



# Age-related Macular Degeneration

The Vision Initiative  
Professional Education Program

# Acknowledgements



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RANZCO is as a proud member  
of Vision 2020 Australia

# Outline

- Vision 2020 Australia
- The Vision Initiative
- Who's who and how to refer
- Age-related Macular Degeneration
  - prevention and treatment
- Other common causes of blindness and vision impairment

# Vision 2020 Australia

- VISION 2020: The Right to Sight
- Peak non-government body
- 53 member organisations
- National Framework for Action to Promote Eye Health and Prevent Avoidable Blindness and Vision Loss (National Framework)

# The Vision Initiative

## Save Your Sight - Get Tested

- The key message of The Vision Initiative
- Funded by the Victorian Department of Human Services
- Implemented by Vision 2020 Australia and members such as RANZCO
- Victoria's public health response to the National Framework

# Vision 2020 Australia members-Victoria

- Able Australia
- Blind Citizens Australia
- Brotherhood of St Laurence
- Centre for Eye Research Australia
- Diabetes Australia - Vic
- Glaucoma Australia
- Guide Dogs - Victoria
- International Diabetes Institute
- Kerataconus Australia
- Macular Vision Loss Support Society of Australia
- Optometrists Association Australia (Victorian Division)
- Orthoptic Association of Australia
- Retina Australia - Vic
- The Royal Australian and New Zealand College of Ophthalmologists
- Royal Victorian Eye and Ear Hospital
- Seeing Eye Dogs Australia
- St Vincent's health
- Victorian College of Optometry
- Vision Australia

# Causes of blindness and vision impairment

75% blindness and vision impairment is caused by five conditions:\*

- Age-related Macular Degeneration (AMD)
- Cataract
- Diabetic retinopathy
- Glaucoma
- Uncorrected and under-corrected refractive error

\*listed in alphabetical order

# Ophthalmologists



- Medical doctors
- Provide total care of the eyes including:
  - Comprehensive examinations
  - Diagnosis and management of all eye diseases and disorders
  - Medical and surgical procedures

# Optometrists

- Primary eye care
- 5 year University course
- Medicare rebate on all consultations
- People do not need a referral
- Will fast-track referrals to ophthalmologists if necessary
- To locate your nearest optometrist  
[www.optometrists.asn.au](http://www.optometrists.asn.au)



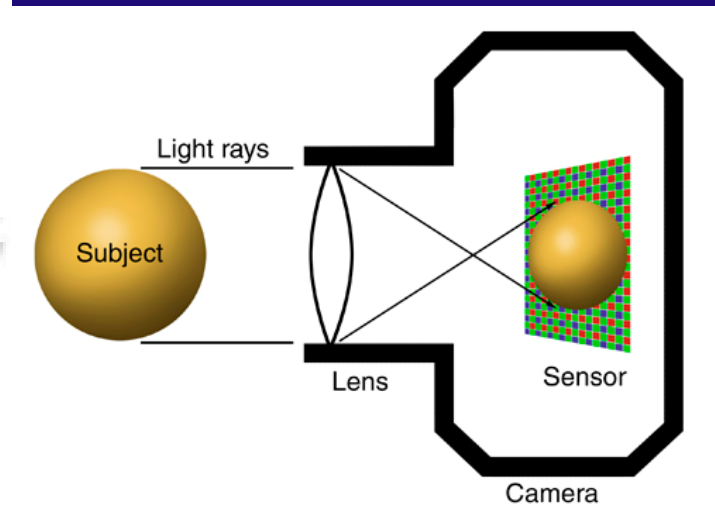
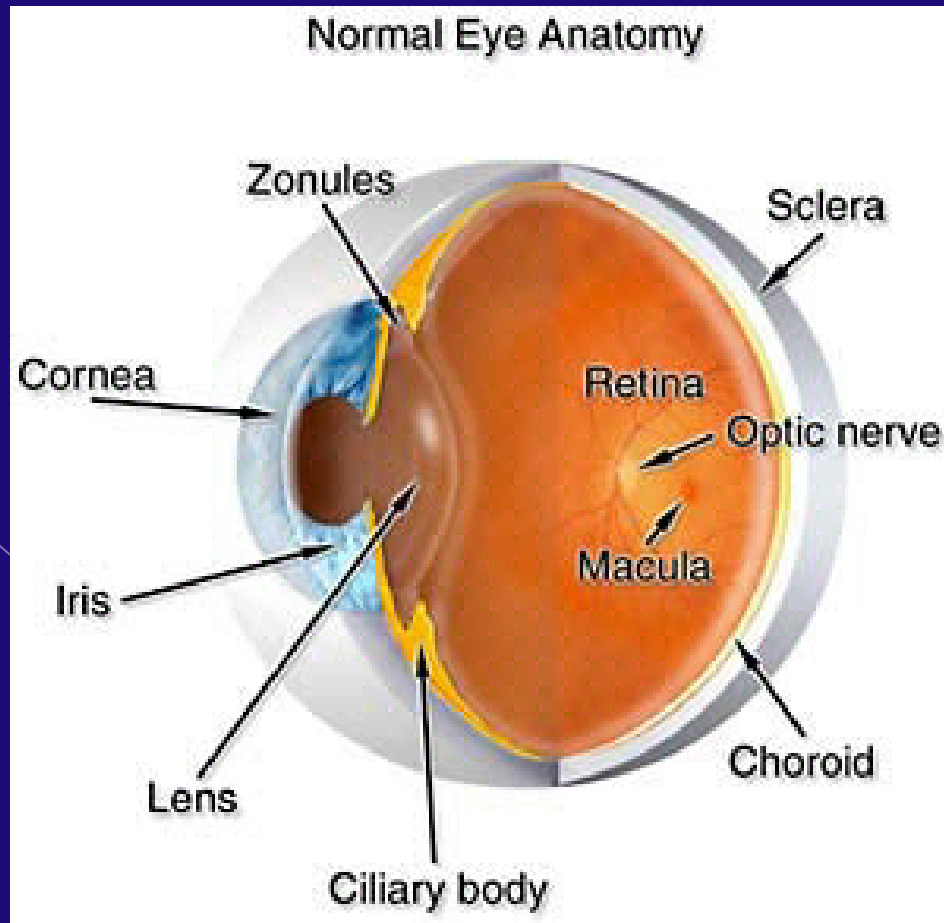
# Low vision service providers

