



# 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	Contraindications and Precautions
<b>Latanoprost 0.005%</b> (Xalatan, Xalaprost, APO-Latanoprost, Latanoprost Sandoz, Latanoprost-WGR)	nocte (at night)	25-35% Starts 2-4 hrs Max at 8-12 hrs	<b>Ocular:</b> <ul style="list-style-type: none"><li>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</li><li>More severe (but rare): iritis/uveitis, reactivation of herpes simplex keratitis, macular oedema</li></ul>	<b>Systemic:</b> <ul style="list-style-type: none"><li>Typically uncommon in occurrence</li><li>In some susceptible individuals, may cause asthma aggravation (or similar respiratory symptoms)</li></ul>	<b>Contraindications:</b> <ul style="list-style-type: none"><li>Known hypersensitivity to the drug or any known excipients</li></ul>	<b>Precautions:</b> <ul style="list-style-type: none"><li>Warn patients of cosmetic effects</li><li>Aphakia or pseudophakia (potential for macular oedema), recent ocular surgery, ocular inflammatory or infective (e.g. herpetic) conditions</li><li>Contact lens wear (in preserved eye drops)</li><li>Severe or brittle asthma</li></ul> <b>Special Populations:</b> <ul style="list-style-type: none"><li>Pregnancy B3; lactation: <i>no data available</i></li><li>Paediatric: <i>not recommended in children</i></li></ul> <b>Pertinent Drug Interactions:</b> <ul style="list-style-type: none"><li>Paradoxical elevation in IOP reported with concomitant dosing of two PGAs</li></ul>
<b>Travoprost 0.004%</b> (Travatan)	<b>Mechanism of Action</b>					
<b>Bimatoprost 0.03%</b> (Lumigan, Lumigan PF)	Increases aqueous outflow (via uveoscleral pathway)					
CLASS: BETA BLOCKERS (BBs)						
Formulation	Dose	IOP reduction	Adverse Reactions		Contraindications	Contraindications and Precautions
<b>Timolol 0.25%, 0.5%</b> (Timoptol, Timoptol-XE*)	bid (2x/day)**	20-30% Starts 20 mins Max at 1-2 hrs	<b>Ocular:</b> <ul style="list-style-type: none"><li>Uncommon; generally well-tolerated</li><li>May include: mild stinging, burning, blurred vision or dry eyes</li></ul>	<b>Systemic:</b> <ul style="list-style-type: none"><li>Cardiovascular: bradycardia, arrhythmia, hypotension, syncope, heart block, cerebrovascular accident, palpitations, cardiac arrest, Raynaud's phenomenon, AV block, sinoatrial block</li><li>Respiratory: pulmonary oedema, bronchospasm, exacerbation of asthma</li><li>CNS effects: dizziness, depression, insomnia, memory loss</li><li>Decreased libido</li><li>GI upset</li></ul>	<b>Contraindications:</b> <ul style="list-style-type: none"><li>Known hypersensitivity to the drug or any known excipients</li><li>Reactive airway disease, bronchospasm, bronchial asthma, history of bronchial asthma, or severe COPD</li><li>Sinus bradycardia, sinoatrial block, second and third degree AV block, overt cardiac failure, cardiogenic shock</li></ul>	<b>Precautions:</b> <ul style="list-style-type: none"><li>Cardiorespiratory: cardiac failure, first degree heart block, respiratory complications, mild/moderate COPD</li><li>Vascular: severe peripheral circulatory disorders or disturbances (Raynaud's)</li><li>Diabetes: may mask hypoglycaemic symptoms in diabetes; may mask thyrotoxicosis</li><li>Contact lens wear (in preserved eye drops)</li></ul> <b>Special Populations:</b> <ul style="list-style-type: none"><li>Pregnancy C (bradycardia possible); lactation: <i>not advised</i></li><li>Paediatric: <i>not established in children</i></li></ul> <b>Pertinent Drug Interactions:</b> <ul style="list-style-type: none"><li>Concurrent CYP2D6 inhibitors, catecholamine depleting drugs, BBs</li><li>Oral calcium antagonists; antiarrhythmics, parasympathomimetics, diltiazem, verapamil</li></ul>
<b>Betaxolol 0.5%</b> (Betoptic, BetoQuin)	or  mane (in the morning)					
	<b>Mechanism of Action</b>					
	Decreases aqueous production					
CLASS: ALPHA-AGONISTS (AAs)						
Formulation	Dose	IOP Reduction	Adverse Reactions		Contraindications	Contraindications and Precautions
