



OCULAR DISEASES IN GERIATRIC PATIENTS



**See Well for Life, Get Your Eyes
Examined Regularly**

**Age-Related Eye Disease Doesn't Have to
Steal Your Sight**

- ◉ *As with other parts of the body, the eyes commence to undergo alters as they age*
- ◉ *In fact, vision problems are one of the initial signs of ageing*

The most common ocular diseases in geriatric people are as follows:

Age-related macular degeneration (AMD)

Cataract

Glaucoma

Diabetic retinopathy¹

Adapted from:

1. Gerontology. 2003 Jan-Feb;49(1):1-11

2. Am Fam Physician 1999;60:99-10

3. <http://technocrat.net/d/2007/6/16/21627/>

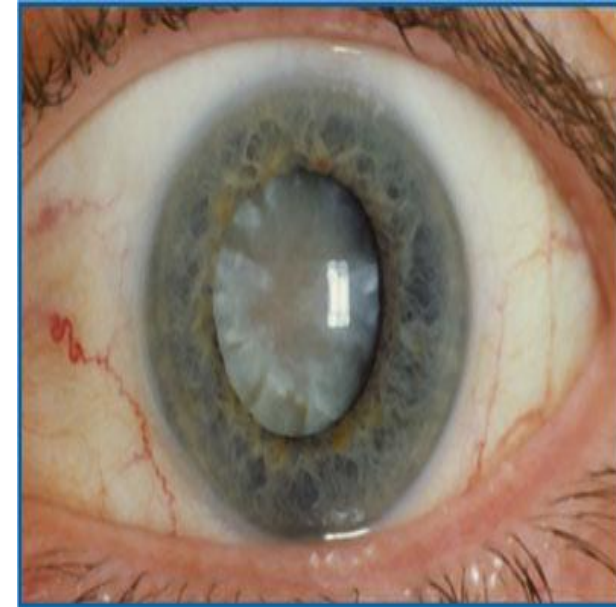


CATARACT

**Most Common Cause for
Vision Loss**

CATARACT

- ◉ *Cataract is a common cause of vision impairment in the elderly and the most common cause of blindness worldwide¹*
- ◉ *The prevalence of cataracts in people aged between 65 and 74 years is 50% and it increases to 70% in those over the age of 75 years²*



Adapted from:

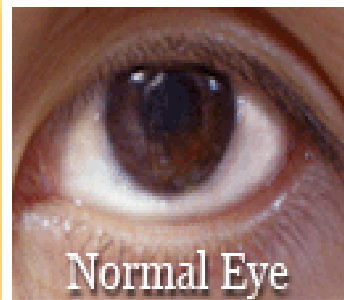
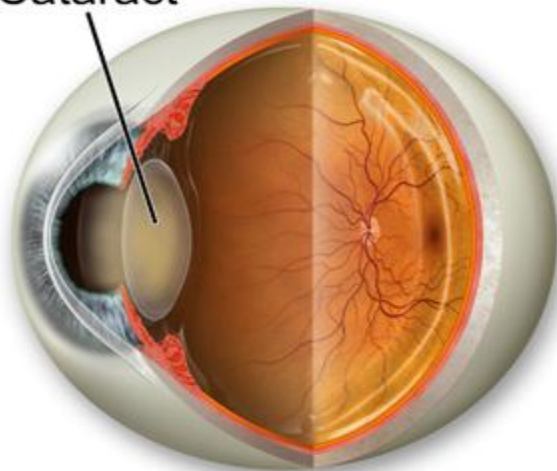
1. Am Fam Physician 1999;60:99-10

2. SA Fam Pract 2006;48(7)

A cataract is a clouding of the lens in the eye that affects vision

- ◉ ***The lens of the eye is composed of water and protein***
- ◉ ***The protein is arranged so that light can pass through and focus on the retina***
- ◉ ***If the protein clumps together, however, it starts to cloud over a small area of the lens***
- ◉ ***In time, this cloudy mass of protein – called a cataract – can grow larger, making it hard to see***