- Low vision organisations and some optometrists provide low vision services
- These services help people to adjust to vision impairment by learning new ways to carry out daily tasks
- They also assist people in making the most of their remaining vision

# Referring to low vision service providers

- Able Australia
  - Ph: 1300 ABLEOZ (1300 225 369)
  - [www.ableaustralia.org.au](http://www.ableaustralia.org.au)
  - Email: [info@ableaustralia.org.au](mailto:info@ableaustralia.org.au)
- Guide Dogs Victoria
  - Ph: 9854 4467
  - [www.guidedogs.asn.au](http://www.guidedogs.asn.au)
  - Email: [referrals@guidedogs.asn.au](mailto:referrals@guidedogs.asn.au)
- Seeing Eye Dogs Australia
  - Ph: 1800 037 773
  - [www.seda.org.au](http://www.seda.org.au)
- Vision Australia
  - Ph: 1300 VISION (1300 847 466)
  - [www.visionaustralia.org.au](http://www.visionaustralia.org.au)

# Structure and function of the eye

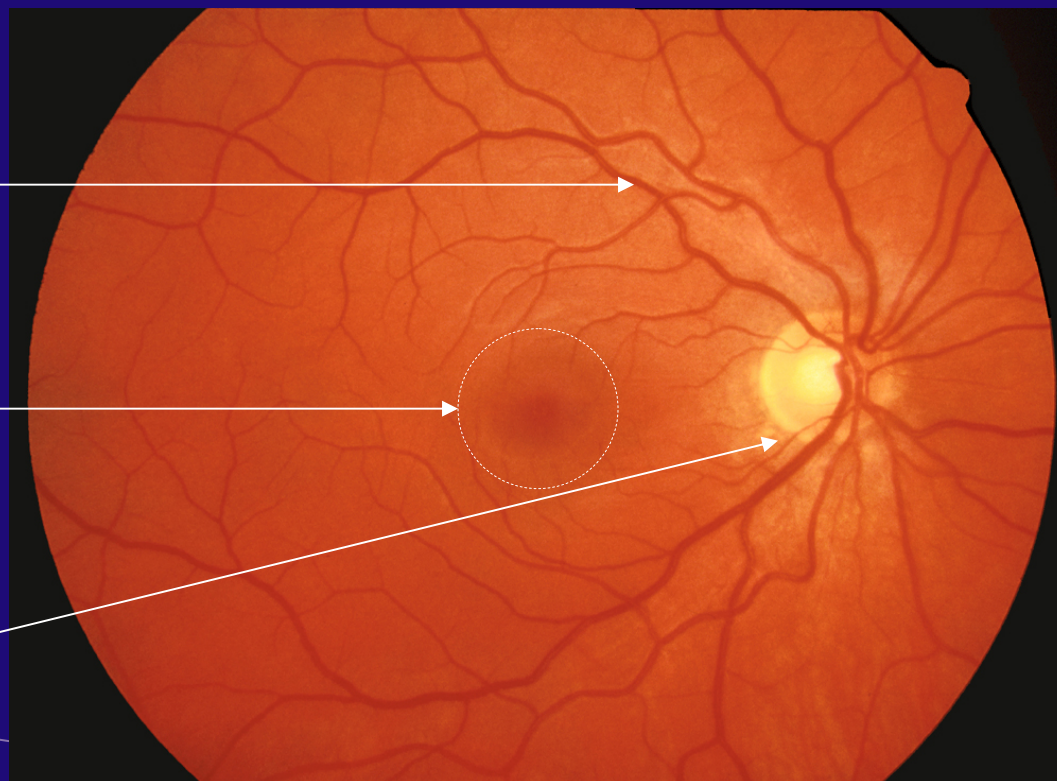


