



GLAUCOMA

An invisible disease

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MS FIGS



World Glaucoma Week

March 7 - 13, 2021



**THE WORLD
IS BRIGHT,
SAVE YOUR
SIGHT**

www.worldglaucomaweek.org

- **Blindness ranked third as people's major fear.***

- After cancer and heart disease

*Prevent blindness American survey

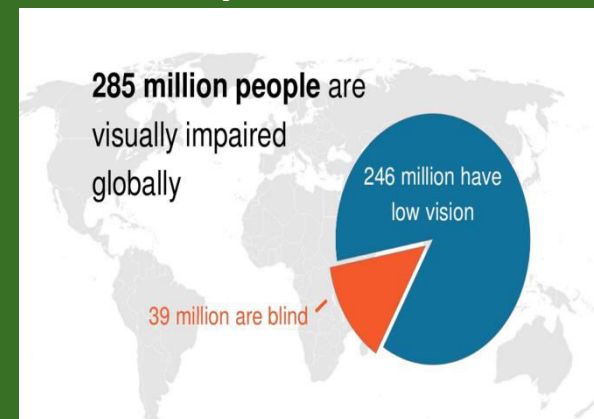
WHAT IS BLINDNESS?

- WHO definition of blindness Visual acuity of **less than 3/60** (Snellens) or its equivalent
- i.e inability to count fingers at 3 mts distance in broad day light

Normal	6/6
Mild visual impairment	<6/6- 6/18
Moderate visual impairment	<6/18-6/60
Severe visual impairment	<6/60- 3/60
Blind	-<3/60 - NPL

GLOBAL BURDEN

- 285 million people are estimated to be visually impaired ,246 million have low vision while **39 million are blind worldwide***
- About 90% of the world's visually impaired live in low to medium income settings.
- 80% of all visual impairment can be prevented or cured



*WHO global data on visual impairment 2010

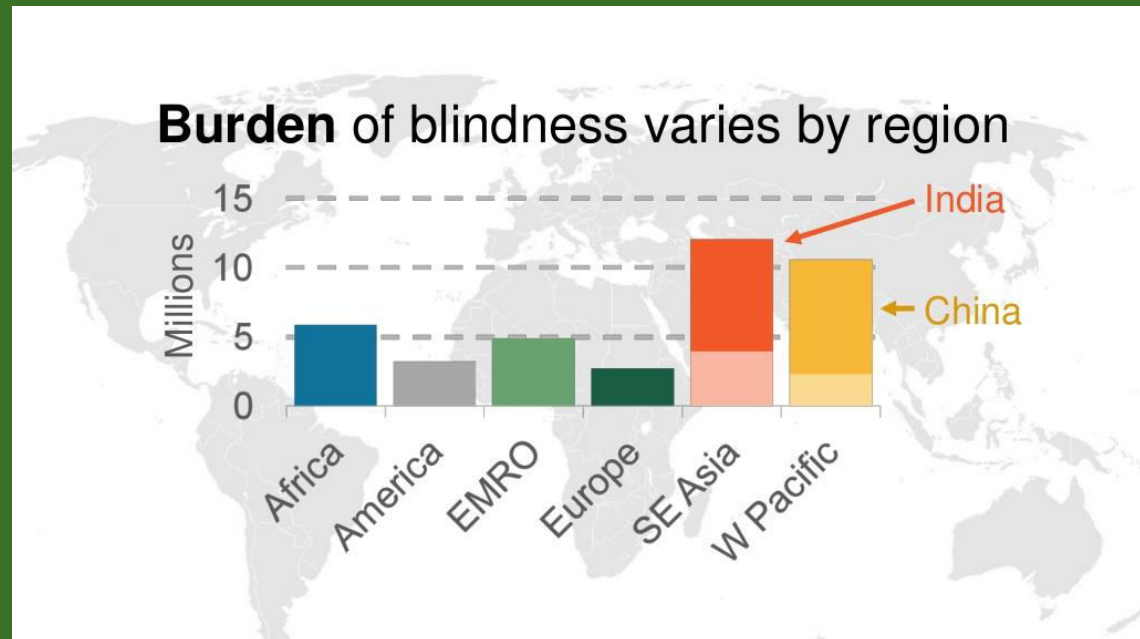
90% of visual impairment (VI) is in low- and middle-income countries

