

Vision Initiative

A partnership promoting eye health and vision care



**Vision
Initiative**

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Laser and the management of eye disease

Vision Initiative in association with
PSA Continuing Education Program

About Vision 2020 Australia

- national peak body
- represents over 50 member organisations
- provides a platform for collaboration
- part of VISION 2020: The Right to Sight.

Why eye health and vision care?

- preventing avoidable sight loss is cost effective
- 75 per cent of vision loss is avoidable or treatable
- people with vision impairment are at a greater risk of suffering from secondary conditions:
 - falls
 - depression
 - early special accommodation
 - increased early mortality.

Vision Initiative

- The Victorian Government's response to the *National Eye Health Framework for Action to Promote Eye Health and Vision Loss*

www.health.gov.au

- is managed by Vision 2020 Australia
- *Get Tested.* Visit your optometrist or ophthalmologist or speak to your doctor.

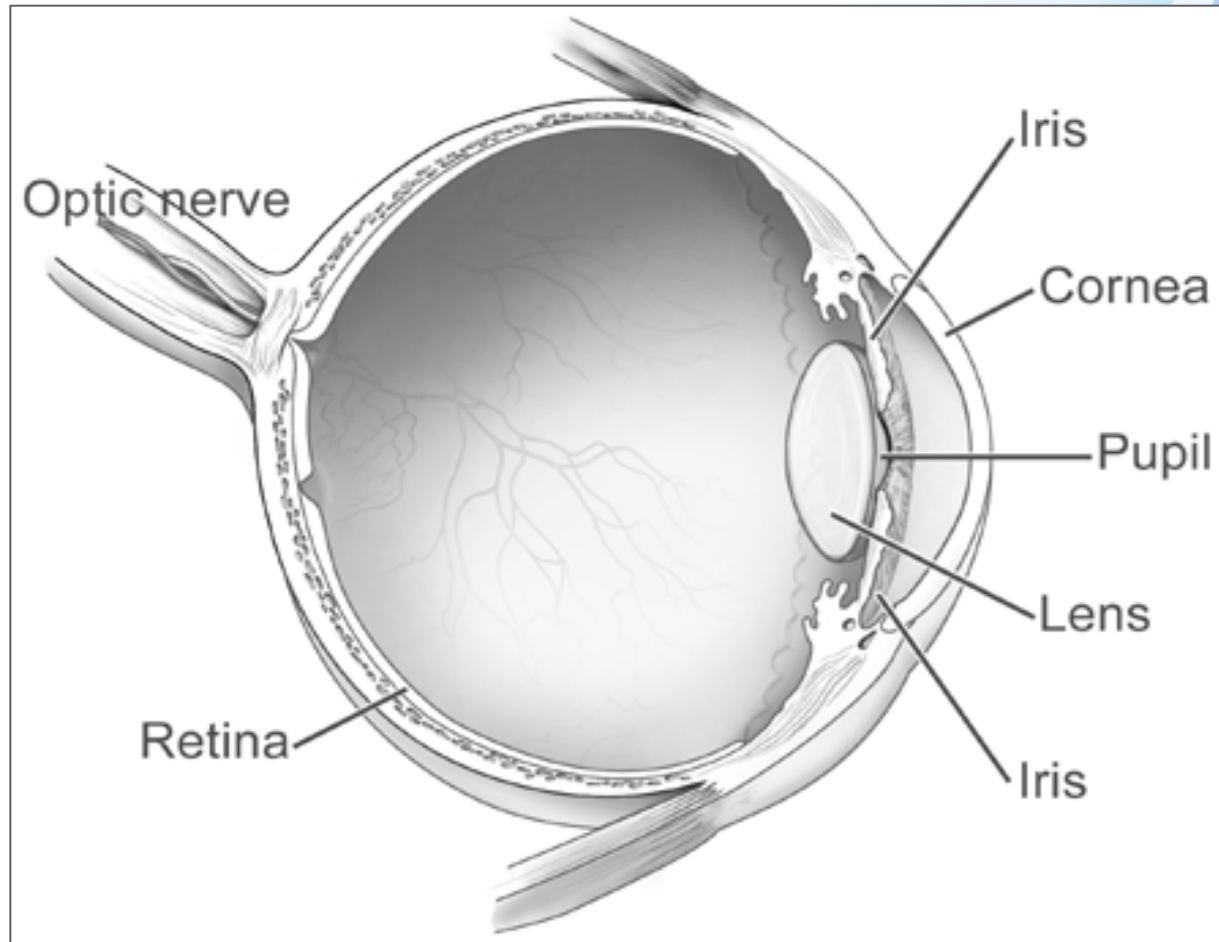
Vision Initiative

- The key message of the Vision Initiative
- **Save Your Sight - *Get Tested***
- funded by the Victorian Department of Human Services
- implemented by Vision 2020 Australia. The national branch of a global campaign to prevent avoidable blindness
- more than 54 member organisations
- Victoria's public health response to the National Framework.

Pharmacists and eye health

- Source of healthcare advice
- local community based
- accessible
- trusted and knowledgeable
- dispenser of prescription medications
- ready-made reading glasses.