# Structure and function of the eye

Retinal  
blood  
vessels

Macula  
(fovea in  
centre)

Optic nerve



Normal Retina

# Age-related Macular Degeneration (AMD)

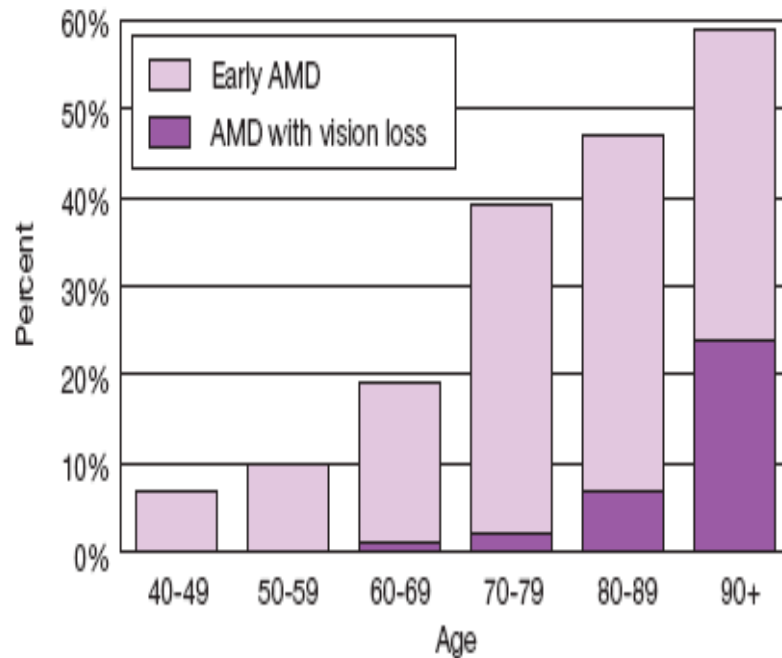
- Progressive condition affecting the central area of the retina
- Age-related maculopathy (ARM) in the early stages
- If disease progresses to AMD, irreversible loss of central vision occurs, usually in both eyes

# Epidemiology- Australia

- 10.4% of population have early ARM
- 3.1% of population over 55 years of age have AMD
- AMD-up to 45 % of legal blindness (Vision <math><6/60</math>)
- AMD-up to 70 % of seriously impaired vision in people over the age of 70 years
- Similar rates between men and women

# AMD Epidemiology (Australia)

Figure 1-4: Demographic distribution of AMD, Australians over 40

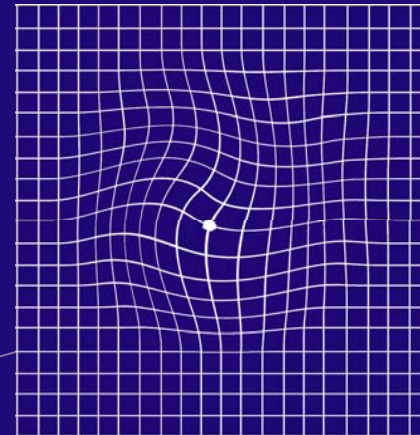
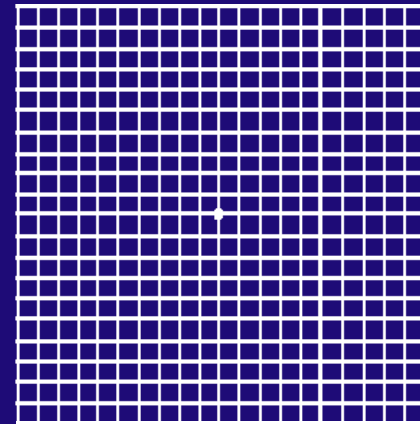