VI prevalence

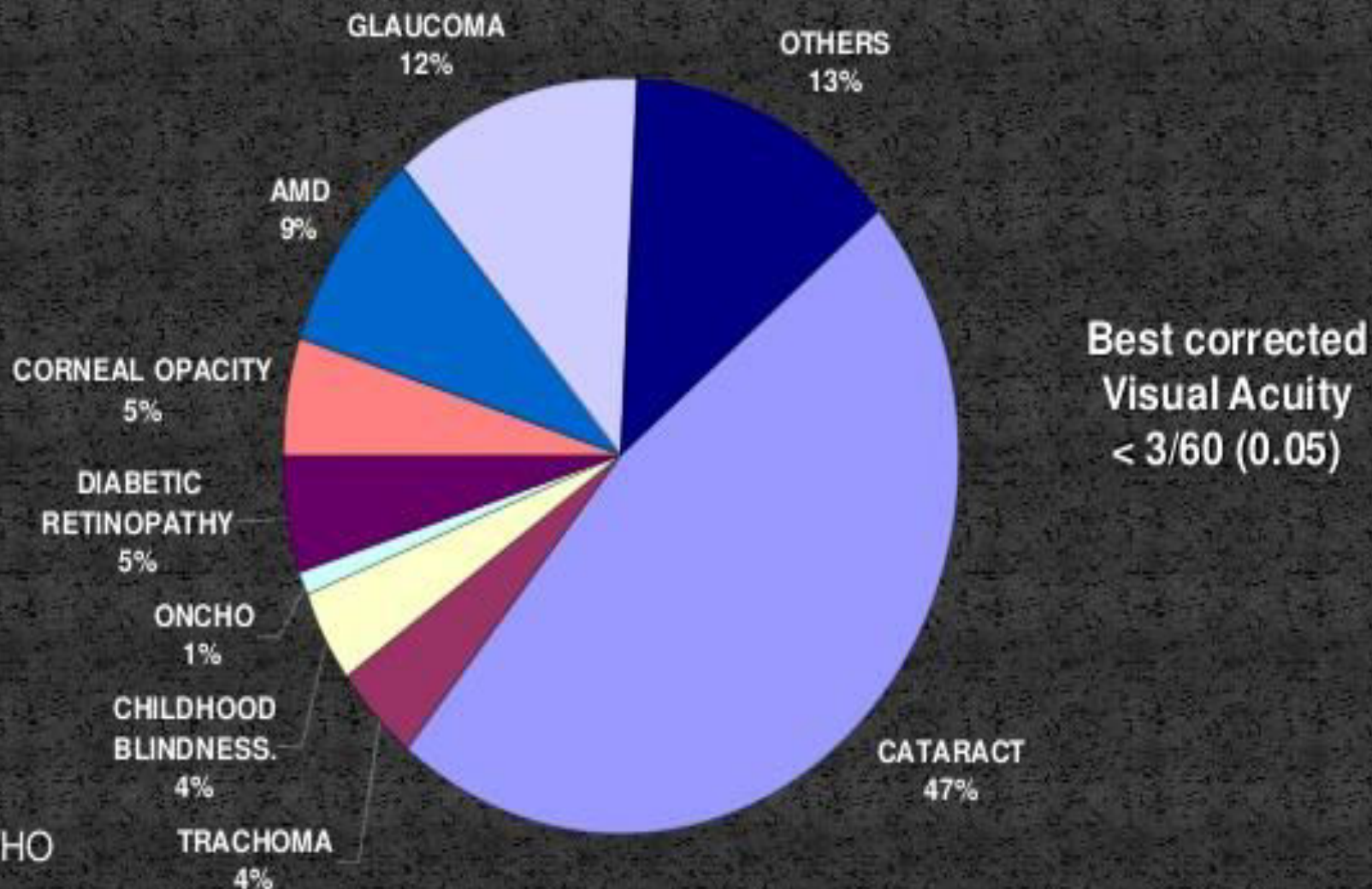


BLINDNESS -INDIA

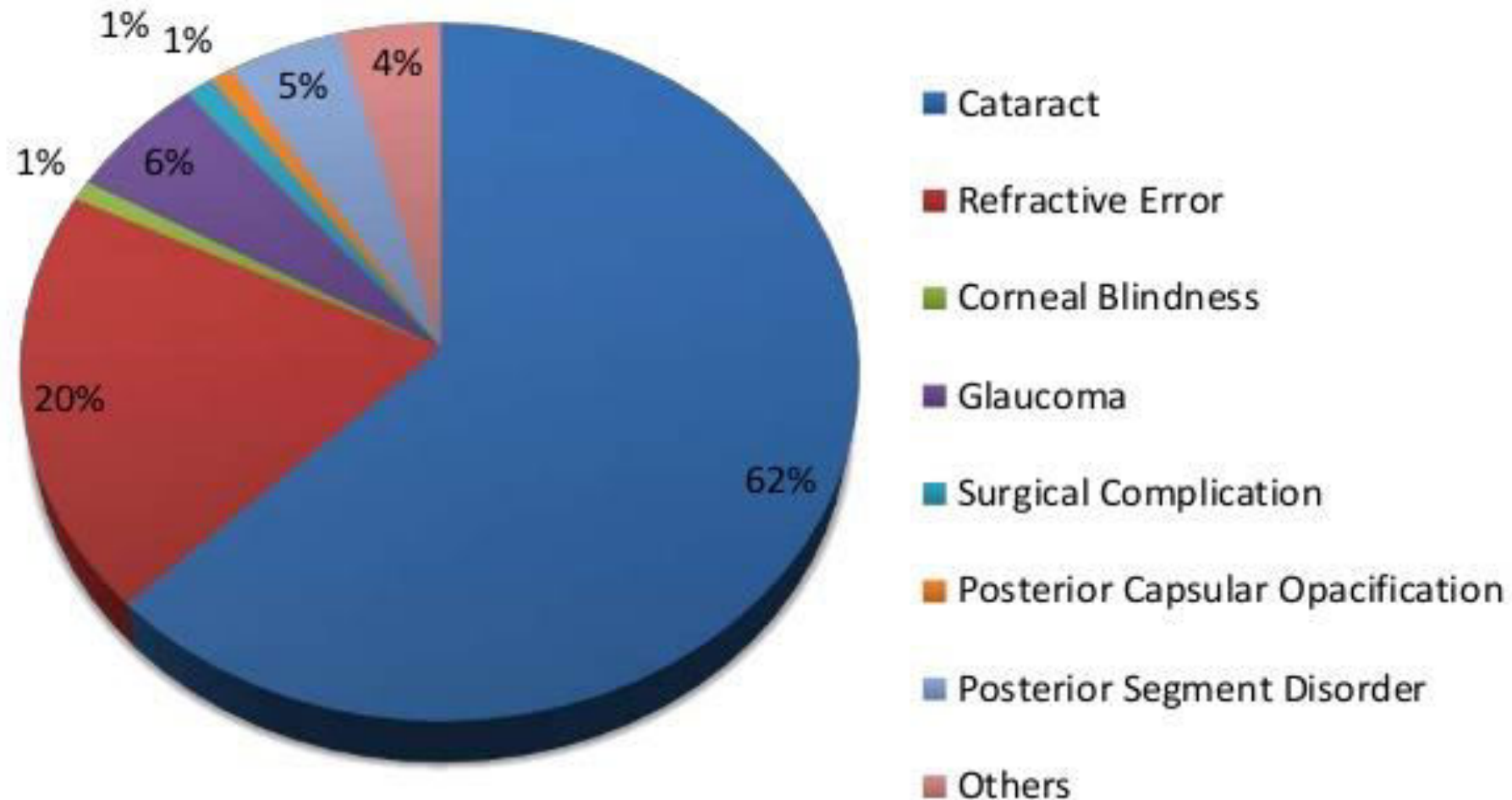
- In India ,**7.8 million people are blind** , while 45 million are visually challenged.
- Accounts for **20 per cent of the blind population across the globe**



Global Causes of Blindness



Main causes of Blindness in India are



GLAUCOMA

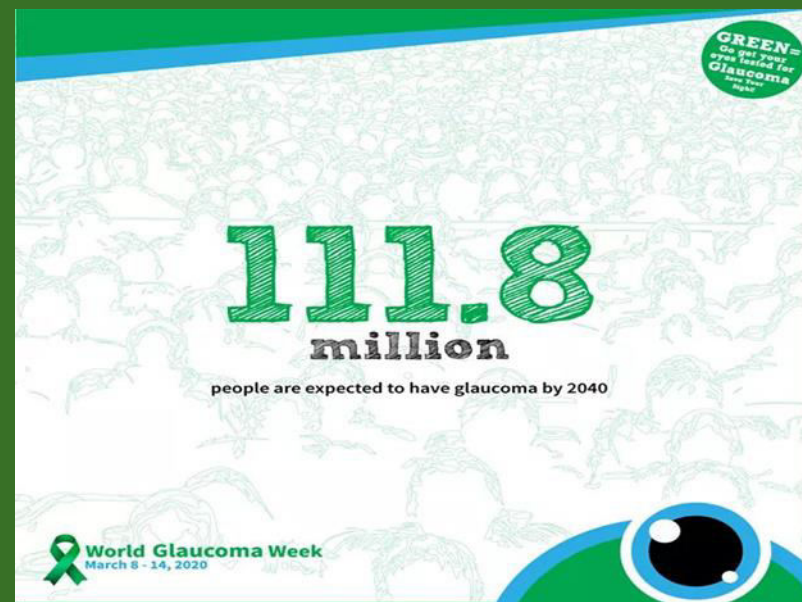
- Glaucoma is the 2nd leading cause of blindness worldwide (WHO)
- Most common cause of **IRREVERSIBLE VISION LOSS.**
- Vision loss is permanent
- If left untreated....may lead to blindness

IMPACT OF GLAUCOMA

- The number of people (aged 40–80 years) with **glaucoma worldwide** is estimated to be 80 million in 2020 and
- 110 million in 2040
- 1 in every 40 individuals- above 40yrs - affected

8 million people

may be affected by
glaucoma in 2020



111.8 million people are expected to have glaucoma by 2040

GREEN
Go get your eyes tested for Glaucoma
Now. That's Right.

World Glaucoma Week
March 8 - 14, 2020

The poster features a background of faint, overlapping line drawings of human faces. In the bottom right corner, there is a stylized graphic of a human eye with a blue iris and a black pupil. A green ribbon is positioned at the bottom left, next to the World Glaucoma Week text.

GLAUCOMA's GLOBAL IMPACT ON VISION LOSS & BLINDNESS



Statistics

People blind due
to glaucoma:

an estimated

4.5
MILLION

globally

Percent of all
global blindness
caused by glaucoma:
slightly more than

12%

2ND

most common
cause of blindness
worldwide

Percent of affected people that are not even aware of having glaucoma:

up to

50% in developed
countries

may rise to

90% in underdeveloped
parts of the world

Source: Information is from the World Health Organization and the World Glaucoma Association, 2016.
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GLAUCOMA - INDIA

- 11.2 million Indians suffer from glaucoma
- 1.1 million turning blind every year
- One fifth of the global burden



FACTS

- One of leading cause of blindness
- Causes blindness if left untreated
- 10% of people who receive proper treatment still experience loss of vision

- No symptoms develop until vision loss is advanced
- **Vision loss is permanent...irreversible**
- Therefore, prevention of vision loss requires early detection.
- **Must be monitored for life**

- There is **no cure** yet for glaucoma
- Everyone is at risk for glaucoma
- So screening is important



- Glaucoma blindness is 10 times higher in developing countries than in developed world
- Lack of awareness



- World50% undiagnosed
- India90% undiagnosed



Why awareness is important?