Anatomy of the eye

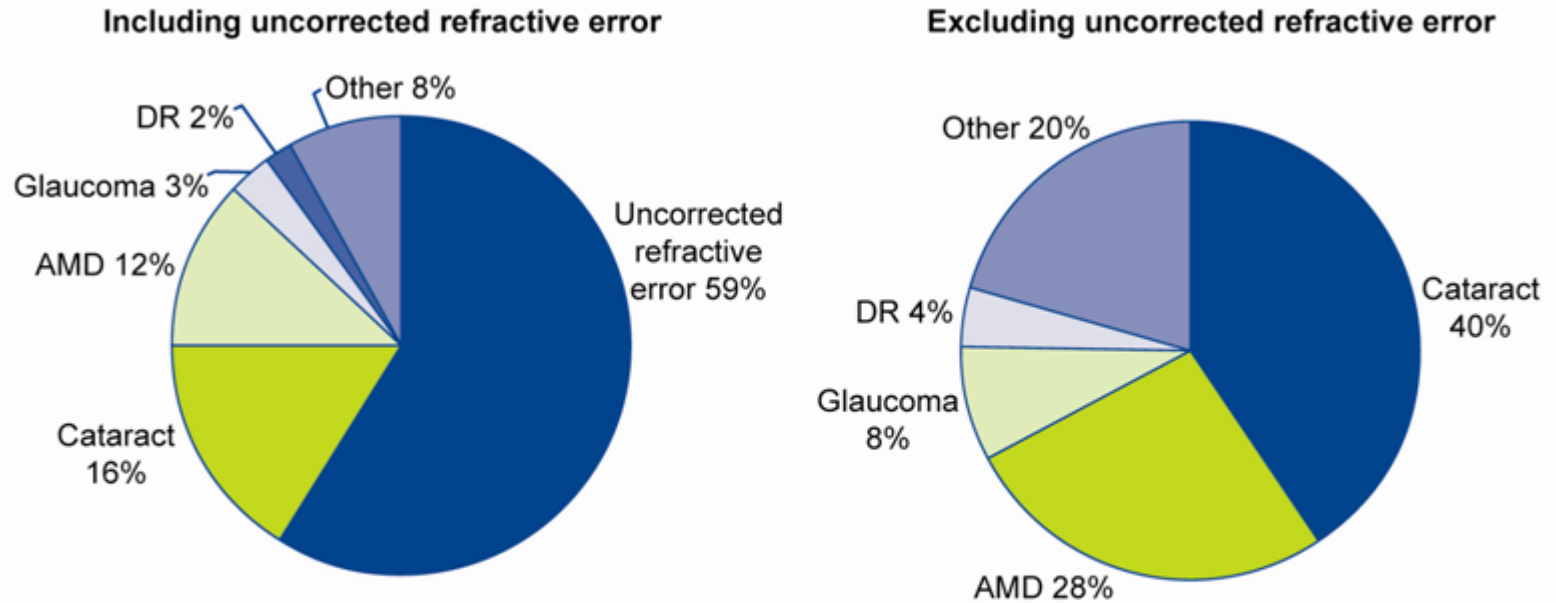


Causes of blindness and vision impairment

- 80 per cent of vision loss is caused by five main conditions:
- age-related macular degeneration (AMD)
- cataract
- diabetic retinopathy
- glaucoma
- uncorrected and undercorrected refractive error.

Causes of vision impairment

Figure 1: Visual impairment classified by primary cause, Australians aged 55 or more



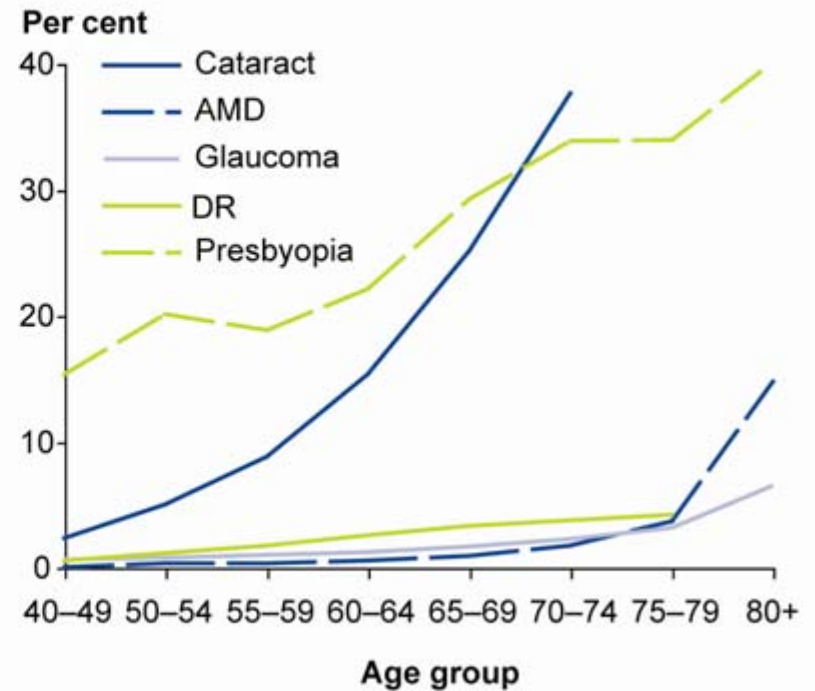
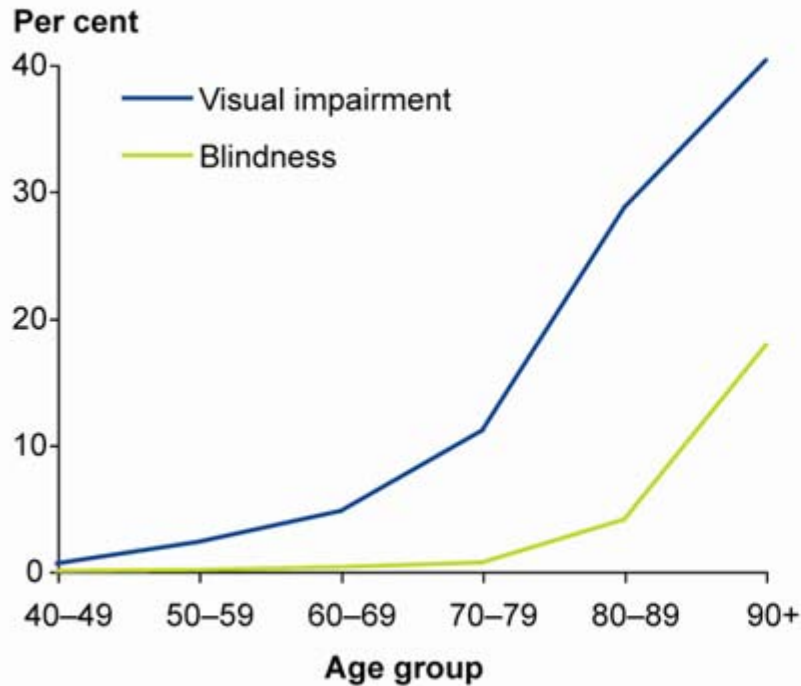
Notes

1. The data are shown both including and excluding uncorrected refractive error, which can be corrected by eyewear.
2. The primary cause of visual impairment was determined where 2 or more disorders were present.