# Early signs

- Classified as either “dry” or “wet”
- Dry = gradual deterioration of vision
- Most Common
- Wet = sudden and severe vision loss, caused by abnormal blood vessels forming and leaking into the macular

# Early signs

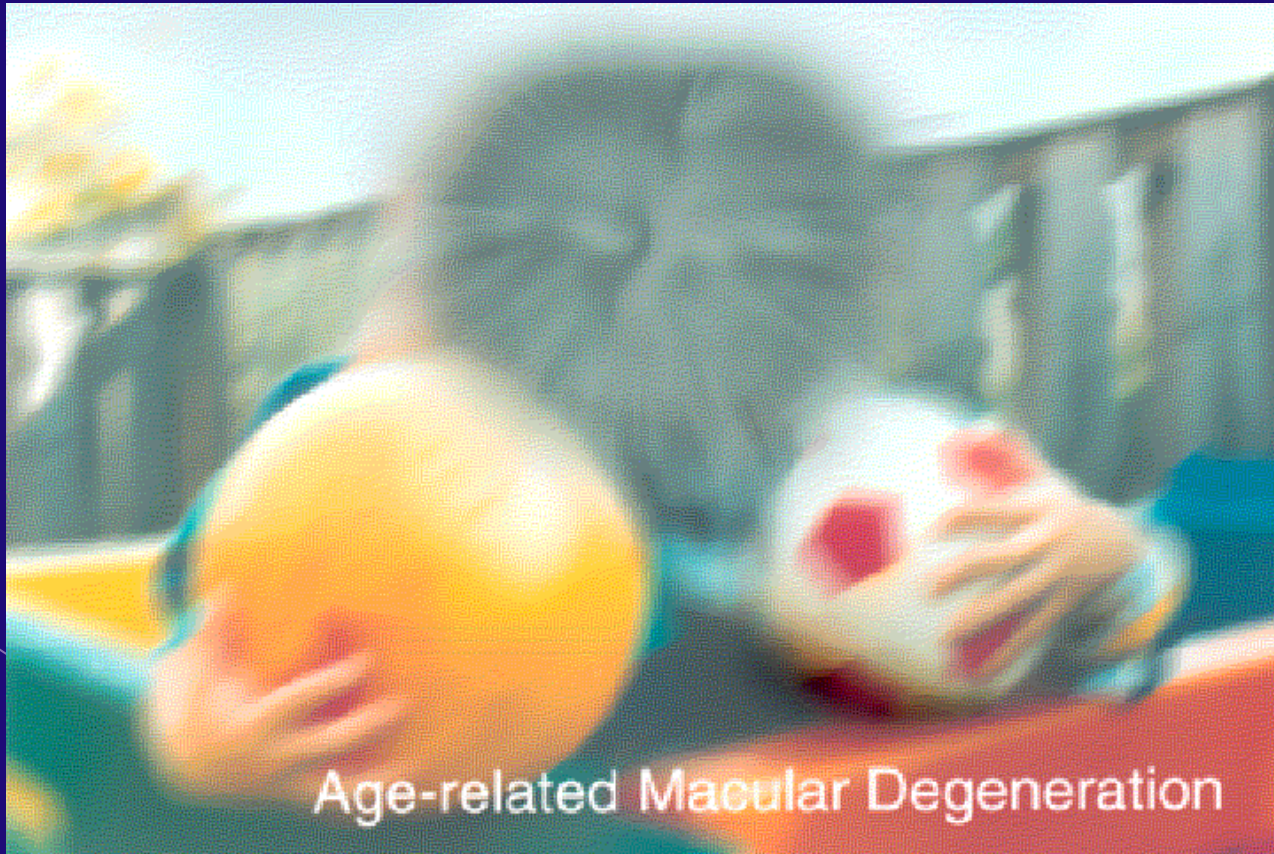
- Amsler grid
- Eyes tested individually with glasses on
- Wavy, patchy or missing lines indicate macular changes