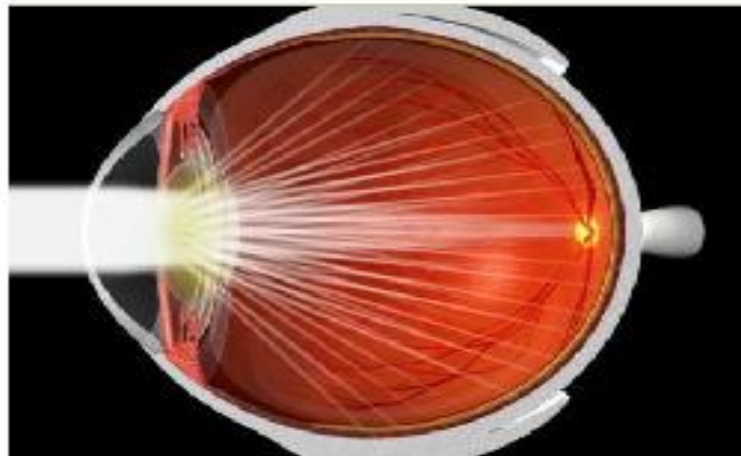
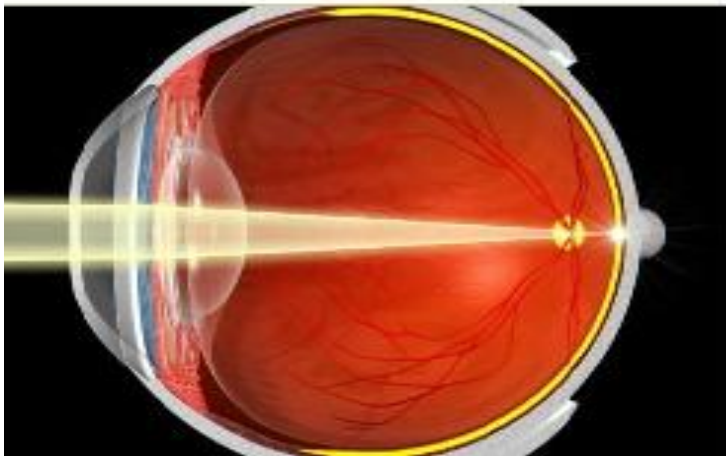
Cataract



NORMAL VISION



VISION IN CATARACT



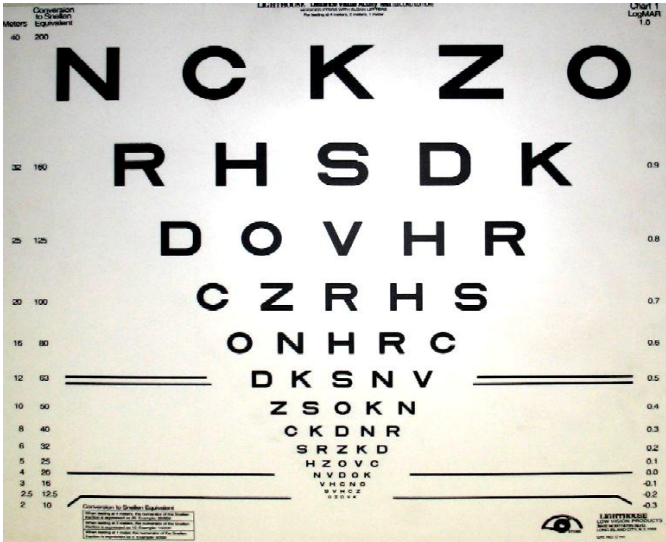
RISK FACTORS

- ◉ Certain diseases such as diabetes
- ◉ Personal behavior such as smoking and alcohol use
- ◉ The environment such as prolonged exposure to sunlight

SYMPTOMS

- ◉ Cloudy or blurry vision
- ◉ Colors seem faded
- ◉ Glare - Headlights, lamps, or sunlight may appear too bright
- ◉ A halo may appear around lights
- ◉ Poor night vision
- ◉ Double vision or multiple images in one eye

