

GP Ophthalmology Update: Cataract, Glaucoma & Eyedrops Eastcote Sept 21 2022

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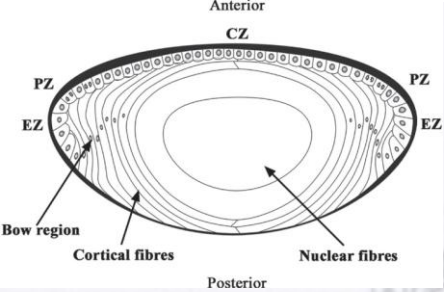


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What is a cataract?

👁 Any opacification of the (crystalline) lens of the eye

- Like looking through a filter
- 'Dark smudged glasses you can't take off'

👁 Basic types of cataract include

- **Nuclear sclerosis:**

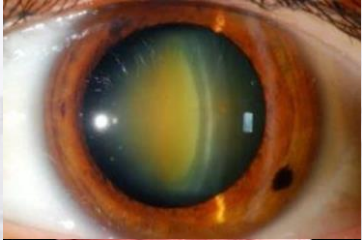
Formed by new layers of lens fibres (added with ageing) compress the lens nucleus

- **Cortical cataract:**

New fibres are added to outside of lens, which age and produce cortical spokes

- **Posterior subcapsular cataract:**

Opacities in the central posterior cortex. This may occur in younger patients and may cause glare ± deterioration in near vision



Surgery: Intraocular lens implants

- ① Surgery involves removing the lens and replacing with an intraocular implant
- ① Phacoemulsification cataract extraction is the commonest operation in the UK
- ① Careful assessment of the preoperative eye and assessment of the patient's current and desired lifestyle needed
- ① No absolute threshold of visual acuity at which surgery is indicated

What's New

👁 Spectacle Independence

- Distance
 - Spherical Targeting (biometry)
 - Astigmatism control
 - LRI
 - Toric IOLs
- Near
 - Multifocal IOLs
 - Accommodating IOLs
 - Enhanced monofocal IOLs
- Presbyopia surgery

From the GP perspective...

Consider

- Pre-operative assessment of patients
 - Pre-operative investigations
 - Anti coagulants
 - Diabetic control
 - Posture
- Post-operative complications
- Recent advances



Anti-coagulants

- No preoperative investigations are needed for > 95% of patients
- Anticoagulants should not be stopped preoperatively
 - Katz J. *et al* Study of Medical Testing for Cataract Surgery Team. Risks and benefits of anticoagulant and anti platelet medication use before cataract surgery *Ophthalmology*. 110(9):1784-8, 2003 Sep
- Recommendations for injected anaesthetic
 - Aspirin can continue safely
 - Warfarinised pts INR 1.8 - 2.2
 - NOACs - if possible ceased for 12 days
- Topical anaesthesia: may continue meds