- Glaucoma is the 3rd leading cause of blindness in India
- **Awareness on glaucoma in India**
- Heard the term glaucoma??
- Chennai – 13.3% ²
- Hyderabad – 2.8%
- **Rural area – 0.33% ³**

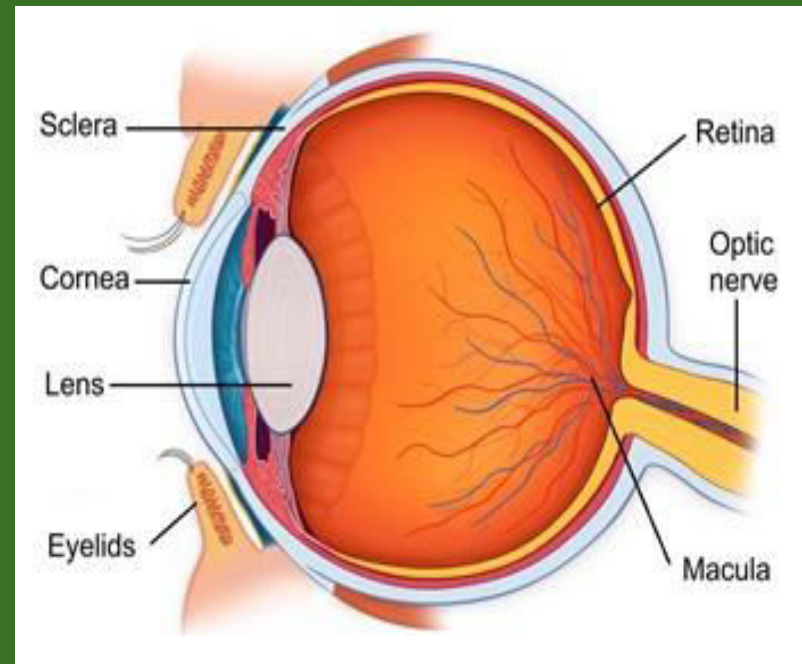
1. Prevent blindness america survey

2. Sathyamangalam RV, Paul PG, George R, Baskaran M, Hemamalini A, Madan RV, Augustian J, Prema R, Lingam V. Determinants of glaucoma awareness and knowledge in urban Chennai. Indian journal of ophthalmology. 2009 Sep;57(5):355.

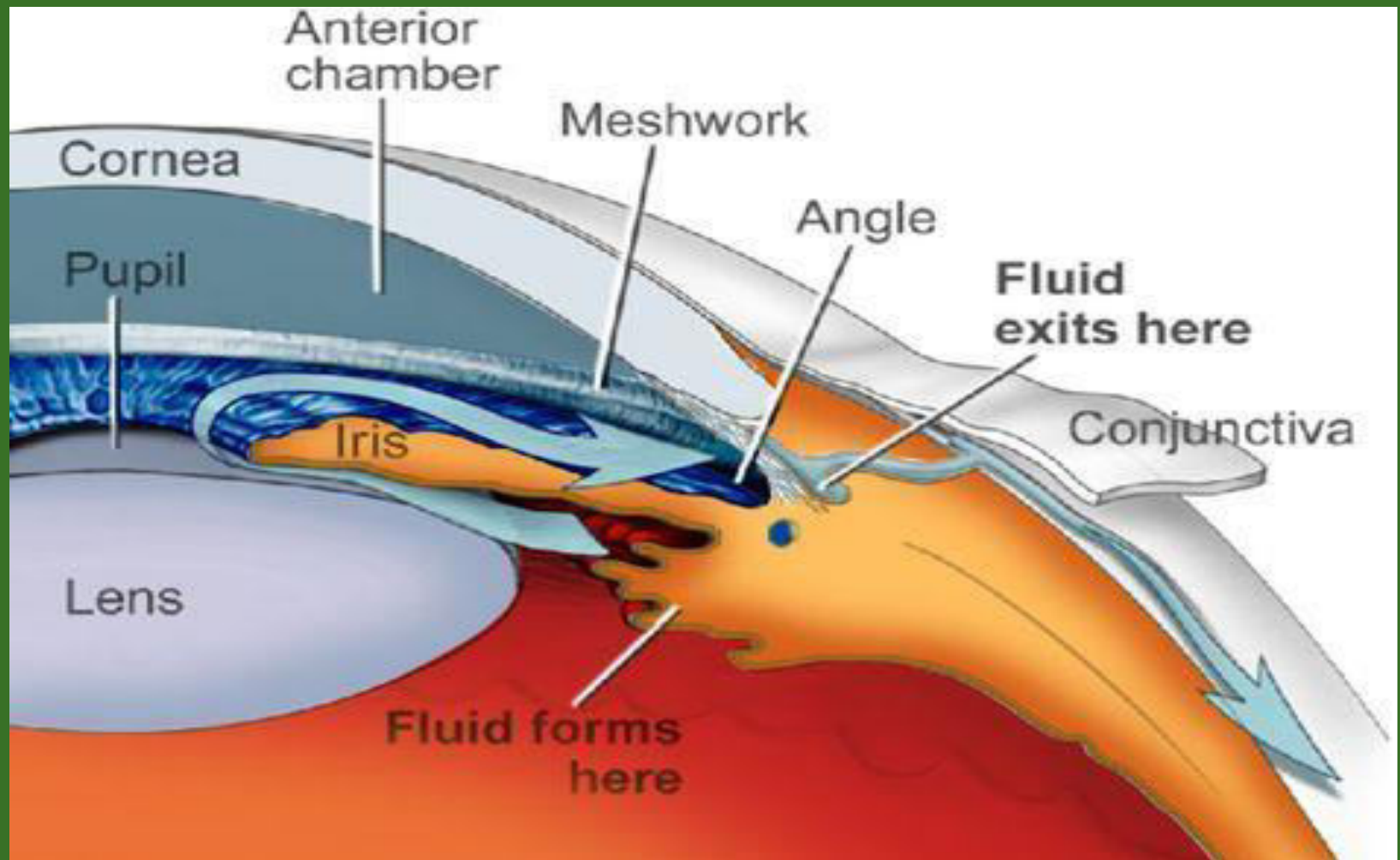
3. Krishnaiah S, Kovai V, Srinivas M, Shamanna BR, Rao GN, Thomas R. Awareness of glaucoma in the rural population of Southern India. Indian journal of ophthalmology. 2005 Jul 1;53(3):205.

WHAT IS GLAUCOMA ?

- Classified as group of diseases.
- Chronic progressive Optic neuropathy
- With characteristic changes in optic disc and visual fields.
- Cause permanent vision loss if left untreated.

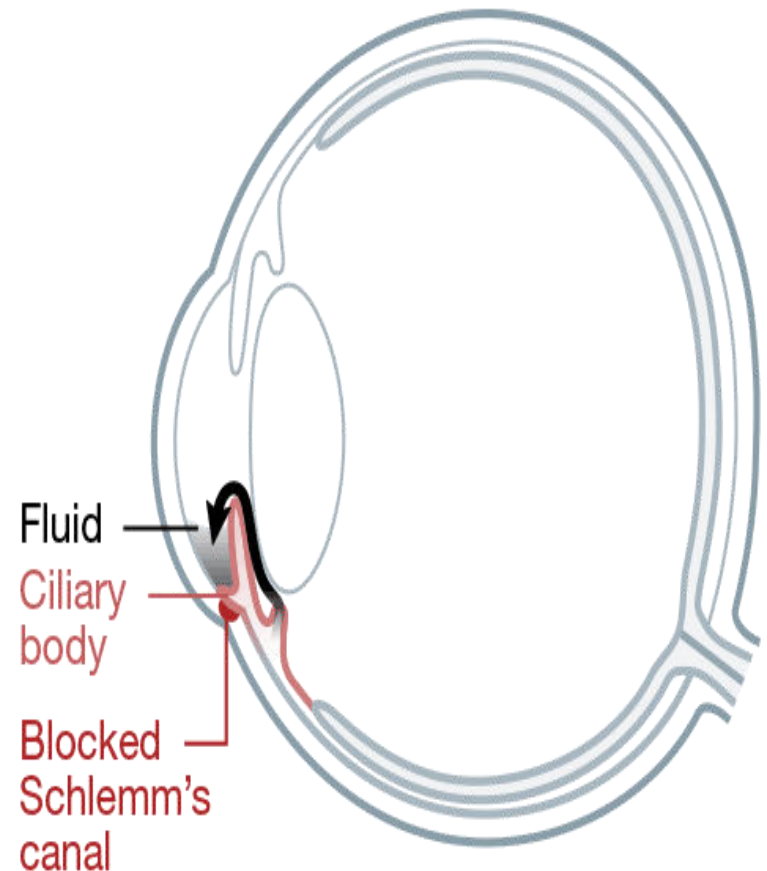


AQUEOUS FLOW



WHAT CAUSES GLAUCOMA?