DIAGNOSIS



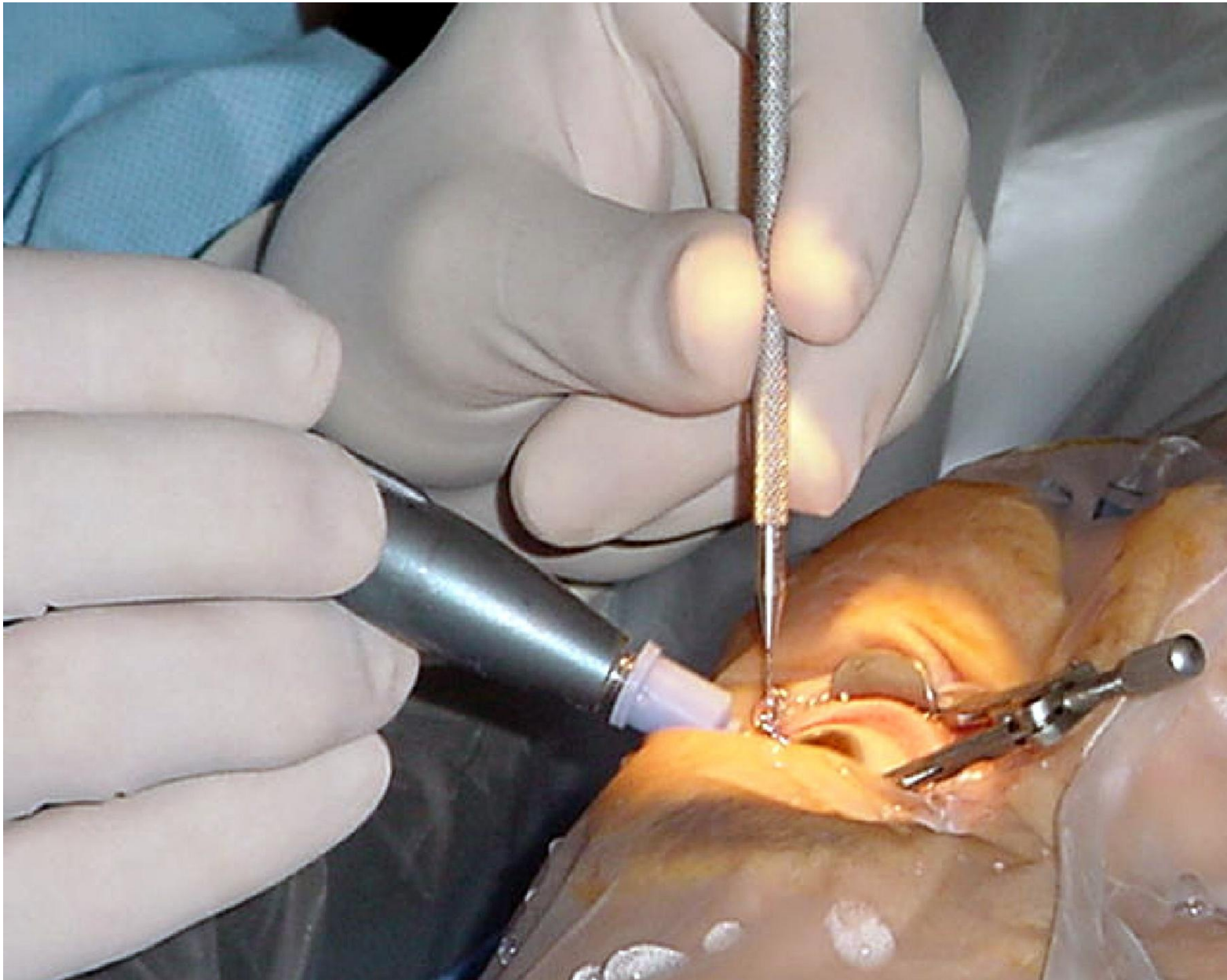
VISUAL ACUITY
*A Chart test measures how well
you see at various distances*



DILATED EYE EXAM
*Drops are placed in eyes to widen,
or dilate, the pupils. Eye care
professional uses a special
magnifying lens to examine the eye*