# Risk factors

- Smoking
- Age
- Family history
- Poor diet
- High body mass index
- Hypertension

# View with Age-related Macular Degeneration



Age-related Macular Degeneration

# Prevention

- Tobacco use
- Physical Activity
- Adequate intake of fruit and vegetables
  - Dark leafy green vegetables
  - Fish (Omega 3)
- Reduce saturated fat, use sparingly in cooking
- American reports regarding margarine may not be relevant

# The Age Related Eye Disease Study

- Supplements with high levels of antioxidants and zinc
- The supplements were most effective when antioxidant and zinc were taken together (not either alone)
- Study Design

# Management of AMD

- Anti-VEGF (Direct VEGF inhibitors & steroids)
- Laser Photocoagulation
- Photodynamic Therapy
- Prompt treatment of “wet” AMD is imperative

# Macugen (pegaptanib): Anti-VEGF

- Vascular Endothelial Growth Factor (VEGF)
- Macugen
  - Stops new vessel growth, preserves macular integrity
  - Requires re-treatments (every 6/52)
  - Effective on classic lesions only
  - May be used in conjunction with PDT
  - Similar drugs: Lucentis (ranibizumab) and Bevacizumab (Avastin)
- Intra-vitreal injections increase the risk of infection and endophthalmitis, and cataract

# Retaan (anecortave acetate)

- Angiostatic cortisone less likely than other steroids to cause cataract and elevated eye pressure
- Administration through a special curved cannula behind the eye (not injected into eye)
- Effective in reducing new vessel growth, requires re-treatment every 6/12
- Used in conjunction with PDT, possible role as preventive treatment in at risk patients (under investigation)

# Anti-VEGF agents- delivery methods

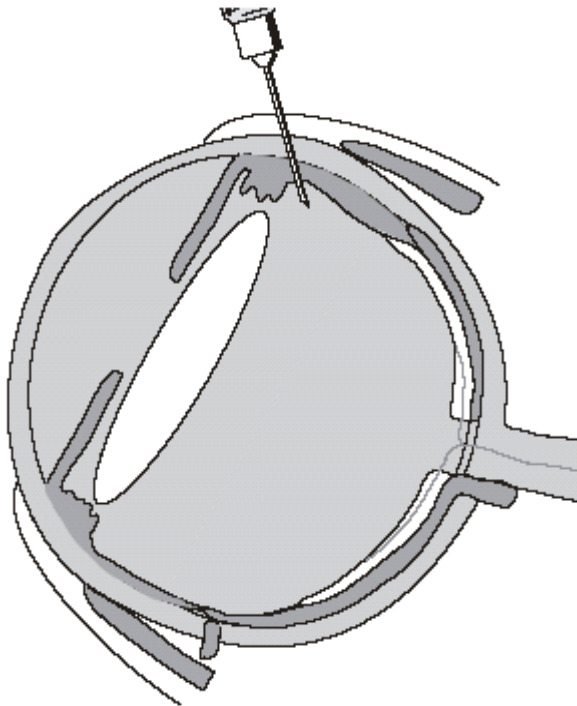


Figure 4. Diagram showing an intravitreal injection, which is given through the pars plana 3 – 4 mm from the limbus.

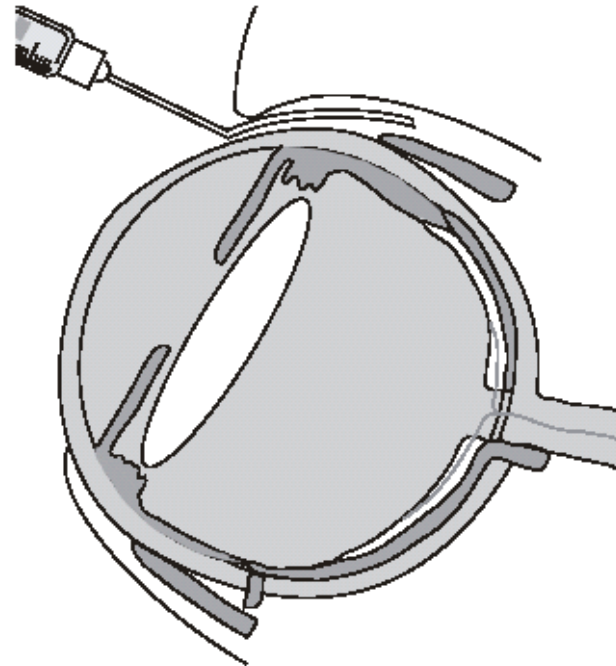


Figure 5. Diagram showing a subtenons injection with a blunt-tipped, curved cannula through a small incision in the conjunctiva and underlying tenons capsule. Compared with the intravitreal route of delivery, the needle is blunt-tipped and does not enter into the eye.