- Slow fluid drainage
- Pressure builds up and damages the optic nerve
- Optic nerve damage can occur at different pressure levels for different people

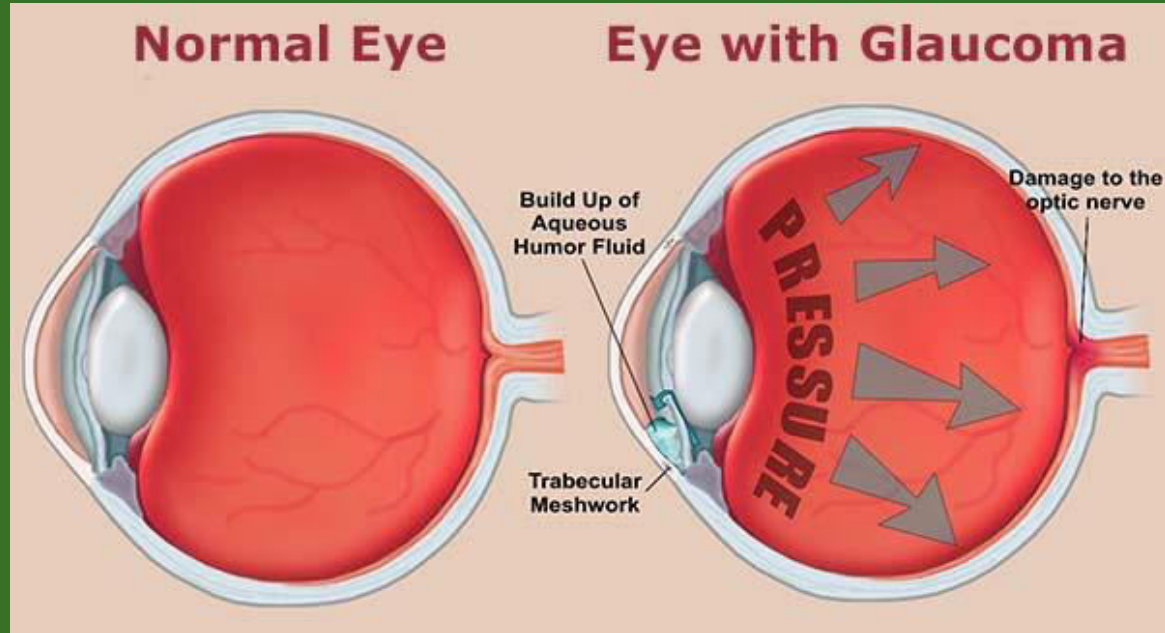


- IOP
- Age > 40
- Positive family history
- Myopia, high Hypermetropes
- Ocular Trauma
- Diabetes
- steroids
- Thin Corneas



IOP

- Main risk factor
- Not the only risk factor
- Only Modifiable risk factor



AGE

- Risk increases with age
- 5th to 8th decade are the most commonly involved
- May coexist with cataract

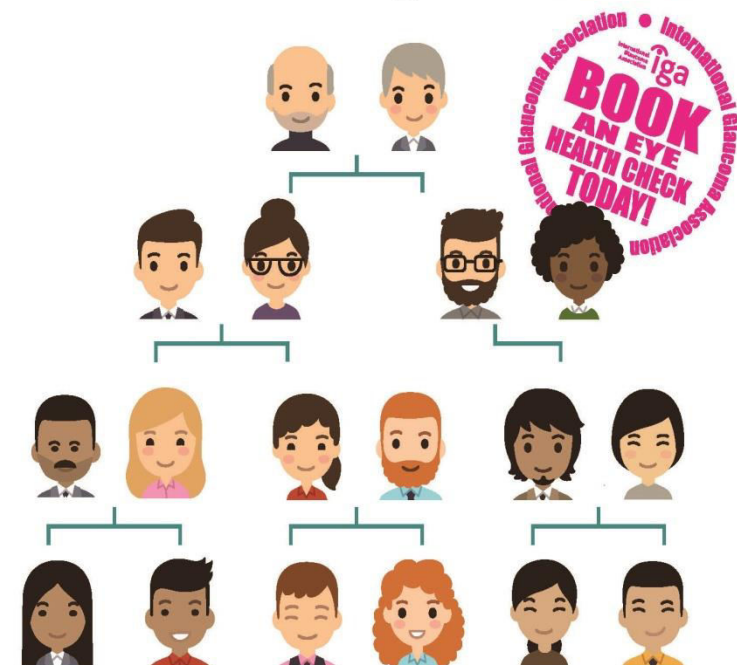


FAMILY HISTORY

- First degree relatives are at increased risk.
- Risk highest in siblings.
- Siblings ... 10%
- Offspring... 4%

Glaucoma?

**If you have it,
so could someone you love**



ETHNICITY

- African Americans are at increased risk of POAG
- Asians are at increased risk of PACG
- World .. POAG > PACG
- INDIA .. POAG = PACG



Myopia and Hypermetropia

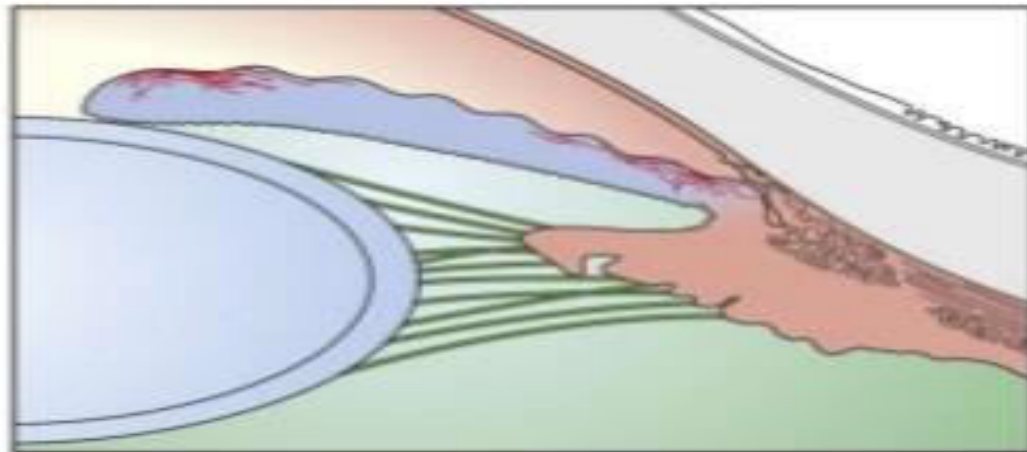
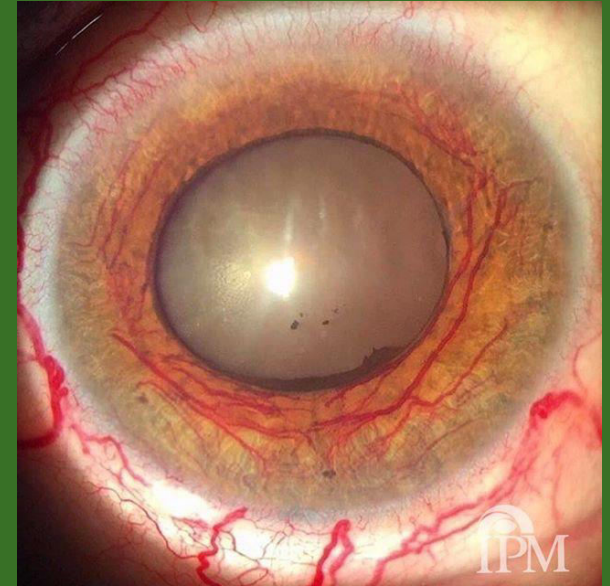


DIABETES AND GLAUCOMA

Diabetes can lead to blood vessel development in the drainage angle of the eye.

This can raise eye pressure and cause glaucoma.

The optic nerve gets damaged and peripheral vision is lost.