TREATMENT

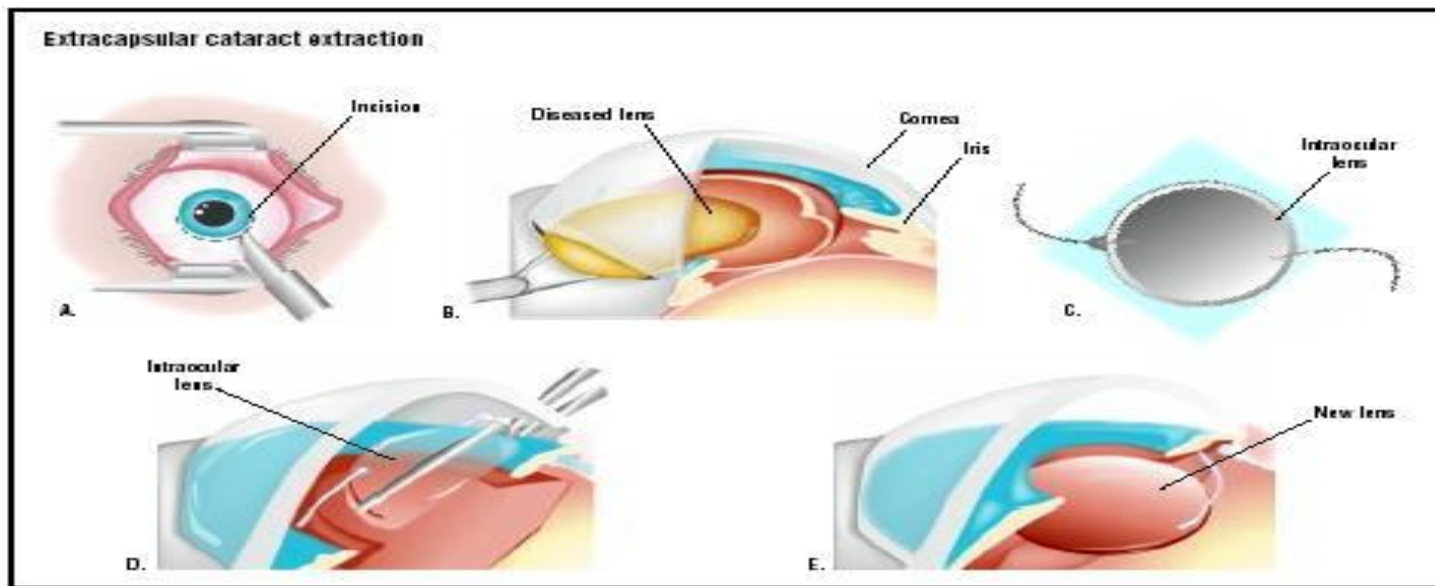
By the year 2020, there will be more than 12 million individuals in the 65 or older age group who will probably need treatment for cataracts



Adapted from:
Am Fam Physician 1999;60:99-10

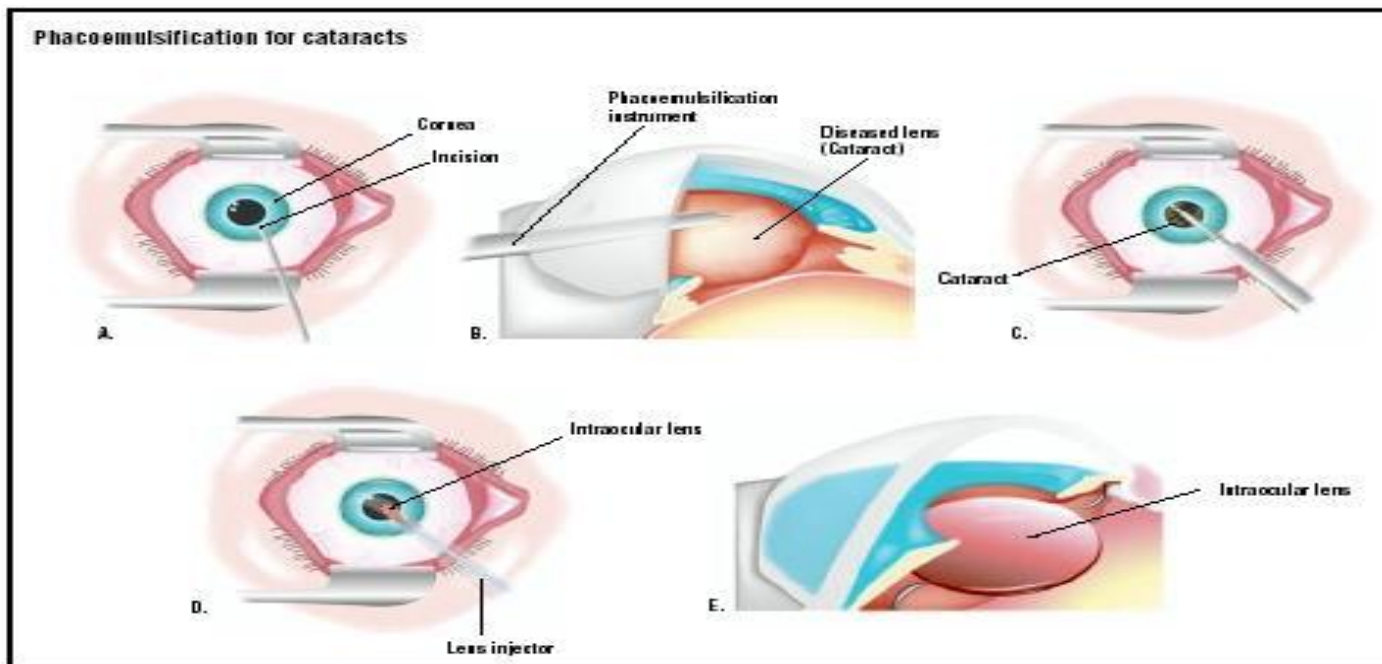
EXTRACAPSULAR SURGERY

- ◉ *Incision is made between sclera and cornea*
- ◉ *Capsule containing lens is opened and nucleus of lens is removed*
- ◉ *Remaining portion is sucked out*
- ◉ *Next, an IOL is implanted*