Source: Based on combined data from MVIP and BMES.

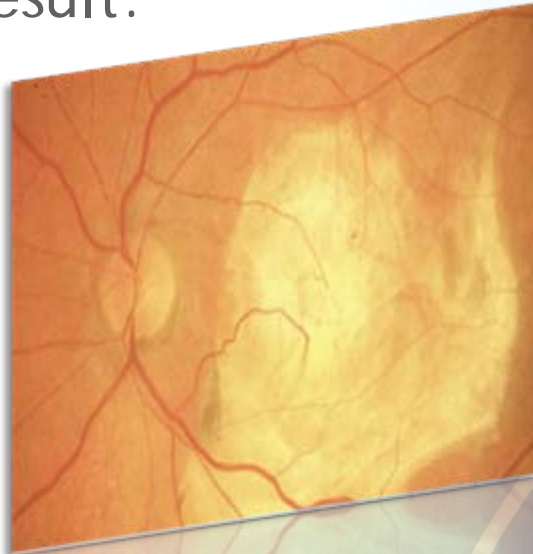
Causes of vision impairment

Figure 2: Prevalence rates of visual impairment and its causes by age



Age-Related Macular Degeneration

- AMD accounts for
 - up to 45 per cent of legal blindness
 - up to 70 per cent of seriously impaired vision in people over the age of 70
 - one in four people will suffer significant loss of vision as a result.

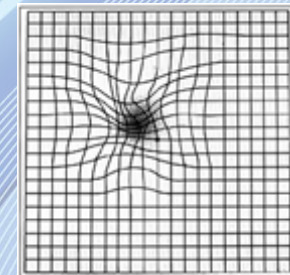
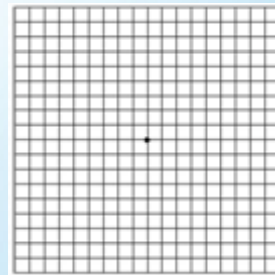


Risk factors associated with AMD

- Risk factors include
 - smoking
 - strongly related to advancing age
 - family history
 - poor diet
 - high body mass index
 - hypertension.

AMD classification

- “Dry” or “Wet”
- dry AMD is most common, caused by fatty deposits (drusen) formed in the macular
- large drusen associated with an increased risk of developing AMD
- wet AMD caused by abnormal blood vessels forming and leaking into the macular.



Management of AMD

- Ophthalmologists' management of AMD falls into three categories
 - anti-VEGF (Direct VEGF inhibitors & steroids)
 - photodynamic therapy
 - laser photocoagulation
- Ranibizumab (Lucentis)
- Bevacizumab (Avastin)
 - stops new vessel growth
 - requires re-treatments
 - may be used in conjunction with PDT.



Current and future management of AMD

- shift to Anti-VEGF rather than PDT
- managing logistics of regular injections “inject and extend”
- VEGF traps
- development of neuroprotective agents
- seeking treatments for geographic atrophy
- potential for gene therapy - complement factor H.

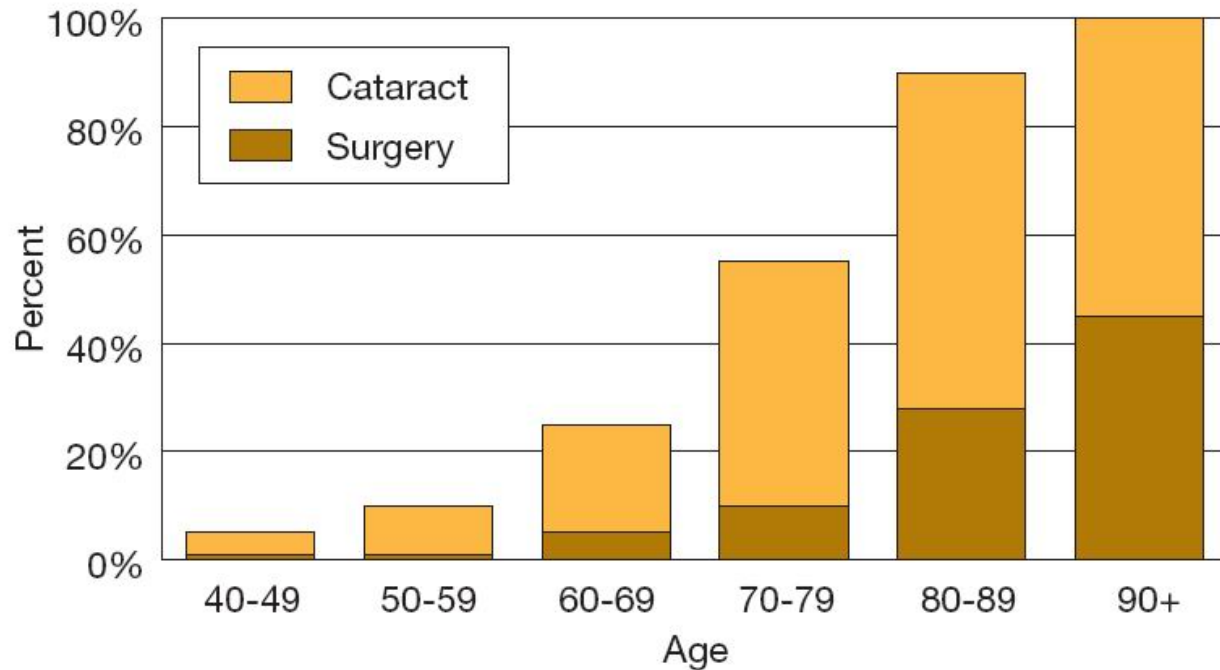


Cataract

- Progressive age related change
- opacification of the lens inside the eye reduces the amount of the light entering the eye
- painless blurring of vision worsening over months or years
 - increased awareness of glare
 - reduce contrast sensitivity
- age, smoking, long term sun exposure are factors

