



CHAIR-SIDE REFERENCE: GLAUCOMA MEDICATIONS FOR OPTOMETRISTS

Centre for Eye Health

Therapeutically-endorsed optometrists are able to prescribe anti-glaucoma medications for patients in accordance with management and co-management guidelines set by the Optometry Board of Australia. All optometrists, irrespective of whether or not they intend on prescribing these medications, need to be aware of the common adverse events, contraindications and precautions associated with these medications. The following reference presents, in brief, some of more common or serious adverse events, contraindications and precautions for topical medications currently available for Australian optometrists to prescribe. A more comprehensive list may be found in other sources (i.e. MIMS).

CLASS: PROSTAGLANDIN ANALOGUES (PGAs)					
Formulation	Dose	IOP Reduction	Adverse Reactions		Contraindications and Precautions
Latanoprost 0.005% (Xalatan, Xalaprost, APO-Latanoprost, Latanoprost Sandoz, Latanoprost-WGR) Travoprost 0.004% (Travatan) Bimatoprost 0.03% (Lumigan, Lumigan PF)	nocte (at night)	25-35% Starts 2-4 hrs Max at 8-12 hrs	Ocular: <ul style="list-style-type: none"> Common effects typically cosmetic: increased iris pigmentation; eye irritation; eyelash and vellus hair changes (darkening, thickening, lengthening, increased number); periorbitopathy and periorbital pigmentation; conjunctival hyperaemia More severe (but rare): iritis/uveitis, reactivation of herpes simplex keratitis, macular oedema 	Systemic: <ul style="list-style-type: none"> Typically uncommon in occurrence In some susceptible individuals, may cause asthma aggravation (or similar respiratory symptoms) 	Contraindications: <ul style="list-style-type: none"> Known hypersensitivity to the drug or any known excipients Precautions: <ul style="list-style-type: none"> Warn patients of cosmetic effects Aphakia or pseudophakia (potential for macular oedema), recent ocular surgery, ocular inflammatory or infective (e.g. herpetic) conditions Contact lens wear (in preserved eye drops) Severe or brittle asthma Special Populations: <ul style="list-style-type: none"> Pregnancy B3; lactation: <i>no data available</i> Paediatric: <i>not recommended in children</i> Pertinent Drug Interactions: <ul style="list-style-type: none"> Paradoxical elevation in IOP reported with concomitant dosing of two PGAs
	Mechanism of Action				
	Increases aqueous outflow (via uveoscleral pathway)				
CLASS: BETA BLOCKERS (BBs)					
Formulation	Dose	IOP reduction	Adverse Reactions		Contraindications and Precautions
Timolol 0.25%, 0.5% (Timoptol, Timoptol-XE*) Betaxolol 0.5% (Betoptic, BetoQuin)	bid (2x/day)** or mane (in the morning)	20-30% Starts 20 mins Max at 1-2 hrs	Ocular: <ul style="list-style-type: none"> Uncommon; generally well-tolerated May include: mild stinging, burning, blurred vision or dry eyes 	Systemic: <ul style="list-style-type: none"> Cardiovascular: bradycardia, arrhythmia, hypotension, syncope, heart block, cerebrovascular accident, palpitations, cardiac arrest, Raynaud's phenomenon, AV block, sinoatrial block Respiratory: pulmonary oedema, bronchospasm, exacerbation of asthma CNS effects: dizziness, depression, insomnia, memory loss Decreased libido GI upset 	Contraindications: <ul style="list-style-type: none"> Known hypersensitivity to the drug or any known excipients Reactive airway disease, bronchospasm, bronchial asthma, history of bronchial asthma, or severe COPD Sinus bradycardia, sinoatrial block, second and third degree AV block, overt cardiac failure, cardiogenic shock
	Mechanism of Action				
	Decreases aqueous production				
CLASS: ALPHA-AGONISTS (AAs)					
Formulation	Dose	IOP Reduction	Adverse Reactions		Contraindications and Precautions
Brimonidine 0.2% (Alphagan, Enidin) Brimonidine 0.15% (Alphagan-P) Apraclonidine 0.5%*** (Iopidine)	bid or tid (3x/day)	20-25% Max at 2 hours	Ocular: <ul style="list-style-type: none"> Common: follicular conjunctivitis, hyperaemia, overall stinging Overall, poorly tolerated by the ocular surface (approximately 1/3 of patients discontinue due to anterior eye symptoms), i.e. delayed hypersensitivity reaction 	Systemic: <ul style="list-style-type: none"> Uncommon, but potentially: oral dryness, headache and fatigue/drowsiness; sometimes effects on cardiovascular system 	Contraindications: <ul style="list-style-type: none"> Known hypersensitivity to the drug or any known excipients Patients receiving monoamine oxidase inhibitors (MAOIs)
	Mechanism of Action				
	Decreases aqueous production and increases aqueous outflow (via uveoscleral pathway)				



