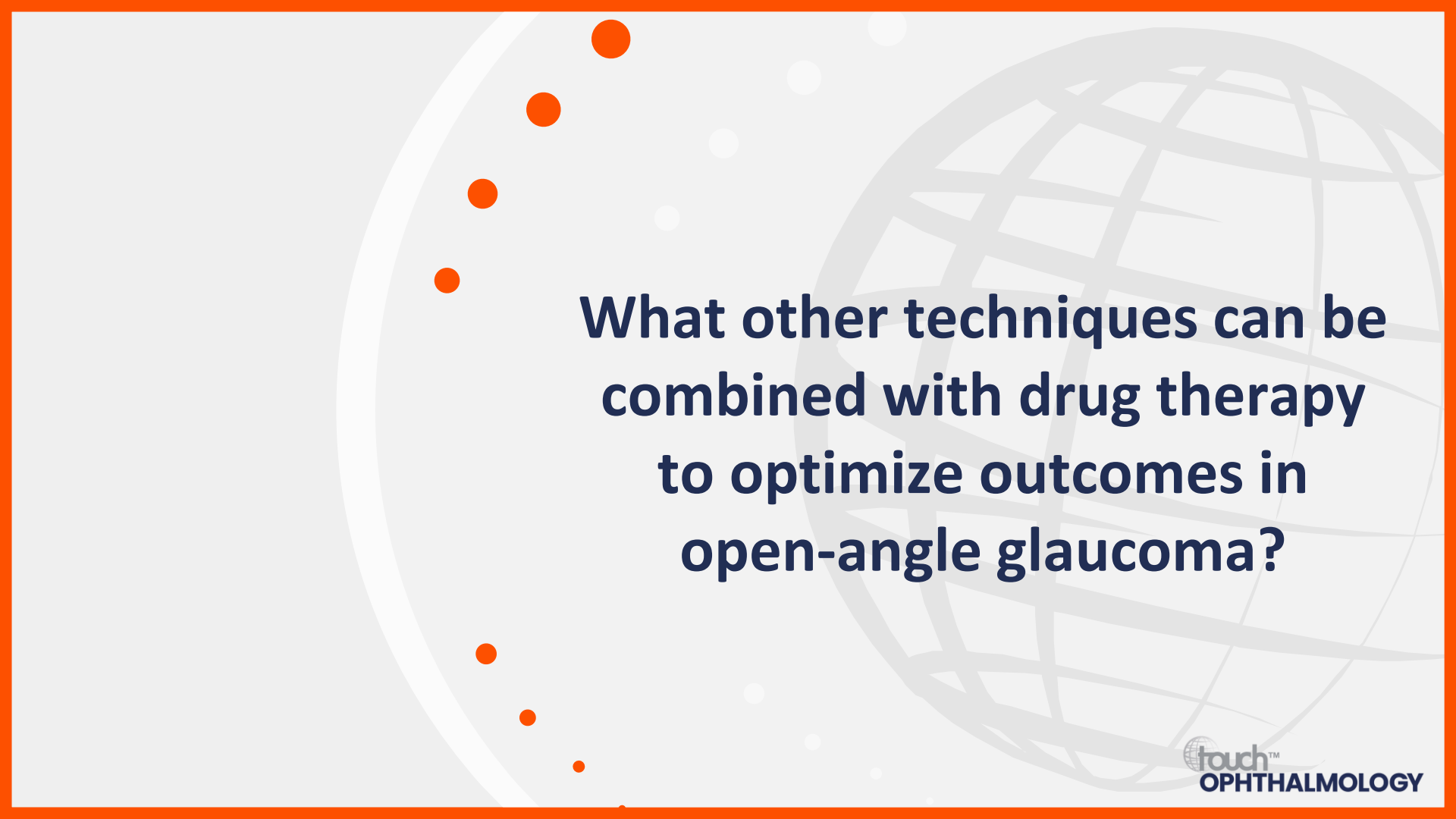
achieved at all nine timepoints
assessed over 3 months

- Netarsudil/latanoprost FDC was non-inferior to bimatoprost/timolol

*Not an exhaustive list of studies comparing different FDC preparations in OAG/OHT.

FDC, fixed-dose combination; IOP, intraocular pressure; OAG, open-angle glaucoma; OHT, ocular hypertension; PGA, prostaglandin analogue; RCT, randomized controlled trial.

1. Inatani M, et al. *Adv Ther.* 2023;40:4074–92; 2. Stalmans I, et al. *Graefes Arch Clin Exp Ophthalmol.* 2024;262:179–90.



**What other techniques can be
combined with drug therapy
to optimize outcomes in
open-angle glaucoma?**