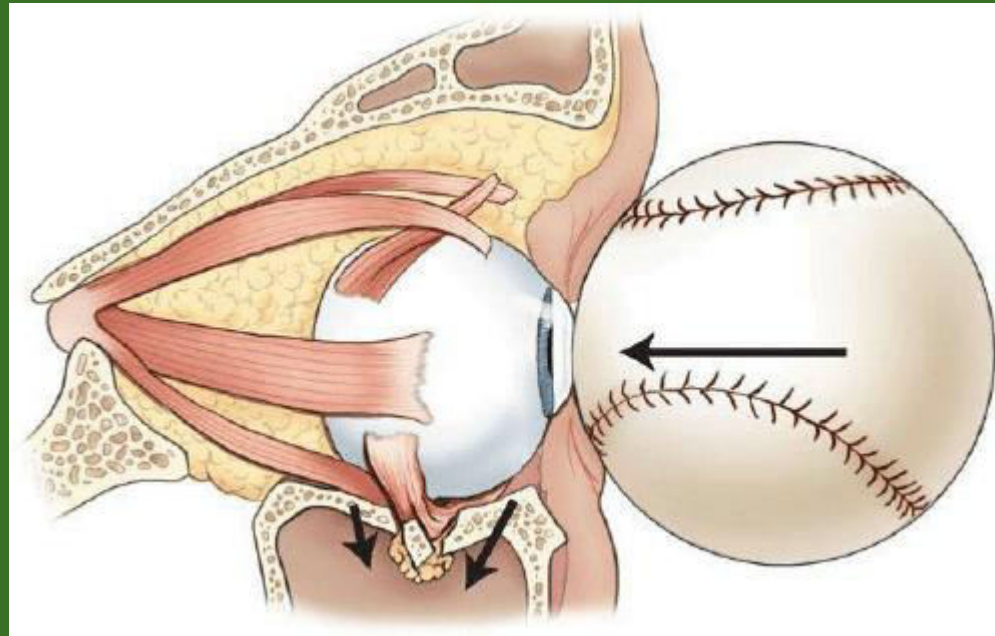
**If you have DIABETES
you are twice as likely
to develop GLAUCOMA
as other adults**

Protect Your Sight.
Get Tested for Glaucoma.



OCULAR TRAUMA

- Inflammation
- Haemorrhage
- Synechiae
- Angle recession



STEROID USAGE



RISK FACTOR WEIGHTING

Variable	Category	Weight
Age	<40 years	0
	40–49 years	1
	50–59 years	2
	>60 years	3
Race	Caucasian/other	0
	Hispanic	1
	African-American	2
Family History of Glaucoma	- or + in non-1 ^o relatives	0
	+ for parents	2
	+ for siblings	4
Last Complete Eye Examination	Within past 2 years	0
	2–5 years ago	1
	>5 years ago	2