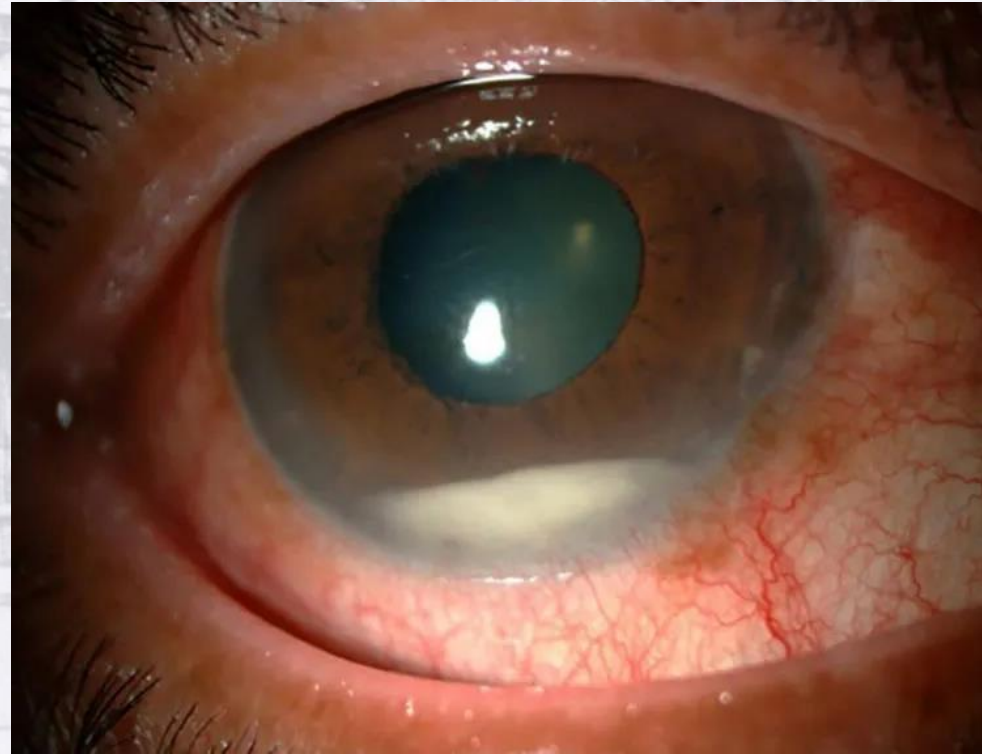
Posture

- Patient must be able to lie almost flat (min 45°) for 20 mins
- Problem with:
 - Chronic airways limitation
 - Tremor - e.g. PD
 - Neck and back scoliosis
 - Claustrophobia
 - Uncooperative patients
- Consider GA for any issues with above
 - Bilateral surgery (ISBCS)
 - Immediate Sequential Bilateral Cataract Surgery

Post-operative issues

- All patients informed of RSVP
 - R - Redness
 - S - Sensitivity to light
 - V - loss of Vision
 - P - Pain
- Complications in first week
 - Infection: endophthalmitis / keratitis
 - Raised IOP
 - Trauma - no heavy lifting, eye rubbing, straining

Endophthalmitis shortly after cataract surgery



Routine surgery

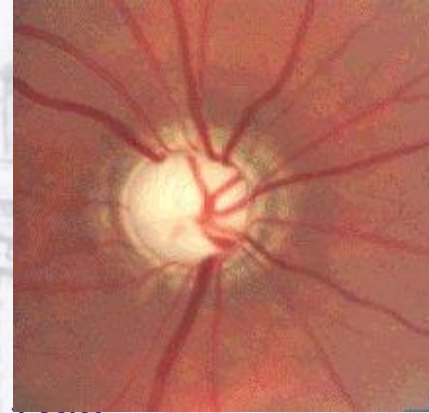
- Day surgery
- Require 4 hrs. fasting, 2hr clear fluids
- Meds should be taken on morning of Sx
- No make up and CL not used for 1 week
- No need for preop antibiotics
- Dilating drops
- Optional sedation
- Anaesthesia: peribulbar or topical
- Discharge 4 hrs. home

Glaucoma: classical triad (c 1990)

- *Raised eye pressure*
 - IOP = intraocular pressure
- *Abnormal optic disc*
 - Optic disc = optic nerve head = front of optic nerve, visible within the eye
 - Degree of 'cupping'
 - Colour & size of optic nerve head
- *Reduced field of vision*
 - Characteristic visual field defects
 - End stage 'tunnel vision', then blindness

(More recently) Glaucoma is

- 👁️ **An optic neuropathy**
 - With an associated, commensurate visual field defect
- 👁️ **A group of disorders**
 - These may share common features (e.g. IOP)
 - May be very different (e.g. cause, Rx, chronicity)
- 👁️ **Not just (or necessarily) raised eye pressure**
 - IOP outside normal range in only 2/3 glaucoma pts
- 👁️ **Not usually an emergency (unless acute)**



Glaucoma : some terms

- 👁️ 'Low pressure (tension)' glaucoma
 - Also 'normal pressure' glaucoma
- 👁️ Ocular hypertension
- 👁️ Synonyms
 - = Primary open angle glaucoma (POAG)
 - = Chronic open angle glaucoma (COAG)
 - = Chronic simple glaucoma (glaucoma simplex)
- 👁️ Phasing = 'continuous' IOP measurement

Glaucoma : prevalence

- ◎ Overall UK prevalence approx. 1-2 %
 - Up to 75 patients per GPs list
- ◎ Only 50% of glaucoma patients diagnosed
- ◎ The principle of **screening**: glaucoma is more common in certain well defined groups
 - Approx. 5% over 75 yr.
 - More common with +ve FH, African ancestry etc
- ◎ Financial implications of screening

IOP in glaucoma

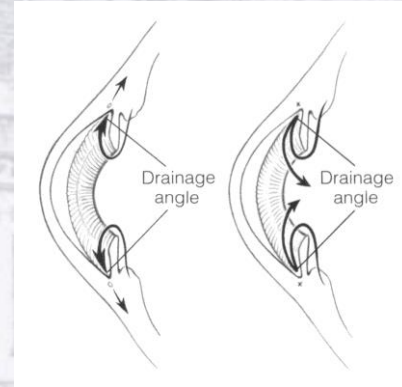
- 👁️ A continuum of pressure
- 👁️ A continuum of risk
- 👁️ A degree of diurnal variation is normal
- 👁️ Single or infrequent measurement of raised IOP does not equal glaucoma

What causes glaucoma?

