touch™ OPHTHALMOLOGY

Innovations in glaucoma care: Targeting pathophysiology to expand treatment options

Practice aid for open-angle glaucoma

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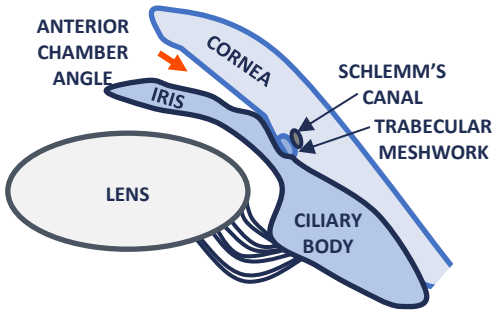
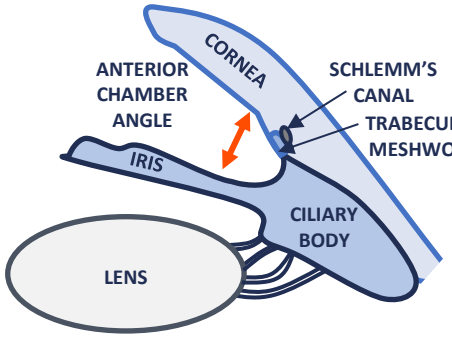
Glaucoma clinical features

Angle-closure glaucoma[1–3]



- Characterized by narrowing or obstruction of anterior chamber angle[4]

Open-angle glaucoma[1–3]



- Increased resistance to AH outflow resulting in nerve damage over time[4]

Key risk factors for developing OAG[5–9]

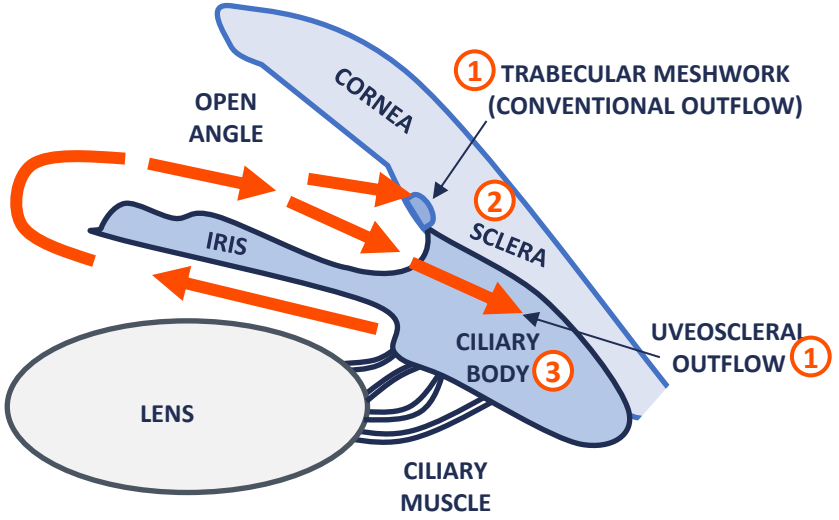
- **IOP (continuous risk factors)**
- **Older age**
- **Family history**
- **Central corneal thickness**
- **Myopia**
- **Steroids**
- **African/Caribbean descent (4x ↑ risk + earlier onset from 40 years) or Hispanic descent**
- **Comorbidities (e.g., diabetes, abnormal BP)**

Clinical presentation[7,10]

- 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

MOA of glaucoma therapies[2,12]



1 ↑ AH outflow:[2,7,12–14]

- Cholinergics
- Prostaglandin analogues (newer agents work at trabecular meshwork)
- ROCK/NET inhibitors
- α_2-selective adrenergic agonists

2 ↓ Episcleral venous pressure:[7,13,14]

- ROCK/NET inhibitors

3 ↓ AH production:[2,7,14]

- α_2-selective adrenergic agonists
- β-blockers
- Carbonic anhydrase inhibitors
- ROCK/NET inhibitors*

*Based on findings from non-human studies.

Efficacy and safety of therapies for OAG[7,15–20]

	α_2-selective adrenergic agonists	β-blockers	Carbonic anhydrase inhibitors*	Cholinergics	Prostaglandin analogues	Latanoprostene bunod	Netarsudil
Dosing	2–3x daily	1–2x daily	2–3x daily	3x daily	1x daily	1x daily	1x daily
IOP reduction	18–35%	20–25%	15–20%	20–25%	25–35%	≥25%†	20%‡
Selected AEs§	Dry mouth Headache Follicular conjunctivitis Fatigue/drowsiness	Bronchospasm Bradycardia/CHF Hypotension Hyperaemia	Corneal oedema Keratitis Punctate cornea Metallic taste	Myopia Reduced vision Miosis Headache	Lash changes Pigmentation Hyperaemia Burning/stinging	Conjunctival hyperaemia Eye irritation Eye pain Installation site pain	Conjunctival hyperaemia Corneal verticillata Conjunctival haemorrhage Installation site pain
	Allergic conjunctivitis/contact dermatitis reported with all drug classes						
Key contra-indications	• MAOi • Children (brimonidine)	• COPD and asthma • CHF, bradycardia, hypotension • >1st-degree heart block	• Sulfonamide allergy • Kidney stones • Aplastic anaemia, SCD, thrombocytopenia	• Neovascular, uveitic, or malignant glaucoma	• Macular oedema • Herpetic keratitis • Active uveitis	**No contraindications** reported for either agent	

OAG treatment algorithm[7,21]

Target IOP not reached with first-choice monotherapy

Switch monotherapy or **Add a second agent**

If target IOP not reached with monotherapies, **consider a second agent**

If second agent ineffective, **substitute or add third**

- When > 1 agent is needed, **FDCs can help to simplify regimens** and decrease AEs[22]
- **The IOP lowering effect of FDCs is superior to** individual agents used as **monotherapy**[23–26]
- **Examples of FDCs:**[23–26]
  - Dorzolamide 2%/timolol 0.5%
  - Brinzolamide 1%/brimonidine 0.2%
  - Brimonidine 0.2%/timolol 0.5%
  - Netarsudil 0.02%/latanoprost 0.005%

*Values shown are for treatment with topical therapy; †Based on a pooled efficacy 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; §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.

Abbreviations and references

Abbreviations

AE, adverse event; AH, aqueous humour; BP, blood pressure; CHF, chronic heart failure; COPD, chronic obstructive pulmonary disease; FDC, fixed-dose combination; IOP, intraocular pressure; MAOi, monoamine oxidase inhibitor; MOA, mechanism of action; NET, norepinephrine transporter; OAG, open-angle glaucoma; ROCK, Rho kinase; SCD, sickle cell disease.

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