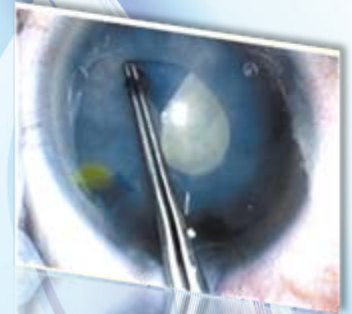
Cataract - epidemiology

Figure 1-1: Demographic distribution of cataract, Australians over 40



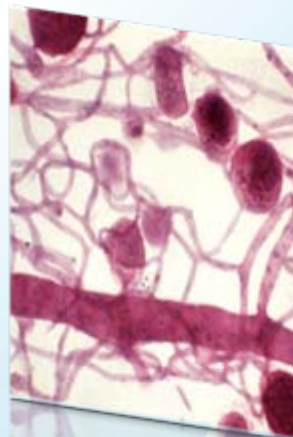
Modern treatment of Cataract

- Managing astigmatism
 - development of toric lenses
 - lamellar refractive laser surgery techniques
- management of presbyopia
 - pseudo accommodating IOL vs. monovision
- concept of IOL which can be adjusted with laser
- micro incision surgery trend - IOL and phako machines operating through <2.2 mm incisions
- prevention of endophthalmitis



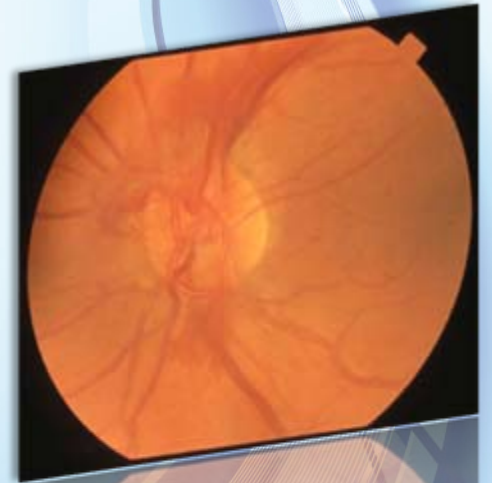
Diabetic Retinopathy

- Diabetic retinopathy (DR) is a broad term used to describe a set of interrelated pathological conditions of the retina which can develop in people with diabetes
- the basis of DR is damage to the microcirculation
 - non-proliferative or proliferative retinopathy
 - Macular oedema.



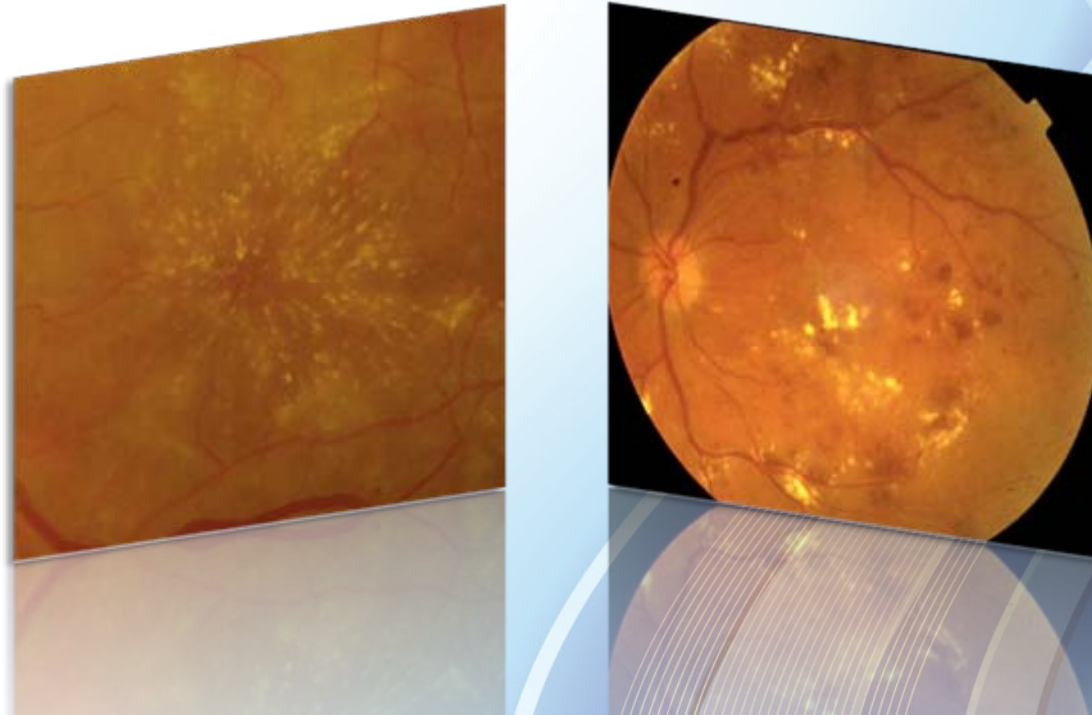
Proliferative Diabetic Retinopathy

- Proliferative diabetic retinopathy (PDR) is characterised by the development of neovascularisation on or adjacent to the optic nerve and vitreous or pre-retinal hemorrhage
- PDR usually occurs in eyes with advanced background diabetic retinopathy and is thought to be secondary to ischemia.