<b>Brimonidine 0.2%</b> (Alphagan, Enidin)	bid or tid (3x/day)	20-25% Max at 2 hours	<b>Ocular:</b> <ul style="list-style-type: none"><li>Common: follicular conjunctivitis, hyperaemia, overall stinging</li><li>Overall, poorly tolerated by the ocular surface (approximately 1/3 of patients discontinue due to anterior eye symptoms), i.e. delayed hypersensitivity reaction</li></ul>	<b>Systemic:</b> <ul style="list-style-type: none"><li>Uncommon, but potentially: oral dryness, headache and fatigue/drowsiness; sometimes effects on cardiovascular system</li></ul>	<b>Contraindications:</b> <ul style="list-style-type: none"><li>Known hypersensitivity to the drug or any known excipients</li><li>Patients receiving monoamine oxidase inhibitors (MAOIs)</li></ul>	<b>Precautions:</b> <ul style="list-style-type: none"><li>Patients with cardiac disease, depression or CNS disease</li><li>May have loss of effect over time</li><li>Contact lens wear (in preserved eye drops)</li></ul> <b>Special Populations:</b> <ul style="list-style-type: none"><li>Pregnancy: avoid apraclonidine; brimonidine maybe suitable if necessary (<i>but generally avoid</i>)</li><li>Paediatric: <i>not recommended in children</i></li></ul> <b>Pertinent Drug Interactions:</b> <ul style="list-style-type: none"><li>Potentiating effect with CNS depressants; caution with concomitant BBs, antihypertensives and cardiac glycosides</li><li>Tricyclic antidepressants may interfere with IOP lowering effect</li></ul>
<b>Brimonidine 0.15%</b> (Alphagan-P)	<b>Mechanism of Action</b>					
<b>Apraclonidine 0.5%***</b> (Iopidine)	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	
<b>Brinzolamide 1%</b> (Azopt, BrinzoQuin)	bid (2x/day)	15-20% Max at 2 hrs	<b>Ocular:</b> <ul style="list-style-type: none"> <li>Generally well-tolerated</li> <li>Rare, but severe: endothelial decompensation, Stevens-Johnson syndrome</li> </ul>	<b>Systemic:</b> <ul style="list-style-type: none"> <li>Commonly: bitter taste, dry mouth</li> <li>May also have headache, nausea, dizziness, fatigue</li> <li>Potential for anaphylaxis</li> </ul>	<b>Contraindications:</b> <ul style="list-style-type: none"> <li>Known hypersensitivity to the drug or any known excipients</li> <li>Corneal grafts, endothelial dystrophy</li> <li><b>Allergy to sulphonamides</b></li> </ul>	<b>Precautions:</b> <ul style="list-style-type: none"> <li>Severe renal/hepatic impairment</li> <li>Contact lens wear (in preserved eye drops)</li> </ul> <b>Special Populations:</b> <ul style="list-style-type: none"> <li>Pregnancy B3; lactation: <i>no data available</i></li> <li>Paediatric: <i>not recommended in children</i></li> </ul> <b>Pertinent Drug Interactions:</b> <ul style="list-style-type: none"> <li>(Similar to systemic CAIs): aspirin (high-dose), lithium, cyclosporine, diuretics, digoxin</li> </ul>
<b>Dorzolamide 2%</b> (Trusopt <sup>®</sup> , Trusamide)	<b>Mechanism of Action</b>					
	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	<b>Ocular:</b> <ul style="list-style-type: none"><li>Commonly: blurry vision (especially at distance), ciliary spasm, reduced night vision, myopic shift</li><li>Paradoxical rise in IOP may be observed in patients with severely compromised trabecular meshwork</li></ul>	<b>Systemic:</b> <ul style="list-style-type: none"><li>Exacerbation of pre-existing systemic disease (gastrointestinal irritation, bronchospasm, hypotension, bradycardia)</li><li>CNS symptoms: nausea, headache</li></ul>	<b>Contraindications:</b> <ul style="list-style-type: none"><li>Known hypersensitivity to the drug or any known excipients</li><li>When pupillary constriction undesirable; acute uveitis/iritis</li></ul>
	<b>Mechanism of Action</b>		<ul style="list-style-type: none"><li>Aggravation of pupillary block</li><li>Rare, but severe: retinal detachment</li></ul>	<b>Precautions:</b> <ul style="list-style-type: none"><li>Patients susceptible to retinal detachment (e.g. high myopes, recent cataract surgery, pseudophakia)</li><li>Patients with severe cardiac, respiratory, gastrointestinal, thyroid or Parkinson's disease</li><li>May affect ability to drive</li><li>Contact lens wear (in preserved eye drops)</li></ul> <b>Special Populations:</b> <ul style="list-style-type: none"><li>Pregnancy B3</li><li>Paediatric: <i>not established in children</i></li></ul> <b>Pertinent Drug Interactions:</b> <ul style="list-style-type: none"><li>Concurrent CYP2D6 inhibitors, catecholamine depleting drugs, BBs</li><li>Oral calcium antagonists, antiarrhythmics, parasympathomimetics, diltiazem, verapamil</li></ul>	
	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 0.2% / 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 Dorzolaticim)			