# Laser Photocoagulation

- A thermal laser beam is directed on to the retina
- The laser destroy and seals the leaky blood vessels
- The laser also destroys the overlying retina leaving a scotoma (a patch of lost vision)
- Laser photocoagulation can only be used if vessels are not directly under the macula

# Photodynamic Therapy

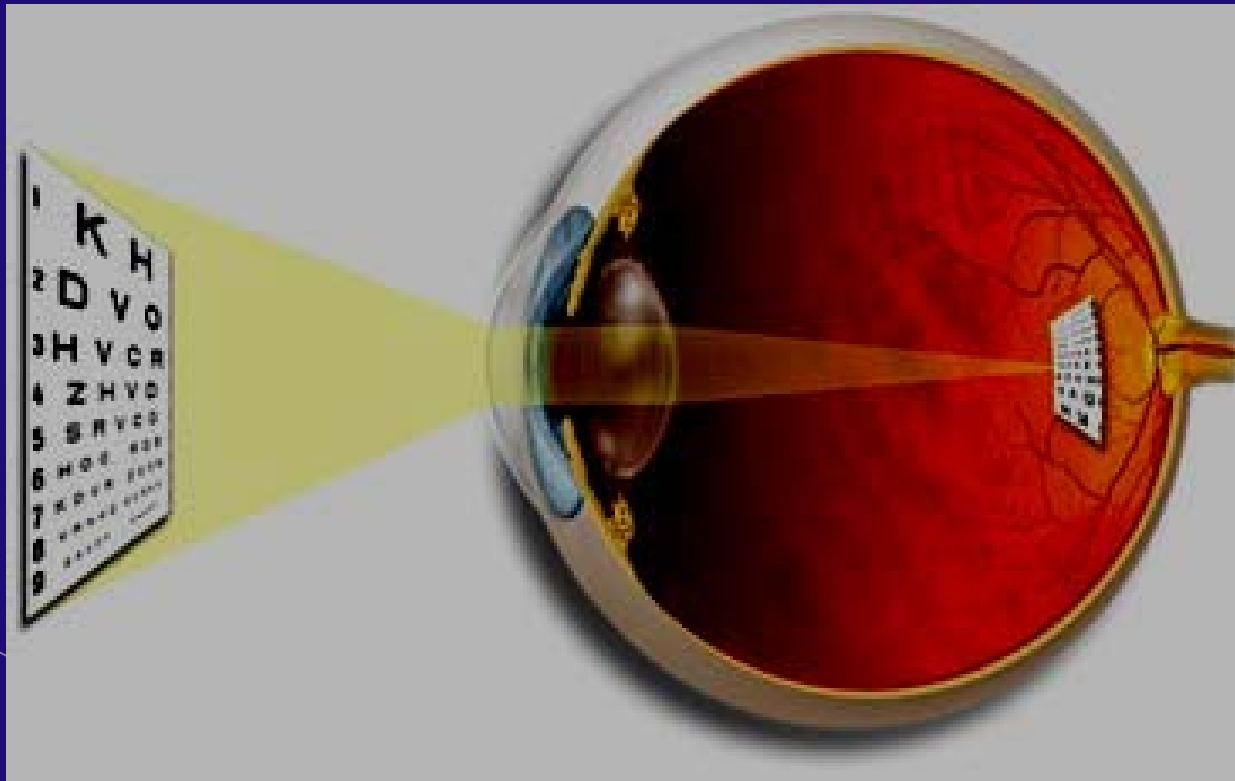
- Photosensitive dye-Verteporfin (Visudine)
- Injected intravenously and is selectively taken up by new vessels (CNV)
- Laser light activates the dye, destroying and sealing the new vessels (with minimal damage to the overlying photoreceptors)
- Primarily reduces vision loss and maintains vision
- Few patients achieve vision improvement
- Re-treatments required