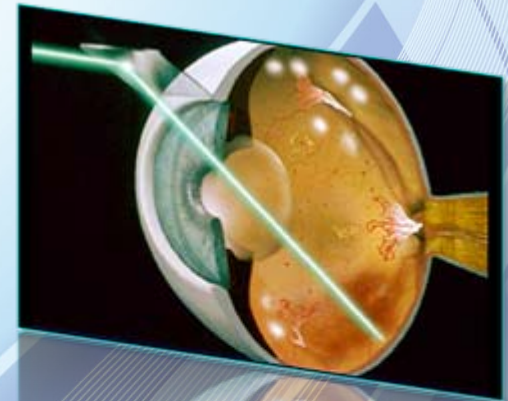
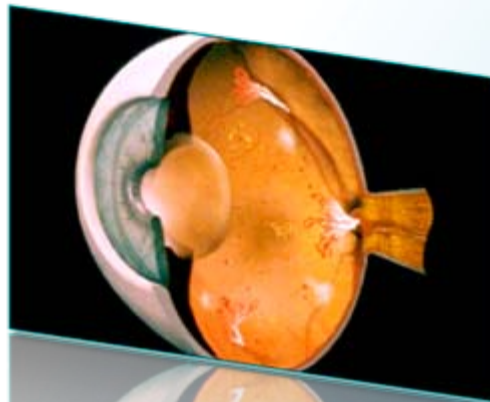
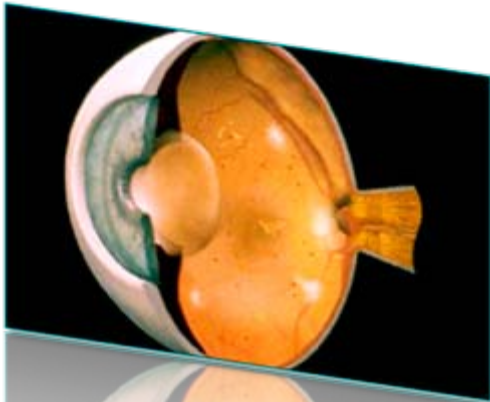
Macular Oedema

- Clinically significant macular oedema (CSME) is the leading cause of blindness in diabetics
- swelling of the macular related to the development of leaky capillaries and microaneurysms.



Laser treatment of Diabetic Retinopathy

- Proliferative changes almost always require prompt laser therapy to ablate the ischaemic tissue
- once the tissue is photocoagulated it ceases to produce the vasoproliferative mediators and permits regression of the new vessels.

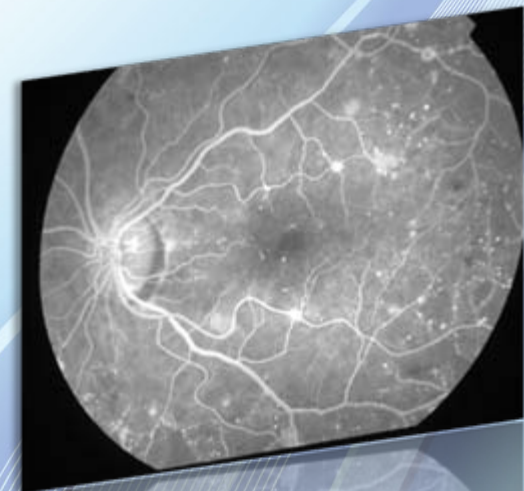
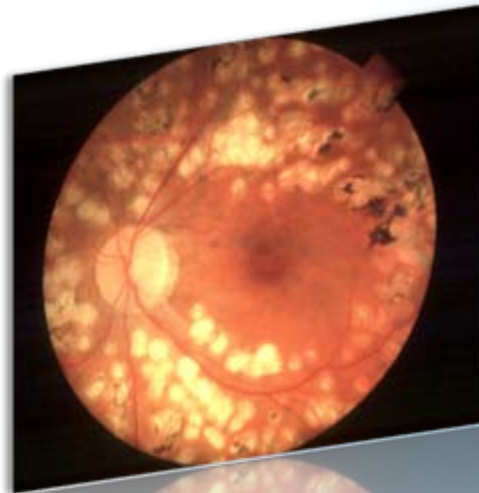


Management of Diabetic Retinopathy

- Baseline management is to
 - improve glycemic control
 - blood pressure
 - regular screening - frequency dictated by severity of disease
 - once reaches threshold of disease then laser.

Treatment of Diabetic Retinopathy

- Panretinal laser is still the standard
- certain situations where anti-VEGF could be used as a temporising measure
- in cases of tractional retinal detachment or continued disease progression treatment becomes surgical - vitrectomy with monitoring by OCT and FFA.