PHACOEMULSIFICATION

- ◉ *Phacoemulsification represents the preferred method of lens removal*
- ◉ *It involves fragmentation of the lens using ultrasound and insertion of an artificial intraocular lens*



PATIENT AWARENESS

HOW CAN I TELL IF I HAVE CATARACT?

- ◉ ***Changes in vision may be signs of cataract***
- ◉ ***Milky or yellowish spot in the pupil***
- ◉ ***Changing eyeglass prescriptions often***

PATIENT AWARENESS

IS SURGERY THE ONLY TREATMENT?

YES

- Cataracts cannot be treated with medicines
- Eye drops or other drugs will not dissolve a cataract or slow its progress

PATIENT AWARENESS

HOW DO I KNOW IF CATARACT SURGERY IS RIGHT FOR ME?

- ◉ *A cataract needs to be removed only when vision loss interferes with your everyday activities, such as driving, reading, or watching TV*
- ◉ *You and your eye care professional can make this decision together*

PATIENT AWARENESS

WHAT HAPPENS AFTER SURGERY?

- ◉ ***After the operation, a patch may be placed over your eye***
- ◉ ***You will rest for a while. Your medical team will watch for any problems, such as bleeding***
- ◉ ***Most people who have cataract surgery can go home the same day***

PATIENT AWARENESS

WHEN WILL MY VISION BE NORMAL AGAIN?

- ◉ *You can return quickly to many everyday activities, but your vision may be blurry*
- ◉ *The healing eye needs time to adjust so that it can focus properly with the other eye, especially if the other eye has a cataract*

PATIENT AWARENESS

WHAT CAN I DO IF I ALREADY HAVE LOST SOME VISION FROM CATARACT?

- ◉ *If you have lost some sight from cataract or cataract surgery, ask your eye care professional about low vision services and devices that may help you make the most of your remaining vision*
- ◉ *Ask for a referral to a specialist in low vision*
- ◉ *Many community organizations and agencies offer information about low vision counseling, training, and other special services for people with visual impairments*
- ◉ *A nearby school of medicine or optometry may provide low vision services*

PATIENT AWARENESS

WHAT CAN I DO TO PROTECT MY VISION?



Take good nutrition



Quit Smoking



Wear sunglasses



GLAUCOMA

Thief of the Sight

Glaucoma is the second leading cause of blindness in the world, according to the World Health Organization¹

8.4 million people will be blind from primary glaucoma by 2010, rising to 11.1 million by 2020²

1. http://www.glaucoma.org/learn/glaucoma_facts.php

2. Br J Ophthalmol. 2006 March; 90(3): 253-254



GLAUCOMA : INDIAN PREVALENCE

- *Second leading cause of preventable blindness in INDIA*
- *12 million Indians will be affected by 2010, 16 million by 2020*
- *POAG in a ≥ 40 -year-old south Indian urban population was 3.51%*
- *POAG in Central India was 3.68%*
- *>90% were not aware of the disease.*



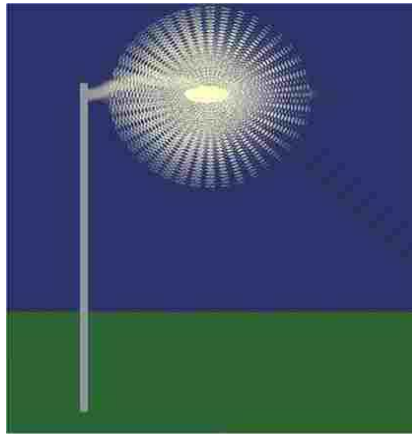
1. *Indian J of Ophthalmology* , vol 56 no (2) , 2008 : 97-98
2. *Indian J. of Ophthalmology* , vol 56 , 2008 : 56- 72
3. *Ophthalmology*, Volume 115, Issue 4, Pages 648-654.e1 , 2008