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CLASS: CARBONIC ANHYDRASE INHIBITORS (CAIs)

Formulation	Dose	IOP Reduction	Adverse Reactions		Contraindications and Precautions	
Brinzolamide 1% (Azopt, BrinzoQuin) Dorzolamide 2% (Trusopt*, Trusamide)	bid (2x/day)	15-20% Max at 2 hrs	Ocular: <ul style="list-style-type: none"> Generally well-tolerated Rare, but severe: endothelial decompensation, Stevens-Johnson syndrome 	Systemic: <ul style="list-style-type: none"> Commonly: bitter taste, dry mouth May also have headache, nausea, dizziness, fatigue Potential for anaphylaxis 	Contraindications: <ul style="list-style-type: none"> Known hypersensitivity to the drug or any known excipients Corneal grafts, endothelial dystrophy Allergy to sulphonamides 	Precautions: <ul style="list-style-type: none"> Severe renal/hepatic impairment Contact lens wear (in preserved eye drops) Special Populations: <ul style="list-style-type: none"> Pregnancy B3; lactation: <i>no data available</i> Paediatric: <i>not recommended in children</i> Pertinent Drug Interactions: <ul style="list-style-type: none"> (Similar to systemic CAIs): aspirin (high-dose), lithium, cyclosporine, diuretics, digoxin
	Decreases aqueous production					

CLASS: MIOTICS

Formulation	Dose	IOP Reduction	Adverse Reactions		Contraindications and Precautions	
Pilocarpine 1%, 2%, 4% (Isopto Carpine)	bid to qid (2-4x/ day)	15-20% Max at 3-4 hrs	Ocular: <ul style="list-style-type: none"> Commonly: blurry vision (especially at distance), ciliary spasm, reduced night vision, myopic shift Paradoxical rise in IOP may be observed in patients with severely compromised trabecular meshwork Aggravation of pupillary block Rare, but severe: retinal detachment 	Systemic: <ul style="list-style-type: none"> Exacerbation of pre-existing systemic disease (gastrointestinal irritation, bronchospasm, hypotension, bradycardia) CNS symptoms: nausea, headache 	Contraindications: <ul style="list-style-type: none"> Known hypersensitivity to the drug or any known excipients When pupillary constriction undesirable; acute uveitis/iritis 	Precautions: <ul style="list-style-type: none"> Patients susceptible to retinal detachment (e.g. high myopes, recent cataract surgery, pseudophakia) Patients with severe cardiac, respiratory, gastrointestinal, thyroid or Parkinson's disease May affect ability to drive Contact lens wear (in preserved eye drops) Special Populations: <ul style="list-style-type: none"> Pregnancy B3 Paediatric: <i>not established in children</i> Pertinent Drug Interactions: <ul style="list-style-type: none"> Concurrent CYP2D6 inhibitors, catecholamine depleting drugs, BBs Oral calcium antagonists, antiarrhythmics, parasympathomimetics, diltiazem, verapamil
	Increases aqueous outflow (via trabecular meshwork)					

FIXED DOSE COMBINATIONS

Class	Formulation	Dose	IOP Reduction	Adverse Reactions, Contraindications and Precautions
PGA + BB	Latanoprost 0.005% / Timolol 0.5% (Xalacom, Xalamol 50/5, APO-Latanoprost/Timolol, Latanocom) Bimatoprost 0.03% / Timolol 0.5% (Ganfort, Ganfort PF) Travoprost 0.004% / Timolol 0.5% (DuoTrav)	mane (in the morning) or nocte (in the evening)	20-35%	As for the individual components
AA + BB	Brimonidine 2% / Timolol 0.5% (Combigan)	bid (2x/day)		
CAI + AA	Brinzolamide 1% / Brimonidine 0.2% (Simbrinza)			
CAI + BB	Brinzolamide 1% / Timolol 0.5% (Azarga) Dorzolamide 2% / Timolol 0.5% (Cosopt, Cosdor, Vizo-PF Dorzolatum)			

* At the time of publication, Timoptol-XE has been reinstated and is undergoing manufacturing, but remains widely unavailable due to previous discontinuation of the medication; with the supply shortage expected to be resolved from 03/2025.

** The dosing regimen of timolol may differ depending on the stage of glaucoma, whether it is used as monotherapy or adjunctive therapy. Timoptol-XE is dosed mane.

*** At the time of publication, Apraclonidine is on the board approved list of medications for optometry but is not an optometric item on the PBS. It is not typically used for long-term glaucoma management due to tachyphylaxis.

NOTE: At the time of publication, there are several other commercially available topical glaucoma therapy options that are not currently available in Australia, including Xelpros, Vyulta, Rhopressa, Rocklatan

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An example medication decision making tree, adapted from the NHMRC glaucoma guidelines (2010). The needs of individual patients may vary considerably.