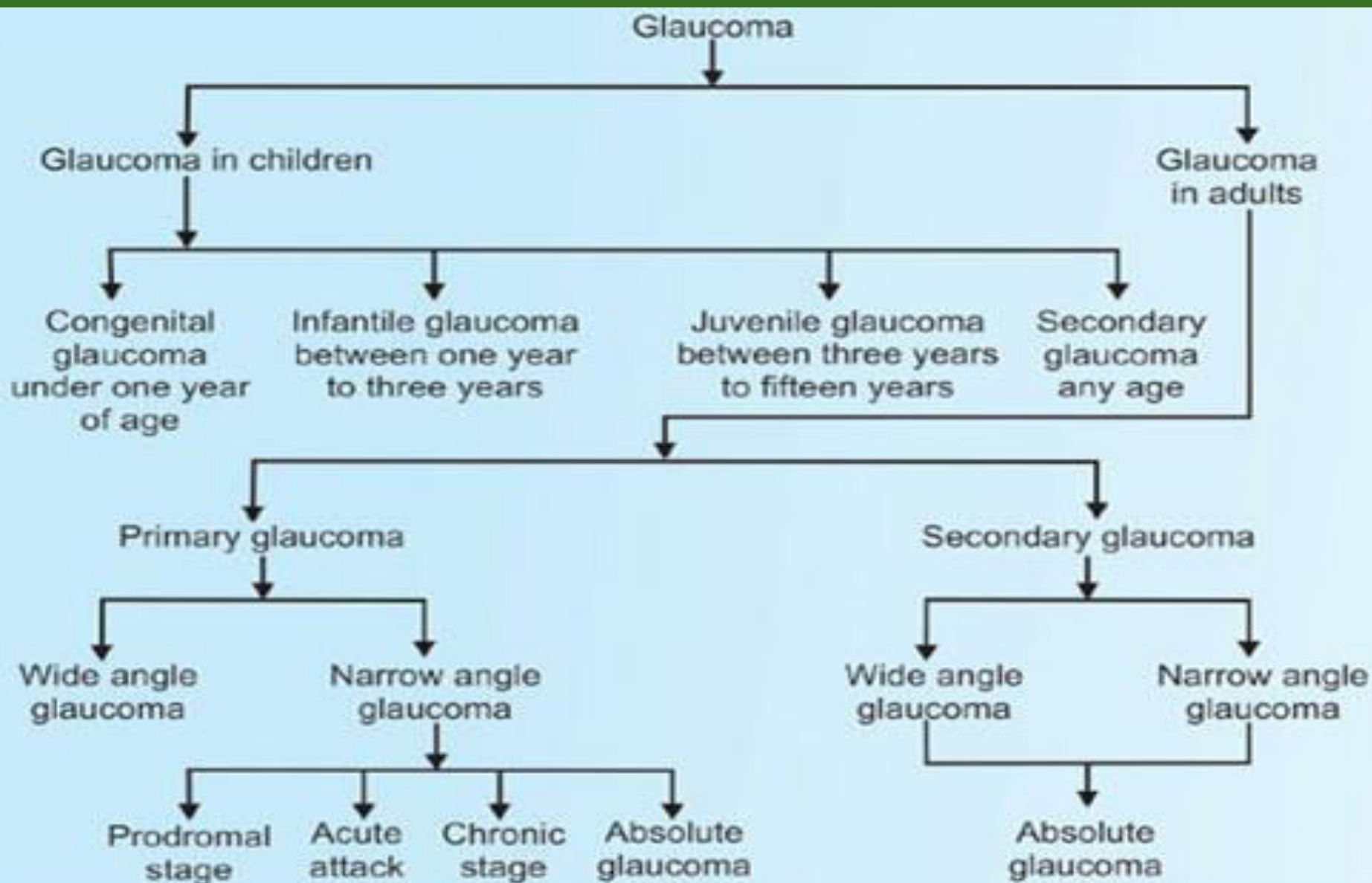
Risk factor analysis

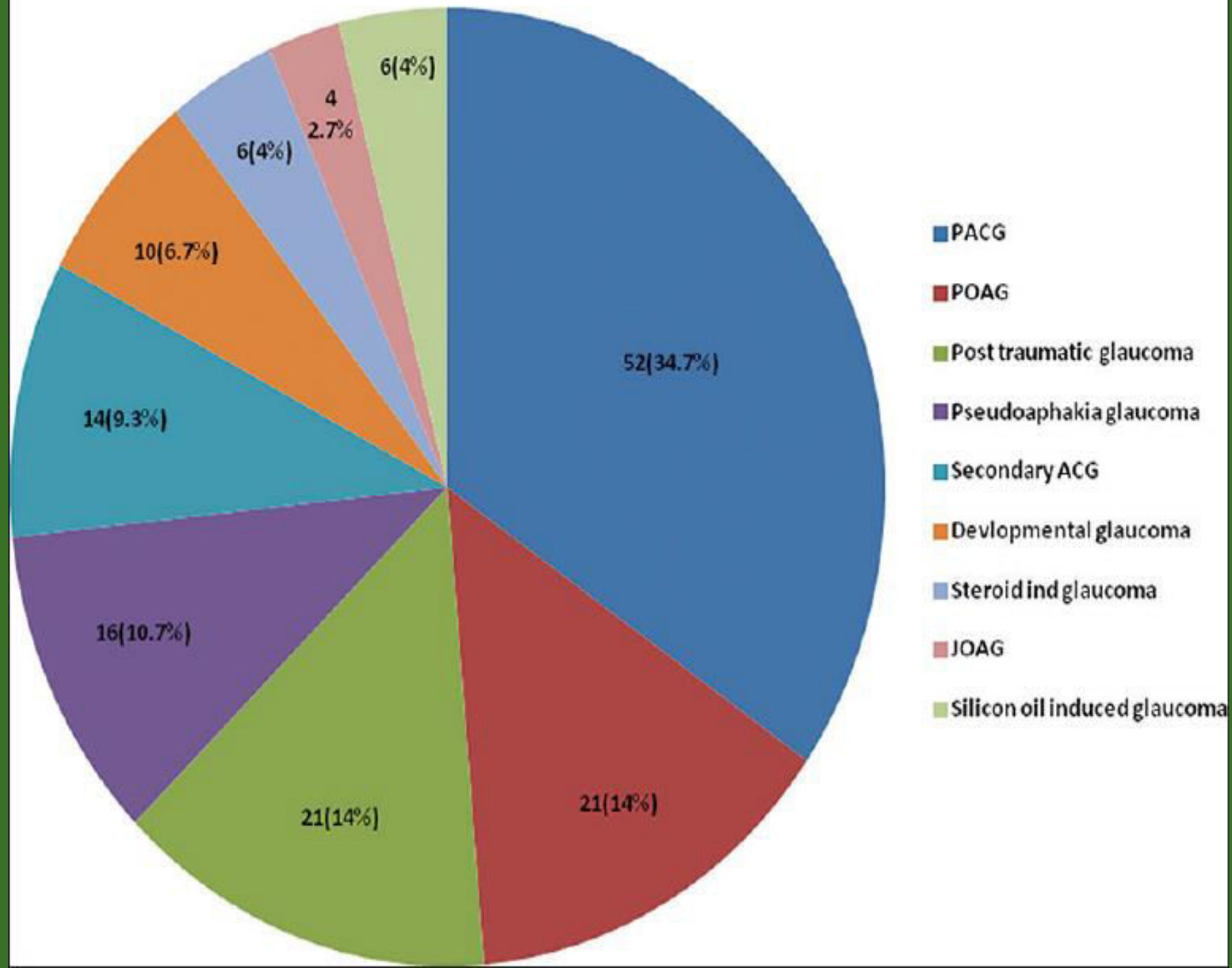
Level of glaucoma risk	Weighing score
High	4 or more
Moderate	3
low	2 or less

WHAT ARE THE EFFECTS OF GLAUCOMA?

Glaucoma can:

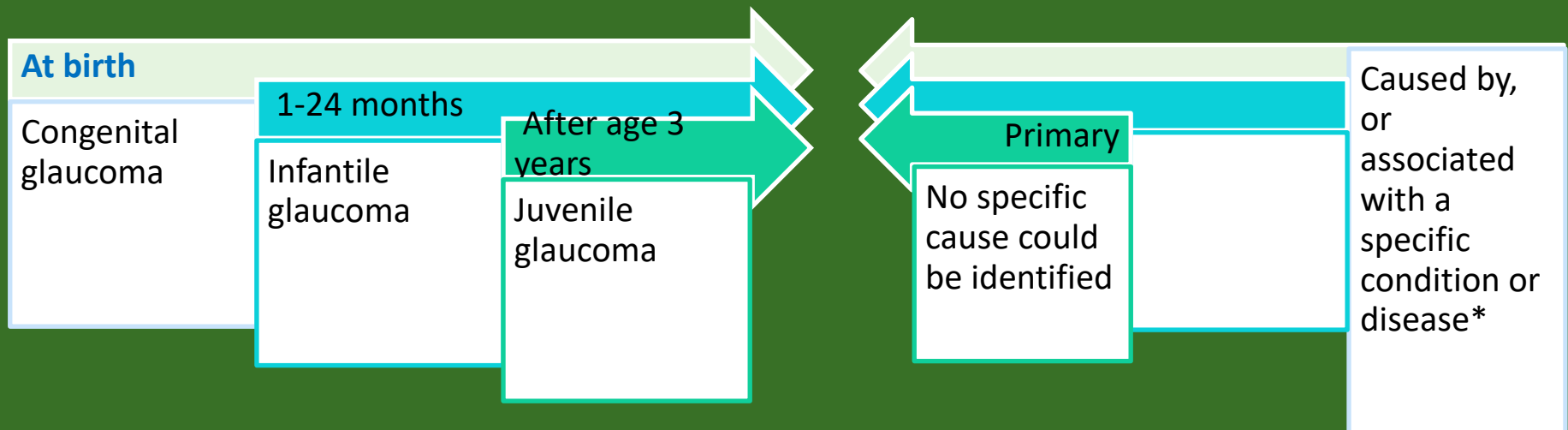
- Reduce side vision.
- Cause permanent vision loss or blindness.
- Most commonly bilateral
- May affect one eye first





PAEDIATRIC GLAUCOMA

Classification of Pediatric Glaucoma¹



Glaucoma accounts for 4.2-7% of all childhood blindness.¹
Infants and children with glaucoma typically have different signs and symptoms than adults.

WHEN TO REFER A CHILD TO AN OPHTHALMOLOGIST ??

1. Clouding and/or enlargement of the cornea

Primary congenital glaucoma



Corneal scarring from Haab's striae

2. Poor vision
3. Tearing
4. Blinking



5. Photophobia



Severe photophobia from corneal edema and Haab's striae

6. Corneal diameter

- Normal: 9.5 to 10.0 mm
- Glaucoma: > 12 mm (infant < 1 year)