- Cause may be unknown (primary)
 - Vast majority
 - e.g. primary (chronic) open angle glaucoma
- Angle closure glaucoma - anatomy
- May be secondary to a known cause
 - e.g. steroid-induced glaucoma
- Role of optic nerve head blood flow
 - Uncertain at present (Ca channel blockers as Rx)

Glaucoma : classification

- By anatomy
 - Angle open, closed or narrow
- By time course of disease
- Acute or chronic
- By description of cause
- Primary (unknown cause or congenital)
- Secondary (i.e. cause known: e.g. uveitic, traumatic, pigmentary, steroid induced)



Glaucoma classification

Forms of glaucoma - EGS classification

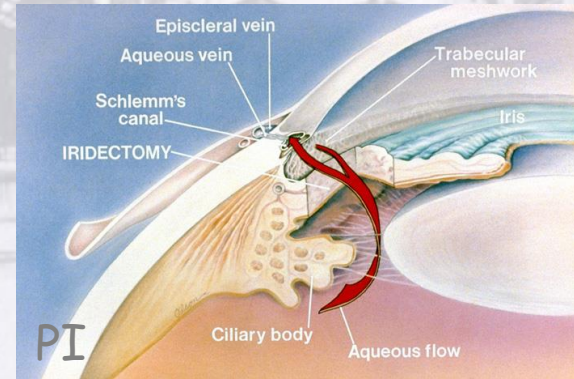
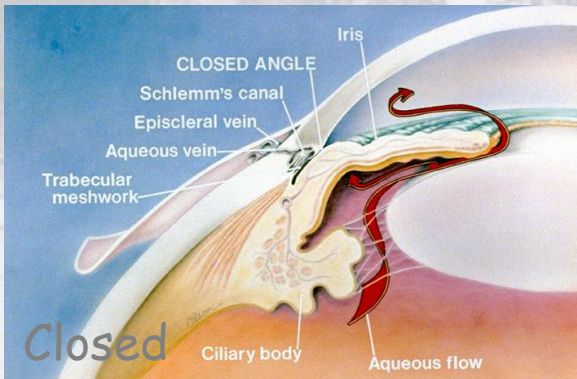
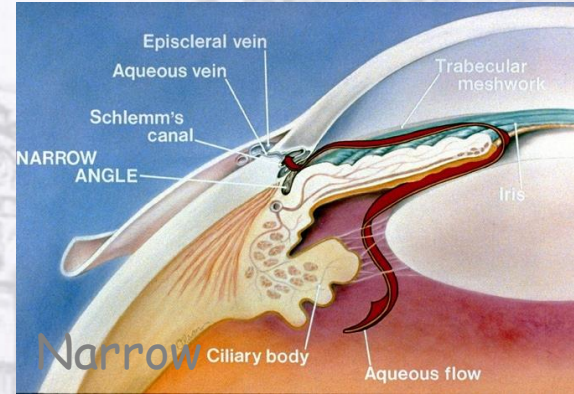
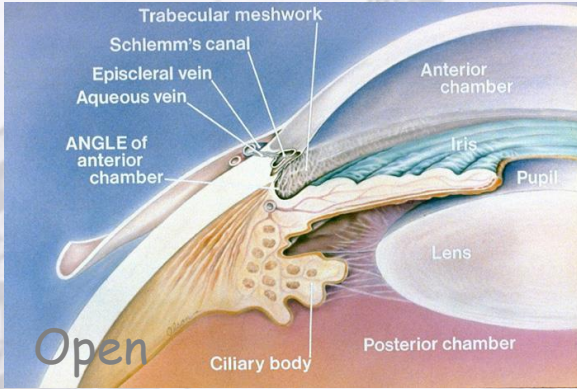
Primary