# Other main causes of blindness and vision impairment in Australia\*

- Under-corrected refractive error
- Cataract
- Glaucoma
- Diabetic Retinopathy

\* Listed in order of prevalence

Refraction is the way in which light is focused onto the retina



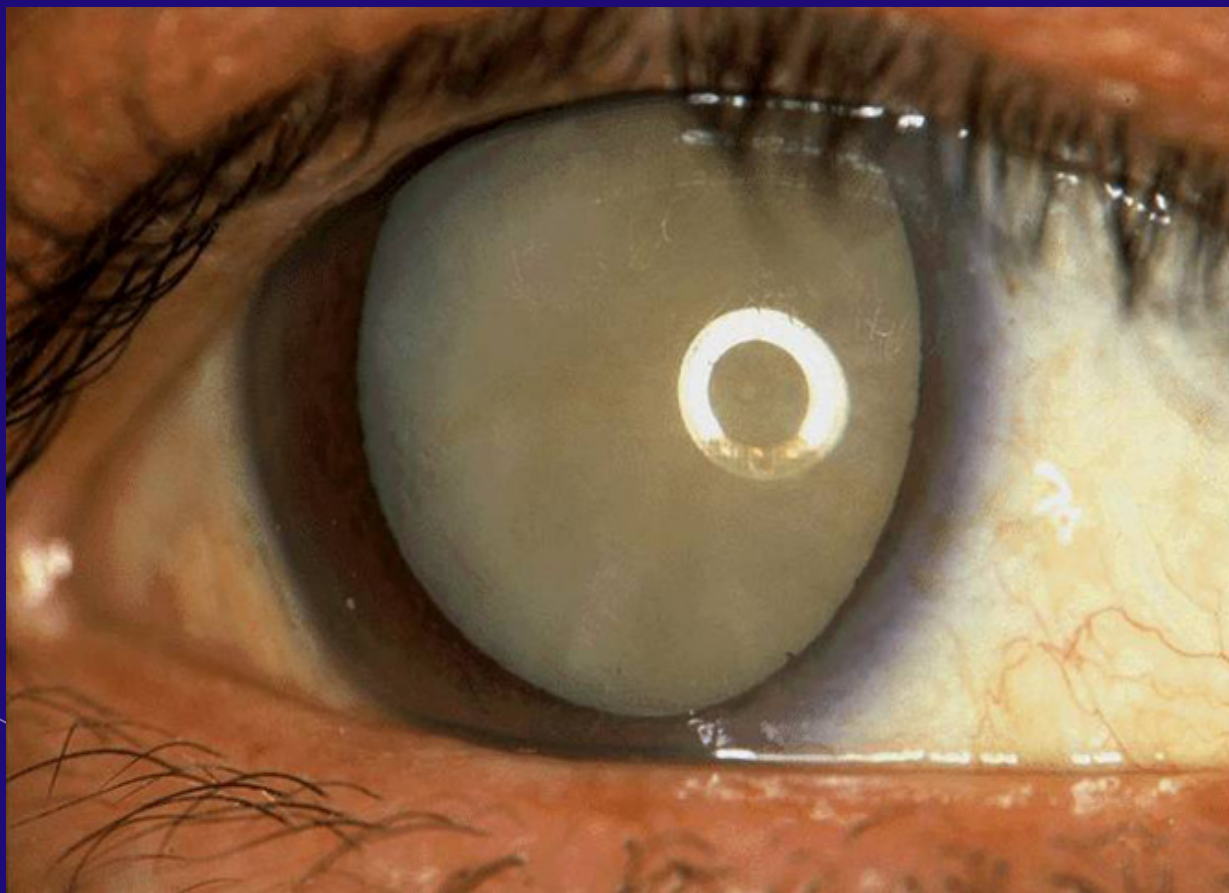
# Types of Refractive Error

- Long-sightedness (hypermetropia)
- Short sightedness (myopia)
- Astigmatism (oval shaped eye)
- Presbyopia (age focus difficulty)
- >40 yrs should have eye test as incidence of most diseases increases with age

# Cataract

- Progressive age related change
- Opacification of the lens
- Symptoms include
  - Painless blurring of vision
  - Increased awareness of glare e.g. car lights
  - Reduce contrast sensitivity
- Vision unable to be corrected with glasses

# Mature Cataract



# Glaucoma

- A group of degenerative diseases
- Painless loss of vision
- Tunnel Vision effect
- Often asymptomatic until late stages
- Half of those with glaucoma are currently diagnosed

# Glaucoma risk factors

- Family history (4 times increased risk)
- age (increased risk after age 40)
- high myopia
- diabetes
- race (African descent)
- hypertension
- history of eye trauma

# Glaucoma management

- Early detection
- Regular monitoring
- Lost vision cannot be recovered
- Eye drops, laser and/or other surgery