Buphthalmos



Corneal clouding



EXTREME GLAUCOMA



ADVANCED GLAUCOMA



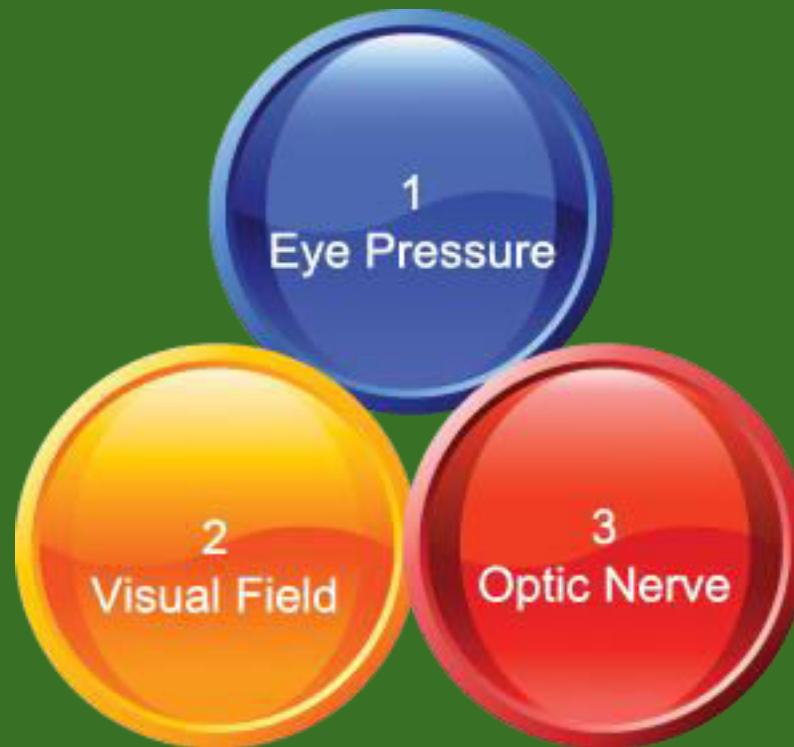
EARLY GLAUCOMA



NORMAL VISION



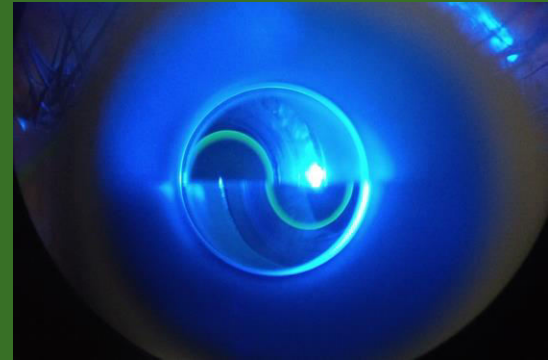
DIAGNOSIS



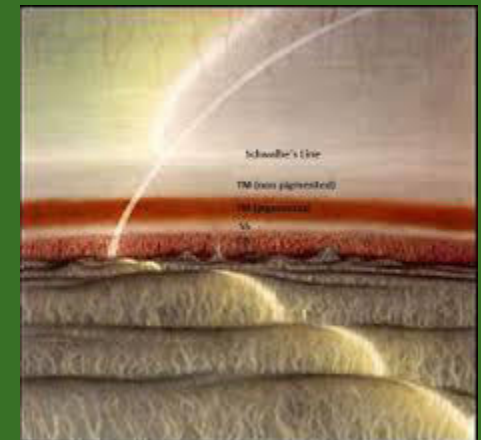
INVESTIGATIONS

- ❑ Applanation tonometry
- ❑ Gonioscopy
- ❑ Fundus
- ❑ Pachymetry (CCT-Central Corneal Thickness)
- ❑ HFA (Humphery Field Analyzer)
- ❑ OCT (Optical Coherence Tomography)
- ❑ Fundus photo
- ❑ HRT
- ❑ GDx
- ❑ UBM

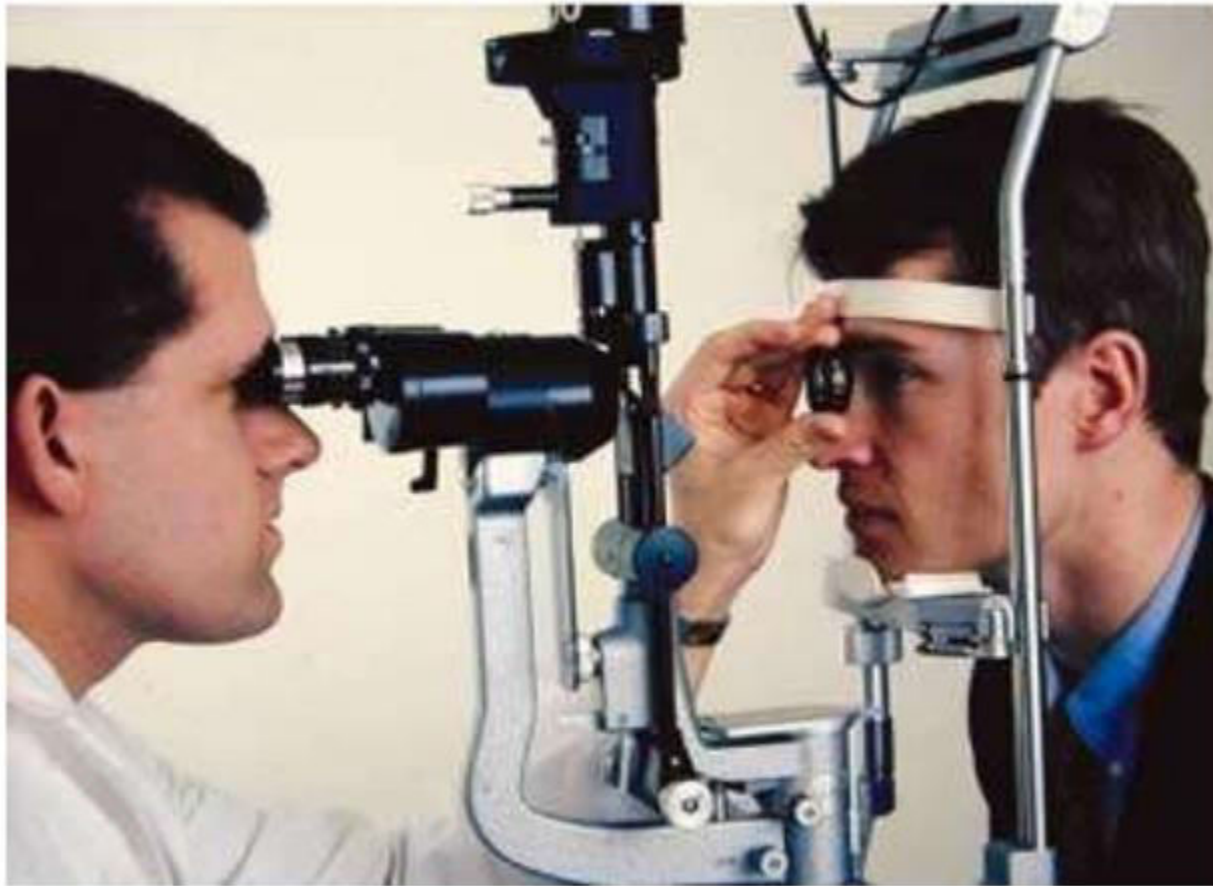
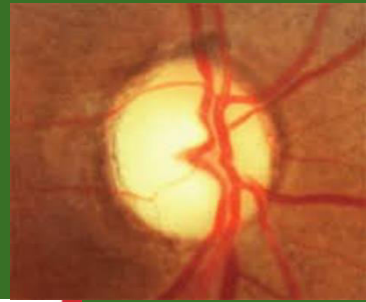
TONOMETRY