- Primary congenital forms
- Primary open-angle glaucomas (POAG)
 - Primary juvenile glaucoma
 - POAG/high pressure glaucoma
 - POAG/normal pressure glaucoma
 - Primary open-angle suspect
 - Ocular hypertension
- Primary angle-closure (PAC)

Secondary

- Secondary open-angle glaucomas
 - Secondary open-angle glaucomas caused by ocular disease
 - Iatrogenic secondary open-angle glaucomas
- Secondary angle-closure
 - With pupillary block
 - Without pupillary block

Irido-corneal angle anatomy



Glaucoma classification:

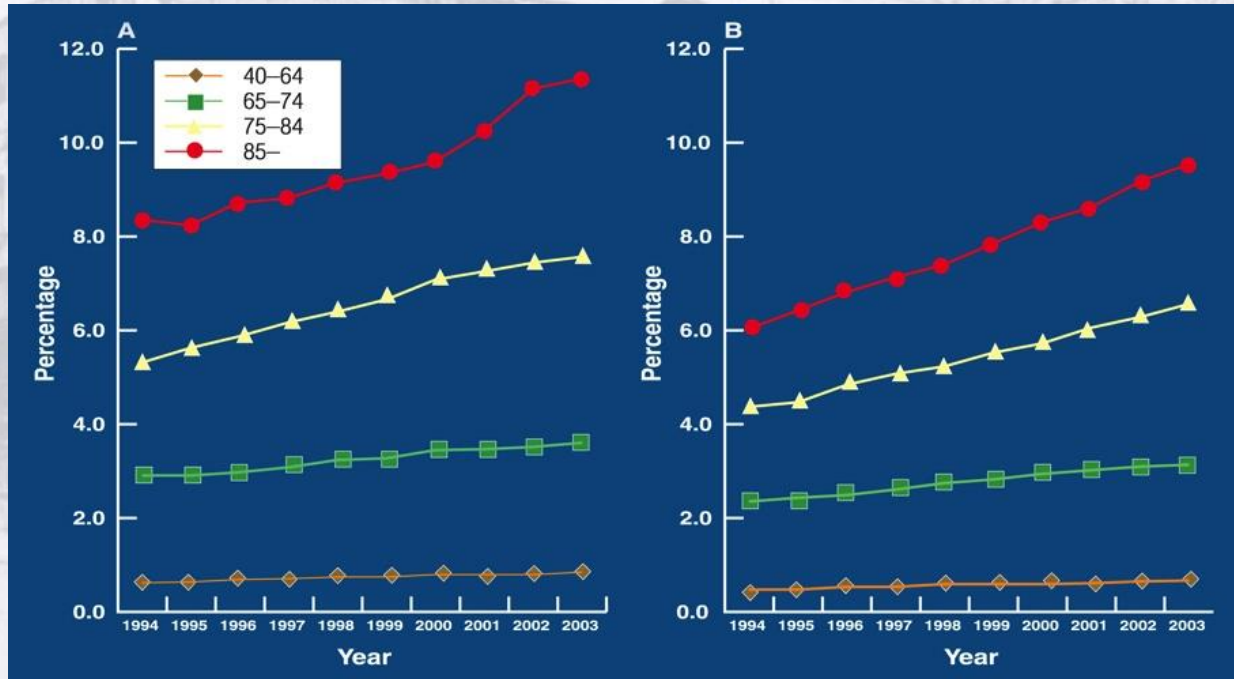
Secondary open-angle glaucomas caused by ocular disease

- Exfoliative glaucoma
- Pigmentary glaucoma
- Lens-induced secondary open-angle glaucoma
- Glaucoma associated with intraocular haemorrhage
- Uveitis glaucoma
- Glaucoma due to intraocular tumours
- Glaucoma associated with retinal detachment
- Open-angle glaucoma due to ocular trauma

Epidemiology of glaucoma in Europe

Glaucoma prevalence in the UK

Percentage of individuals treated for glaucoma each year from 1994 to 2003
 A = men and B = women