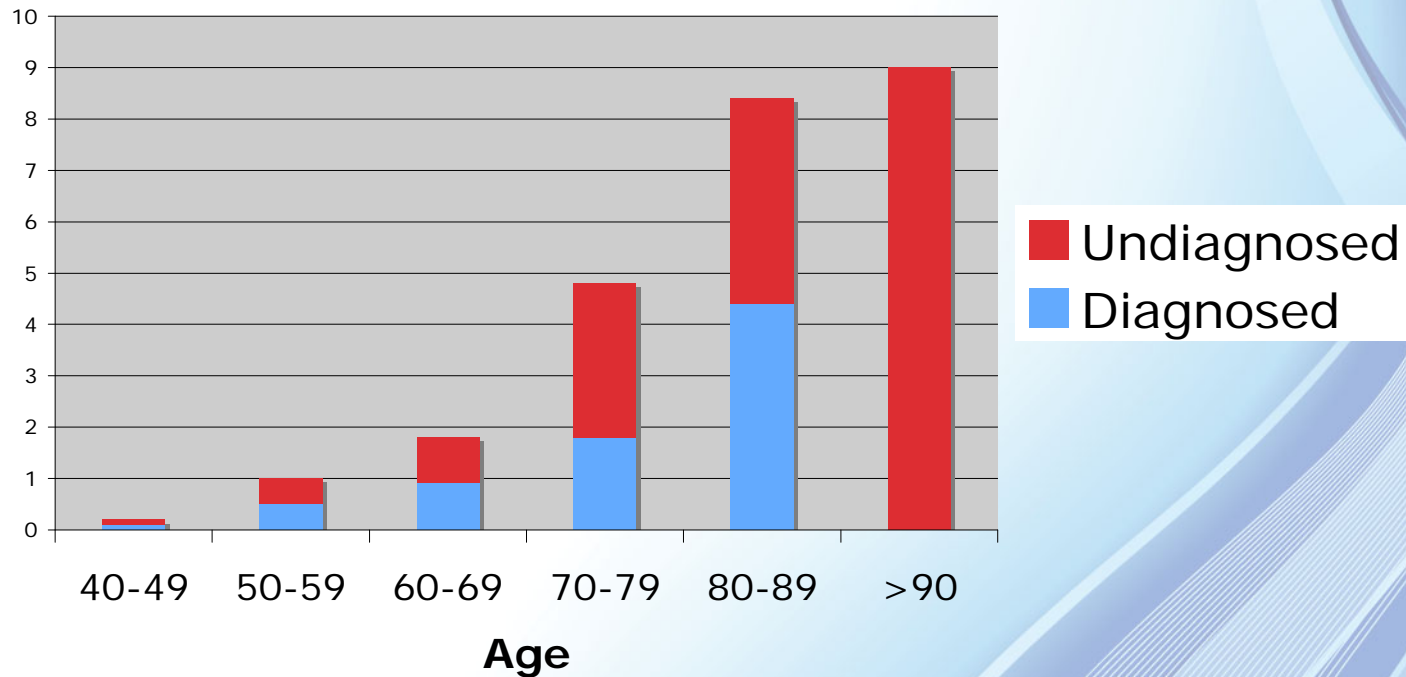
Glaucoma

- Generic name for a group of diseases causing optic neuropathy and visual field loss, usually in the presence of raised intraocular pressure
- early stages of glaucoma are asymptomatic
- peripheral vision is lost first, leading to “tunnel vision” effect.