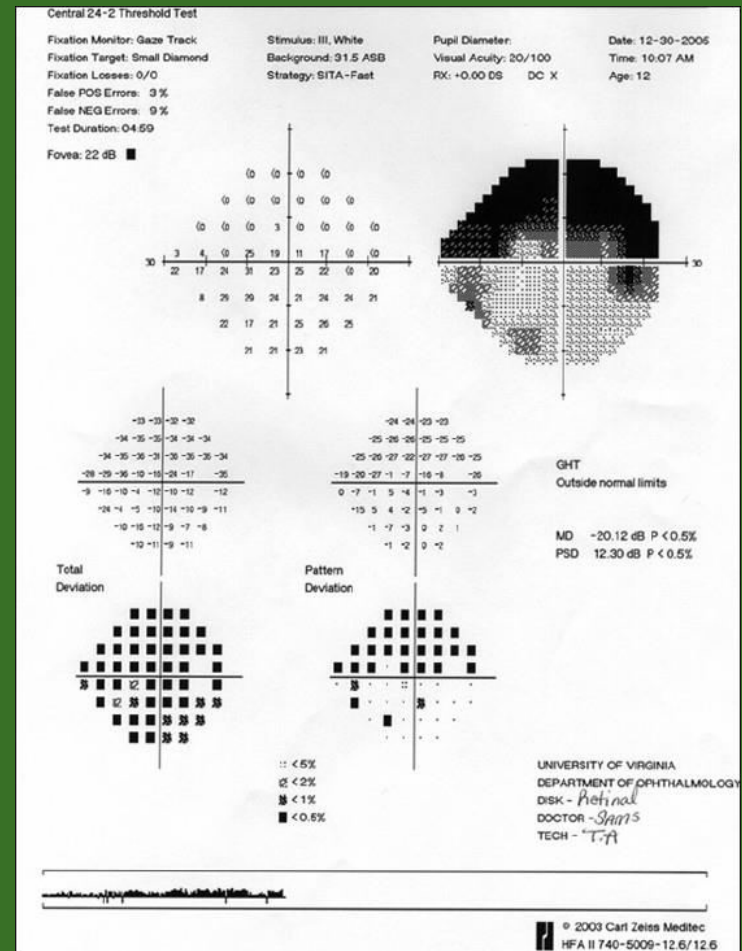
GONIOSCOPY



OPTIC DISC EXAMINATION



VISUAL FIELDS



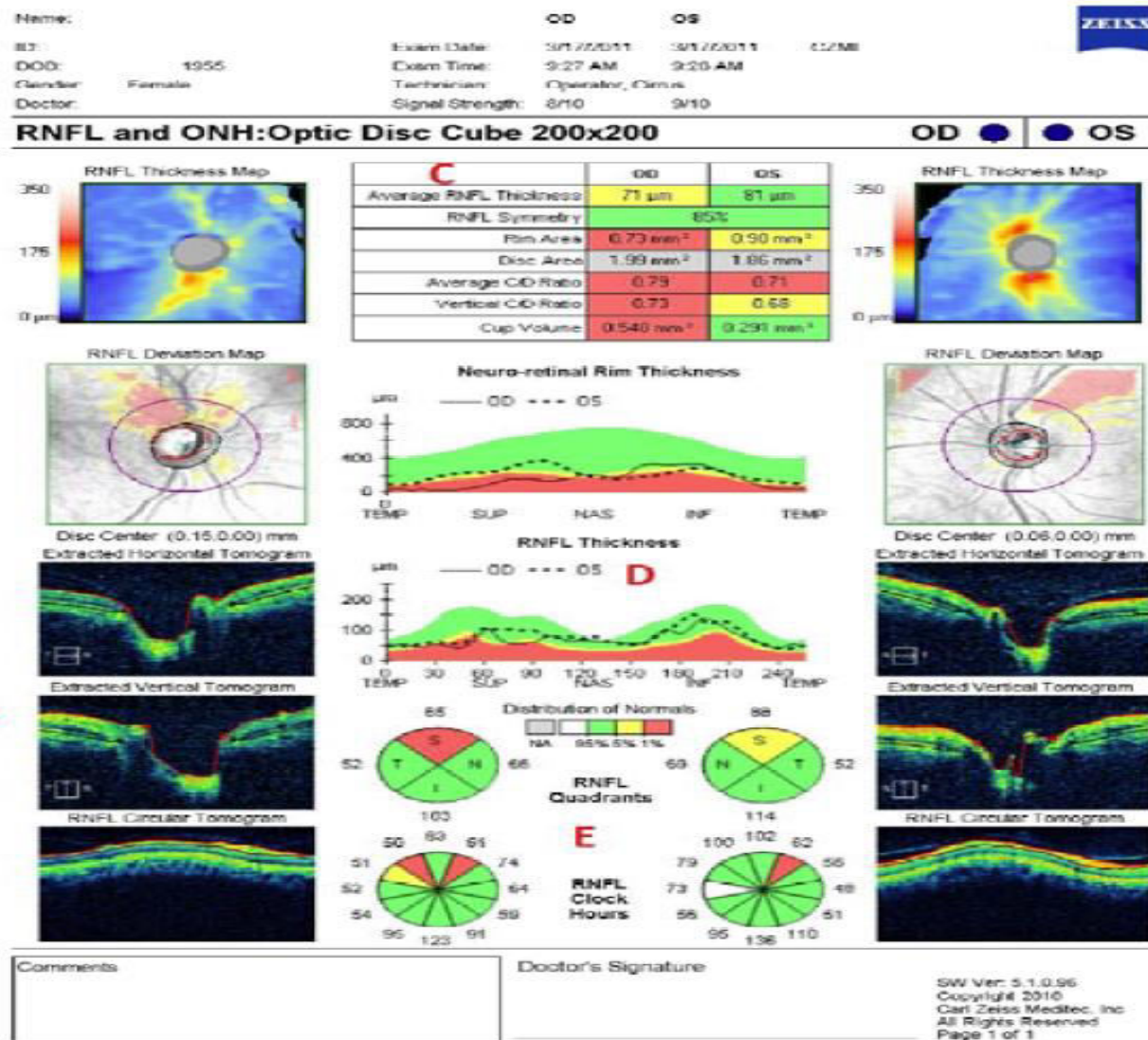
PACHYMETRY



PACHYMETRY remains an integral part of the contemporary glaucoma workup, even in light of advances in other technologies.

Photo courtesy Benjamin P. Casella, OD, FAAO

Optical Coherence Tomography

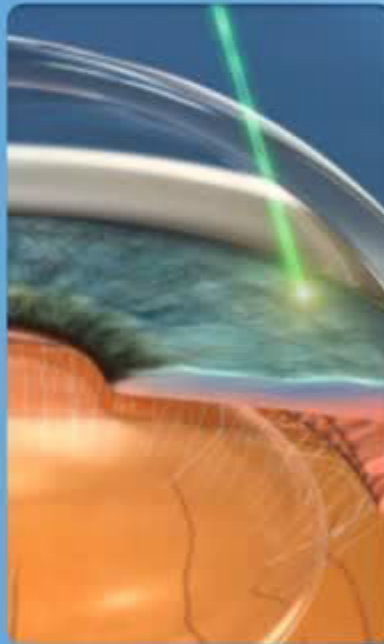


TREATMENT

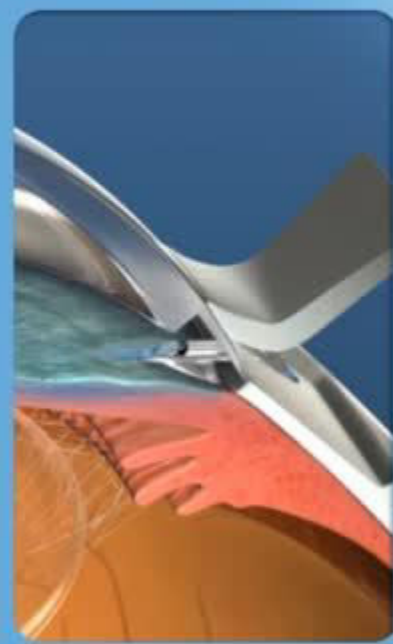
Medications



Laser Surgery



Traditional Surgery



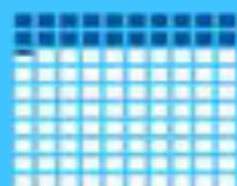
AIM OF TREATMENT

- Halt further visual loss
- Halt further optic nerve damage
- **THE VISION LOST CANNOT BE RECOVERED**

Glaucoma: the importance of patient screening



2nd leading cause
of blindness worldwide



79.6 million people
with glaucoma by 2020



4.5 million people
worldwide
are blind from glaucoma,
rising to 11.2m by 2020



6% of the world's
population
suffer from glaucoma



90%

of those with
the condition in
underdeveloped
countries are
unaware they
have it



50%

of those with
the condition in
developed
countries are
unaware they
have it

- **OPPORTUNISTIC SCREENING.....**

1. Patients coming to OPD for what ever reason
2. Pts in cataract camps
3. Asking Family members of known case of glaucoma to get screened

SCREENING

- High risk...family H/O, DM, trauma, steroid usage.....at or < 35yrs.....every 1-2 yrs
- General population....all pts > 40yrs

Age	Regular visits
< 4oyrs	Every 5- 10 yrs
40- 54 yrs	1- 3yrs
55- 64 yrs	1- 2 yrs
>65 yrs	Every 6- 12 mts

Glaucoma – Quality of life

Living with Glaucoma

Glaucoma can have a serious impact on a person's quality of life. Quality of life is most impacted when a person has problems with:



Reading and seeing in detail



Fear of falling



Isolation due to lack of mobility



Driving



Darkness or glare from bright lights



Bumping into things



Tripping over objects



Frequent steroid use



Working



Cooking, cleaning and self care



Work, volunteerism and socialization



Emotions such as anxiety, depression, fear and uncertainty

Tools:
Quality of Life Priorities

<http://bit.ly/11YeZCP>



GlaucomaSocioeconomic Burden *

- Chronic disease....needs life long Rx and follow up
- **Direct cost**
 - 1.Medication cost
 - 2.Physician and hospital visit
 - 3.Glaucoma related procedures and tests
 - 4.Transport
- **Indirect cost**
 - 1.Lost productivity
 - 2.Days missed from work
 - 3.Care giver cost

*Nayak B, Gupta S, Kumar G, Dada T, Gupta V, Sihota R. Socioeconomics of long-term glaucoma therapy in India. Indian journal of ophthalmology. 2015 Jan;63(1):20.

PSYCHOLOGICAL BURDEN

1.Social withdrawal due to blindness

2.Depression

WHAT SHOULD YOU REMEMBER?

Glaucoma:

- Often has no symptoms.
- Can result in vision loss or blindness.
- Only an eye care professional can diagnose glaucoma.
- Vision loss from glaucoma cannot be restored.

WHAT ARE YOUR NEXT STEPS?

- Find out if you have a family history of glaucoma.
- Schedule your comprehensive dilated eye exam.
- Spread the word!
- Encourage other people to visit their eye care professional

GREEN =
Go get your
eyes tested for
Glaucoma
Save Your Sight!