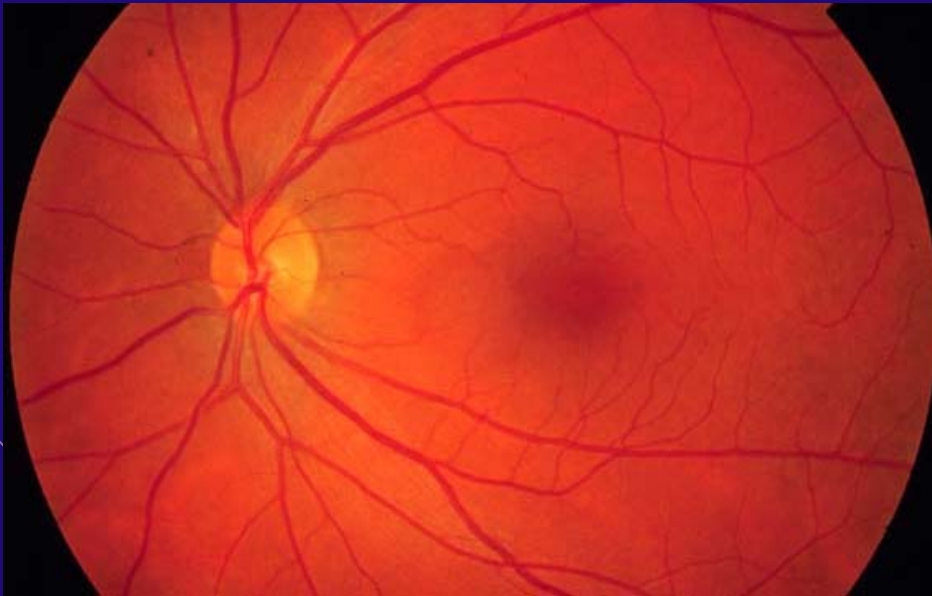
# Diabetic Retinopathy

- Complication of longstanding diabetes
- 25 times more vision loss than those without
- Elevated sugar levels damage the sensitive blood vessels at the back of the eye
- 90 % of those with diabetes will develop some changes in their eyes
- Painless loss of vision due to leaky blood vessels or scar tissue formation in the retina

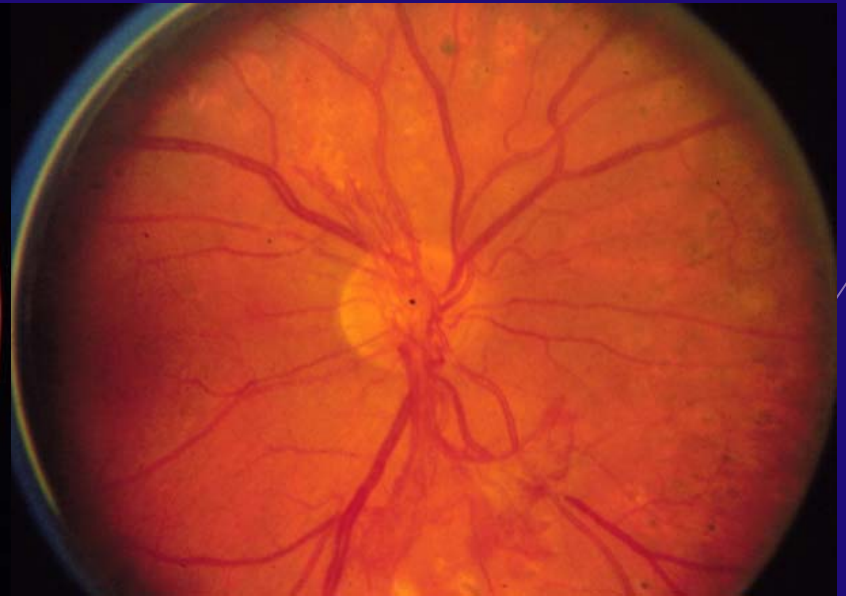
# Prevention

- Early detection and treatment essential
- Regular review and coordinated care approach by GP and other eye care practitioners
- Target levels for
  - blood sugar levels  $< 7.0$
  - blood pressure  $< 130/80$
  - Cholesterol (LDL ideal)  $< 2.6$  mmol/L

# Diabetic Retinopathy



Healthy retina



Broken blood vessels  
Cause scarring and  
loss of vision

# Save Your Sight - Get Tested

For more information:

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