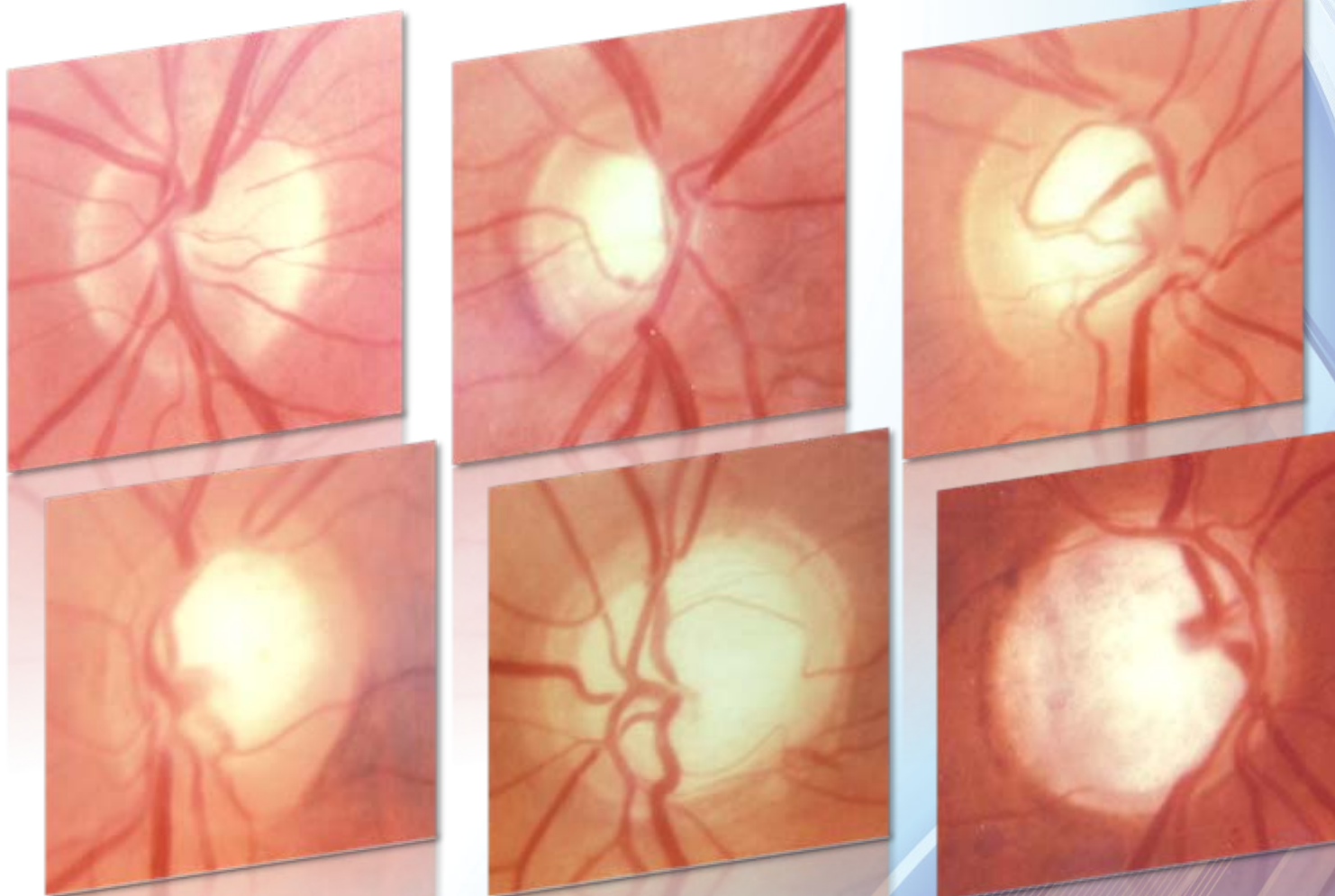


Undiagnosed Glaucoma

*Demographic distribution of glaucoma in
Australians over 40*



Glaucoma and the Optic Disc

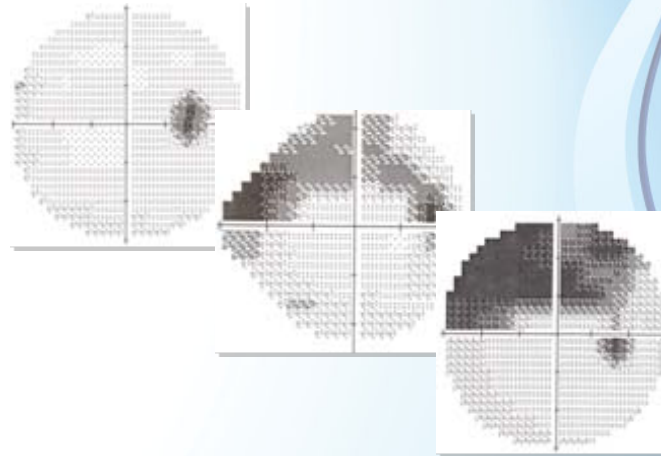
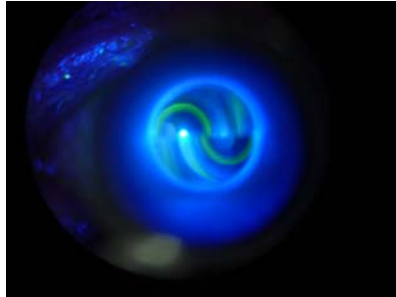


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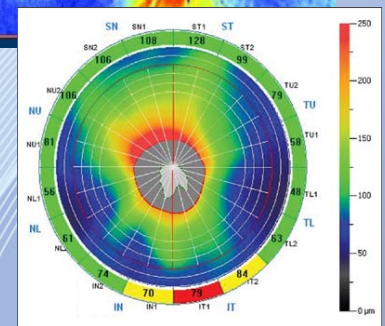
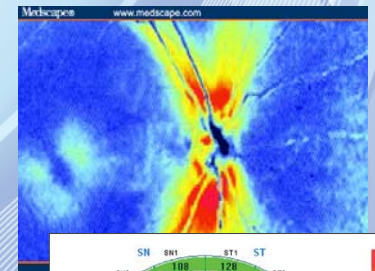
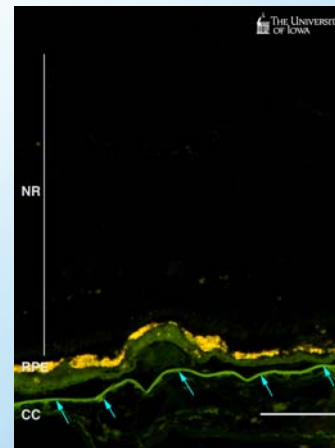
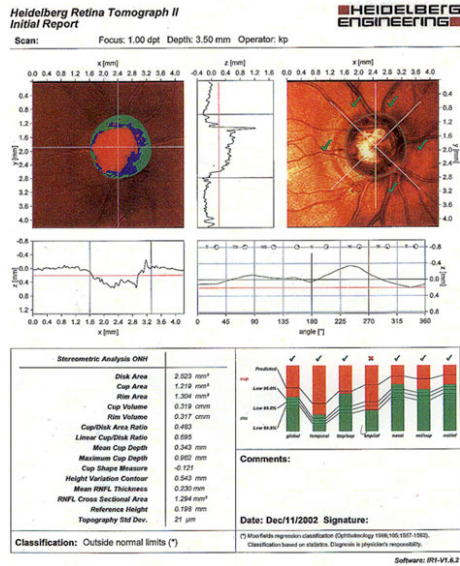
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Diagnostic Testing in Glaucoma

- 2000



- 2010



Types of Glaucoma- POAG

- > 70 per cent of all glaucoma cases
- impairment of aqueous drainage through the trabecular meshwork
- results in excavation and atrophy of the optic nerve head
- visual field abnormalities