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.

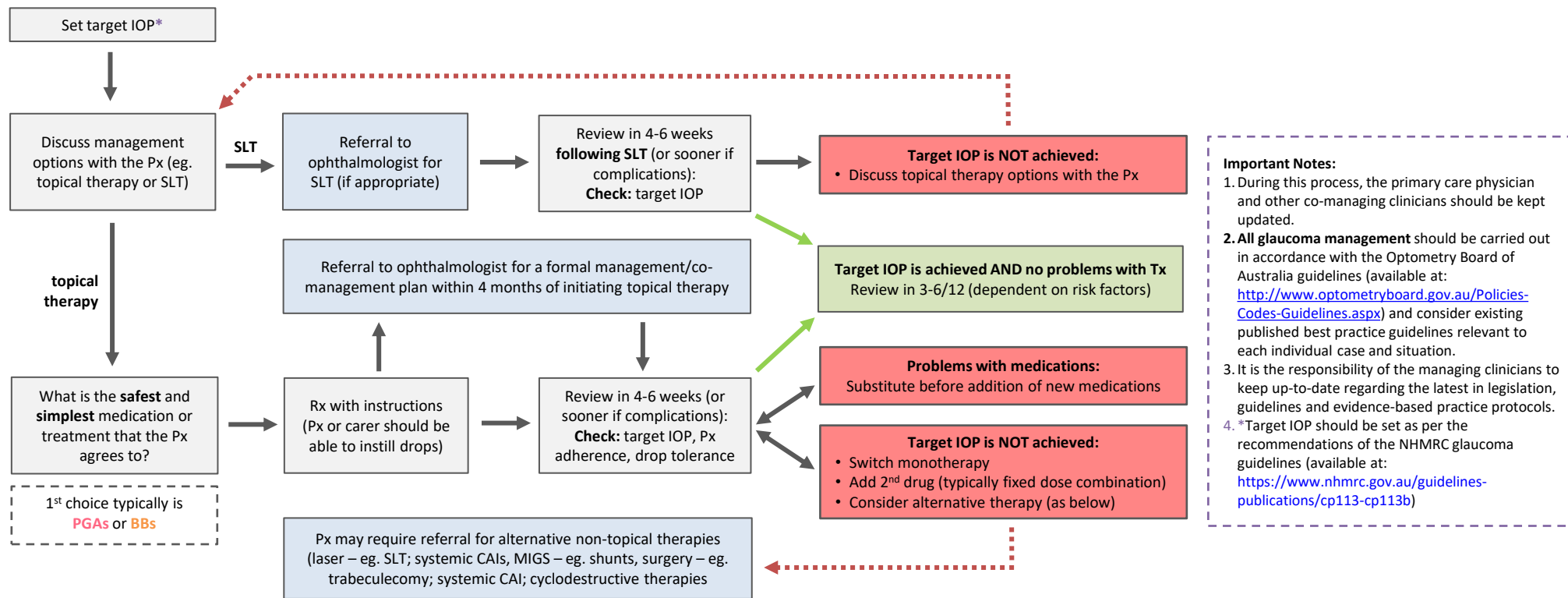
\*\*\* At the time of publication, Apraclonidine is on the board approved list of medications for optometry but is not an optometric item on the PBS. It is not typically used for long-term glaucoma management due to tachyphylaxis.

**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.



**CFEH TELEHEALTH**  
SUPPORTING OPTOMETRISTS

This reference is designed a guide to aid glaucoma management decisions, however individual cases must be assessed in the context of all available clinical data.

For personalised clinical support or advice managing your patients with glaucoma, please make a free one-on-one telehealth appointment for yourself with one of the CFEH Senior Staff Optometrists.

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