Screening for open-angle glaucoma*

A guide for family physicians to identify and refer patients at risk of glaucoma

Glaucoma is important: the numbers

- **#1** cause of irreversible vision loss
- **2.7%–7.5%** prevalence in Canada
- **50%** with glaucoma are undiagnosed
- **66** patients with potentially undiagnosed glaucoma in an average family MD practice

Family physicians play a vital role

Only **27%–64%** of Canadians make regular visits to the optometrist.

Family physicians can aid in identifying and referring patients at high risk for glaucoma.

Why selectively screen for glaucoma?

1. Vision loss from glaucoma is asymptomatic and irreversible
2. Diagnostic tools can detect glaucoma early
3. **Early detection and treatment prevents further nerve fiber layer damage**

Risk factors

Ask about risk factors to identify asymptomatic patients at risk of glaucoma. Consider referral to an optometrist or ophthalmologist.

Age > 55	African descent
Hispanic descent	Family history of glaucoma
Corticosteroid use (periocular/ topical)	Last complete eye exam > 5 years ago

For **angle-closure glaucoma**: Inuit/ East Asian ancestry, female sex, hyperopia

Clinical exam

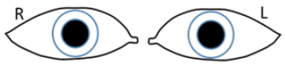
A thorough physical exam can reveal signs of progressive glaucoma that may already be symptomatic and require urgent referral. Examine for the following:

Reduced visual field	Direct ophthalmoscopy to view optic disc
Relative afferent pupillary defect (below)	Reduced central distance vision

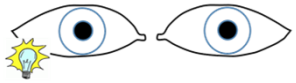
*Screening is particularly important in elderly adults, because they may not present/report classic symptoms

Testing for relative afferent pupillary defect (RAPD)

1. Begin with dark room, bright pen light, and patient fixated at distant object.

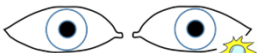


2. **Shine light into unaffected eye**. Both pupils constrict.

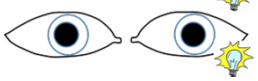


3. **Swing light to affected eye.** Instead of constricting (normal), both pupils *dilate*.

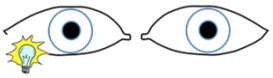
Normal:



RAPD*:



4. **Swing light back to unaffected eye**. Both pupils constrict.

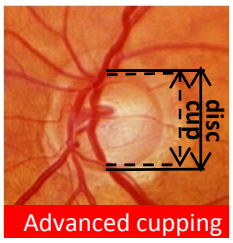


Direct ophthalmoscopy

Glaucomatous findings on ophthalmoscopy:

- Cup:disc ratio > 0.5
- Cup:disc asymmetry > 0.2
- Inferior notch
- Nerve fiber layer defect
- Disc hemorrhage


Normal disc



Advanced cupping


Inferior disc notch


Disc hemorrhage

Bottom line

1. Ask about risk factors and refer if high risk
2. Check vision and refer if reduced
3. Check pupils for a relative afferent pupillary defect
4. Ophthalmoscopy for glaucomatous findings

Glaucoma meds	Names
Prostaglandin analogs	Xalatan (latanoprost), Travatan Z (travoprost), Lumigan RC (bimatoprost)
β blockers	Timoptic-XE (timolol), Betagan (levobunolol), Betoptic (betaxolol)
Carbonic anhydrase inhibitors	Topical: Trusopt (dorzolamide), Azopt (brinzolamide) Oral: Diamox (acetazolamide), Neptazane (methazolamide)
α-2 adrenergic agonist	Alphagan (P) (brimonidine)
Parasympathomimetics	Isopto carpine (pilocarpine), Isopto carbachol (carbachol)
Combinations	Cosopt (timolol/dorzolamide), Combigan (timolol/brimonidine), Xalacom (timolol/latanoprost), Duotrav (timolol/travoprost), Azarga (brinzolamide and timolol)

References

1. Canadian Ophthalmological Society evidence-based clinical practice guidelines for the management of glaucoma in the adult eye. *Can J Ophthalmol* 2009;44(Suppl 1):S7-93. Available: www.cos-sco.ca/cpgs/COS-GlaucomaCPG_PKG_Jun09.pdf
2. Harper RA . *Basic Ophthalmology.* 9th ed. San Francisco: American Academy of Ophthalmology; 2009.

Appendix to: Basilious A, Buys YM. A woman with a family history of glaucoma. *CMAJ* 2015. DOI:10.1503/cmaj.140685.