Secondary Glaucoma

- pigment
- traumatic
- vascular



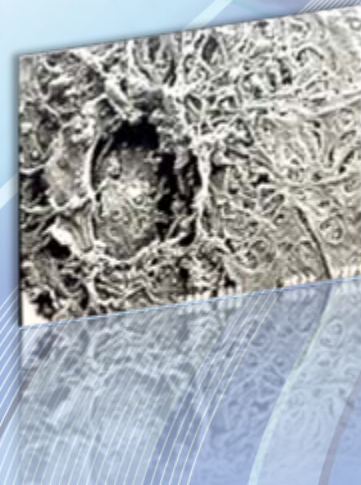
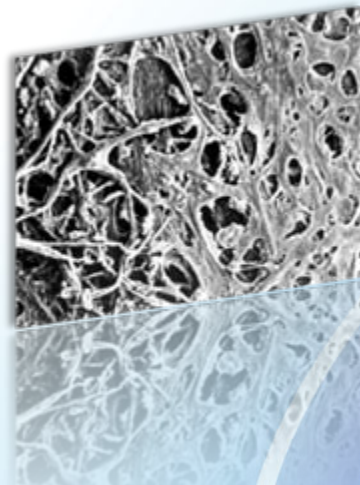
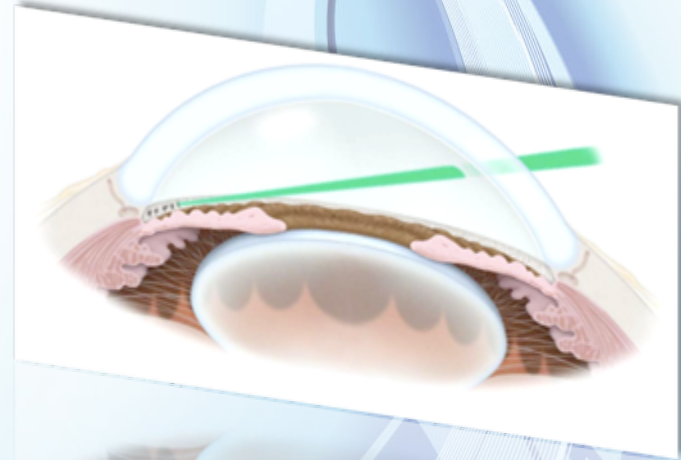
Glaucoma Medications

- Topical medication for treatment of POAG
 - prostaglandin analogs
 - beta-blockers
 - alpha-agonists
 - carbonic anhydrase inhibitors
 - miotics.



Surgical management of Glaucoma

- Laser burns cause shrinkage and contraction of the collagen meshwork to create openings and increase aqueous outflow
- Selective Laser Trabeculoplasty
- Argon Laser Trabeculoplasty.



How pharmacists can assist

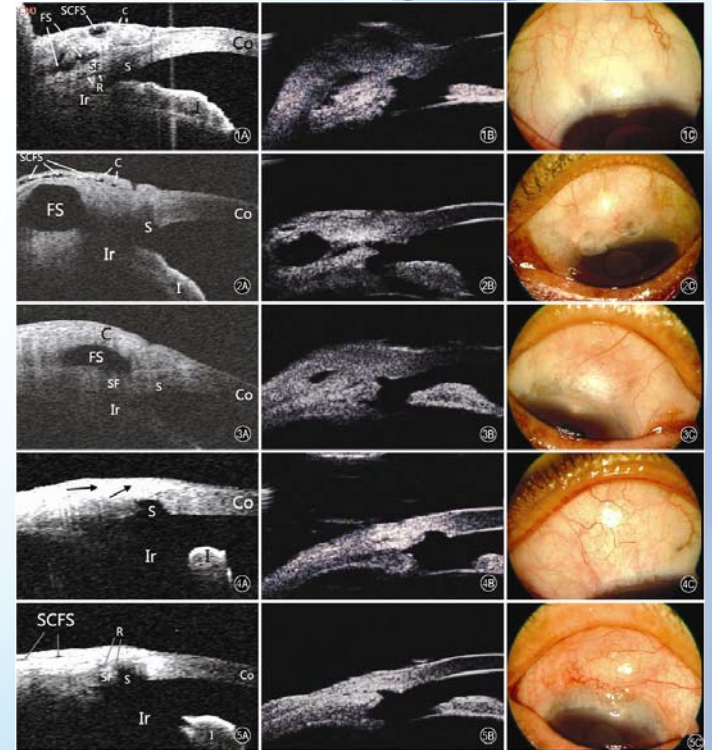
- Liaison with GPs and eye healthcare providers regarding drug interactions
 - eg. topical and systemic beta blockers
- discussing instillation technique
 - having partner instill drops for them
- emphasizing importance of compliance.

Current and future Glaucoma management

- Ganforte 0.3/5 - most recent PBS listed combination prostaglandin analog and beta blocker
- emergence of new surgical techniques including non-penetrating glaucoma surgery and shunt devices
- use of anterior segment imaging modality for documentation and diagnosis of angle closure glaucomas.

Current and future Glaucoma management

- Ultrasound biomicroscopy
- laser polarimetry and new quantitative imaging modalities allow measuring area of neuroretinal rim and monitoring of disease progression
- antimetabolites / filtering surgery
- Trabeculectomy.

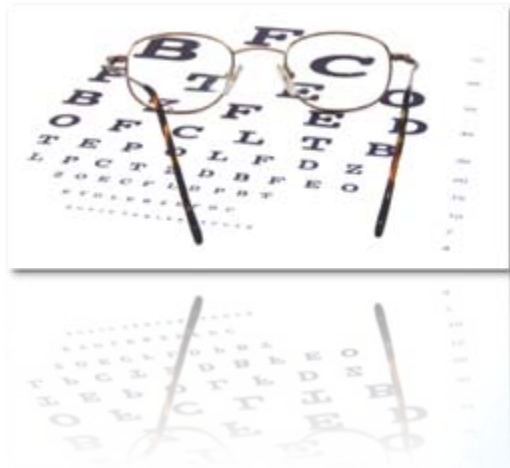


How pharmacists are involved

- Liaison with GPs and eye healthcare providers regarding drug interactions
eg. Topical and systemic beta blockers
- discussing instillation technique
 - having partner instill drops for them
 - removing contact lenses
- emphasizing importance of compliance.

Uncorrected Refractive Error

- Myopia, hypermetropia and astigmatism
- advanced techniques using laser to reshape the cornea and correct the focal point of light passing through the eye.



59%

of vision impairment
in older Australians

Laser Surgery in treatment of Refractive Error

- LASIK (laser in-situ keratomileusis)
- PRK (photorefractive keratectomy)
- LASEK (laser epithelial keratomileusis)
- LTK (laser thermokeratoplasty)
- ALK (automated lamellar keratoplasty).



Pharmacists and eye health

Engage clients on eye care issues

- over 40?
- noticed change in vision?
- family history of eye disease?
- diabetes?
- wearing / buying ready-made readers?