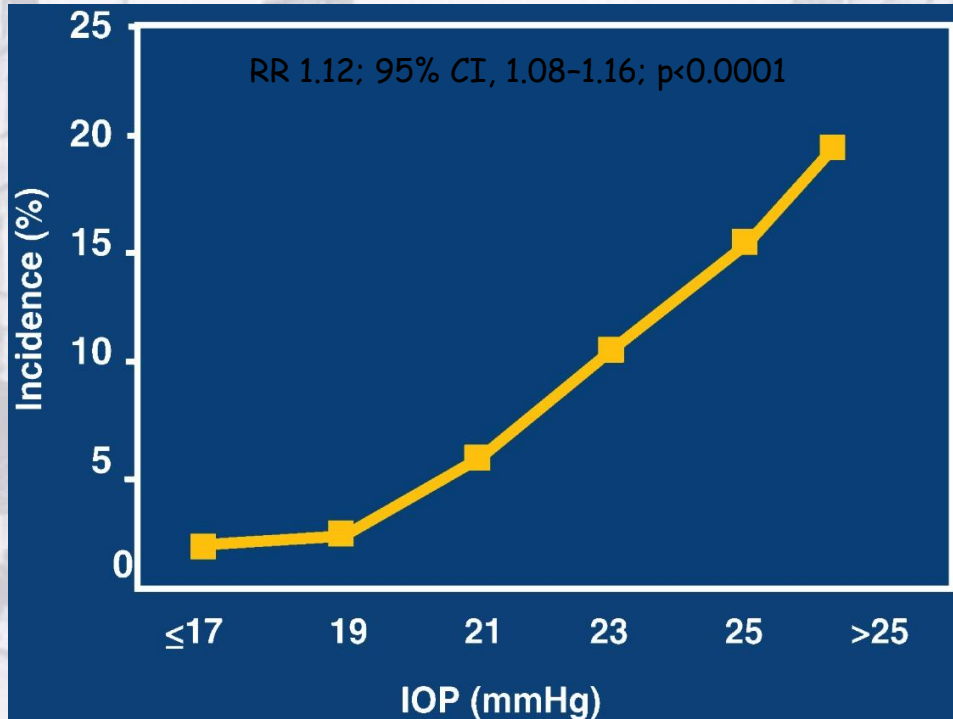
Glaucoma :

Concept of risk factors

- 👁️ +ve family history
- 👁️ Age
- 👁️ Short-sightedness
- 👁️ Diabetes
- 👁️ Race - Afro-Caribbean
- 👁️ Ocular trauma -including surgery
- 👁️ Drugs - e.g. topical or systemic steroids
- 👁️ Raised IOP - by no means essential for Δ
 - New concept of IOP as a risk factor for glaucomatous optic neuropathy

Risk factors for glaucoma

Intraocular pressure (IOP)



Medical glaucoma treatment - plan

👁️ Drugs

- Combinations
- Formulations
- Therapeutic strategies
- Delivery routes

👁️ Compliance

- Minimising side effects
- Maximising efficacy

👁️ Support

- Glaucoma UK



Medication load

👁 Medication strength











- ❑ β -blockers 0.5% v 0.25% v 0.1%
- Bimatoprost 0.3% v 0.1%
- Apraclonidine 1% v 0.5%
- Dorzolamide (top) v acetazolamide (oral)

👁 Dosage

- ❑ β -blockers od v bd
- CAI bd v tds
- ❑ α -agonists bd v tds (iopidine)

Medical nuances

- 👁️ SLT as initial treatment (?)
- 👁️ Initial vs add on
- 👁️ Single or dual agents
- 👁️ Switch vs add
- 👁️ Maximum tolerated medical therapy
 - Then and now
 - 1, 2, 3, 4 drops
 - 1, 2, 3 agents (bottles)
 - New agents add more options for combinations
- 👁️ Treatment holiday
 - Diamox
 - SLT
- 👁️ Increased clinic time ...

Class	Color of Bottle Cap	
Anti-infectives	Tan	
Anti-inflammatories/steroids	Pink	
Mydriatics and cycloplegics	Red	
Nonsteroidal anti-inflammatories	Gray	
Miotics	Dark Green	
Beta-blockers	Yellow	
Beta-blocker combinations	Dark Blue	
Adrenergic agonists	Purple	
Carbonic anhydrase inhibitors	Orange	
Prostaglandin analogues	Turquoise	

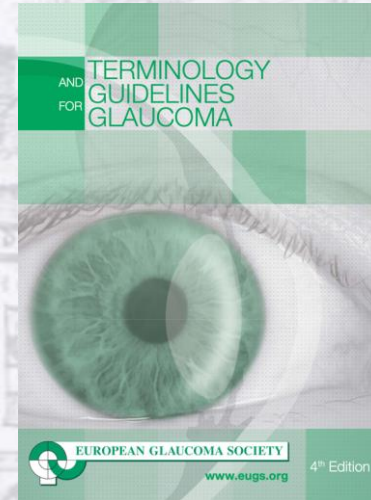
Further nuances

- Generic vs proprietary
 - Cost
 - Drop bottles - stiffness / drop size / medication volume
 - Avoid excessive variation
- Preserved vs preservative-free
 - Single use v multi-dose
- Different types of preservatives
 - BAK
 - Purite
 - Polyquad
- Management of ocular surface disease
 - Before and during Rx
- SLT as a drop-sparing measure
- Compliance aids
 - Bottles vs single use vials

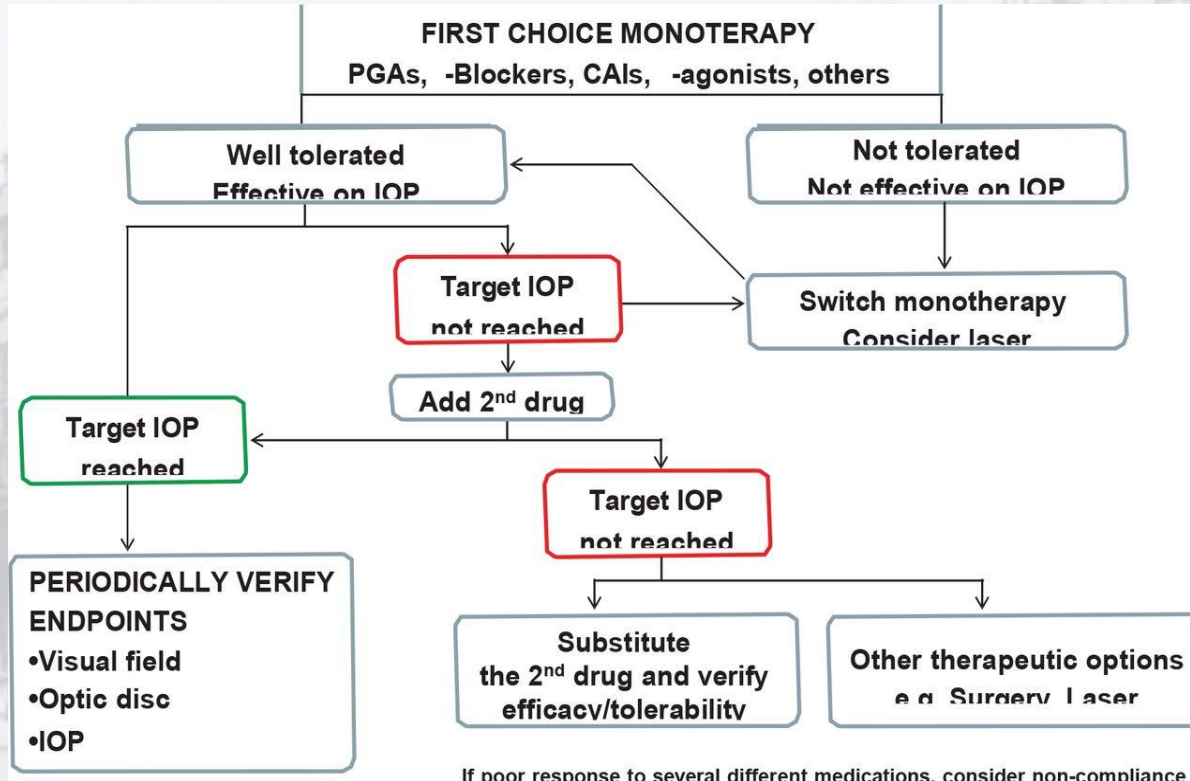


Some medical treatment strategies

- One eye treatment trial
 - Non-responders
 - Contralateral effect (systemic v central effect)
 - Unilateral or asymmetric disease
- Discontinuation
 - Tachyphylaxis
 - Treatment holiday
 - Washout
- Combining inflow / outflow
- Drugs of same class
 - Avoid in combination
 - Switch
 - Within class
 - Between classes
- Punctal occlusion
 - Close eye / avoid excessive blinking
 - Digital occlusion
 - Devices
- Timing of drops
 - Throughout the day
 - Between drops
 - PGA / β -blocker: night vs morning



Therapeutic algorithm in glaucoma topical therapy





Thank You