GLAUCOMA: HOW THE DEFINITION IS EVOLVED OVER THE YEARS

- ◉ *Glaucoma was widely known as the disease related to the rise in intraocular pressure (IOP) > 21 mm Hg*

And now what is the current definition of Glaucoma

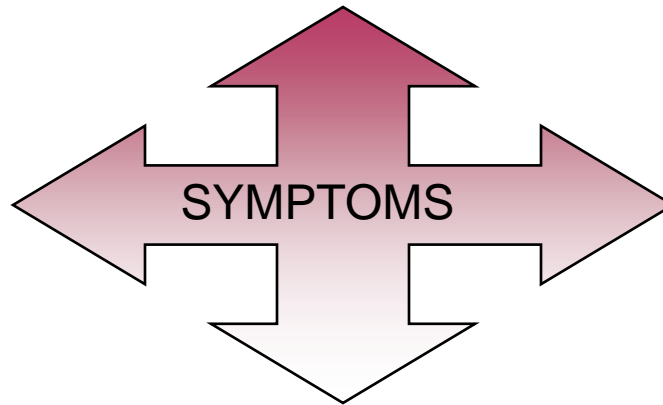
- ◉ *An optic neuropathy characterized by a specific pattern of optic nerve head and visual field damage characterized by acquired loss of RGC cells and optic nerve atrophy*



Halo around lights

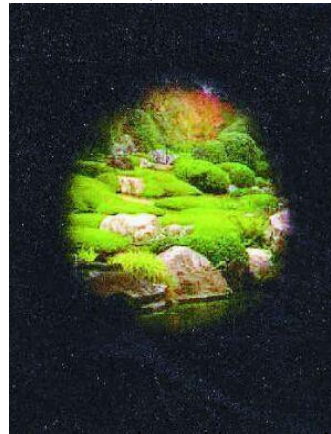


Red eye, pain in the eye,



Blurred vision

Tunnel vision



GLAUCOMA SYMPTOMS

EXTREME GLAUCOMA



ADVANCED GLAUCOMA



EARLY GLAUCOMA



NORMAL VISION



GLAUCOMA : SYMPTOMS



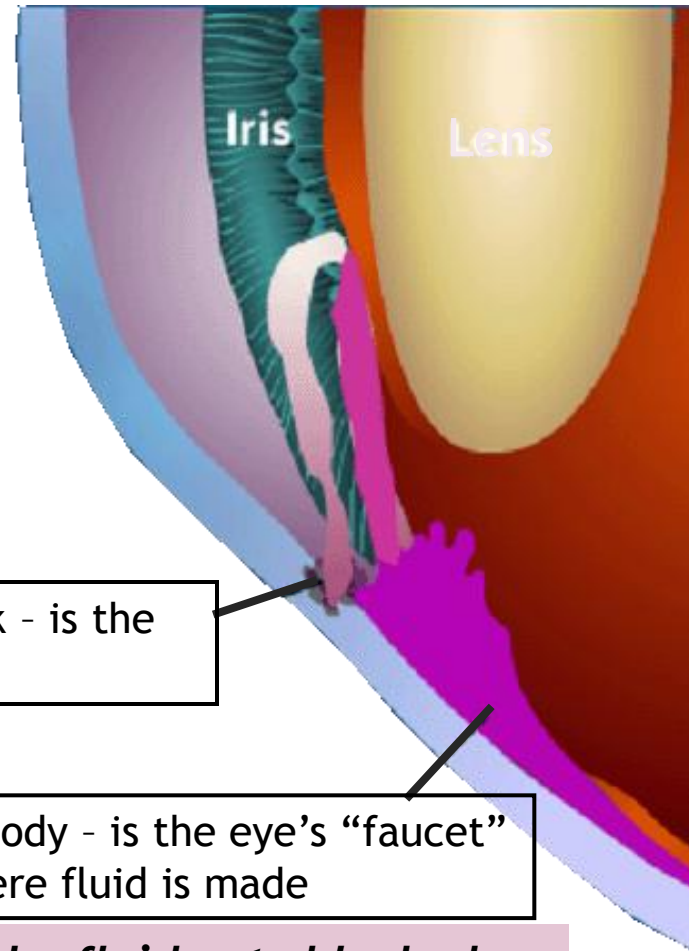
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GLAUCOMA : RISK FACTORS



Glaucoma: The Disease

Normal Drainage Picture

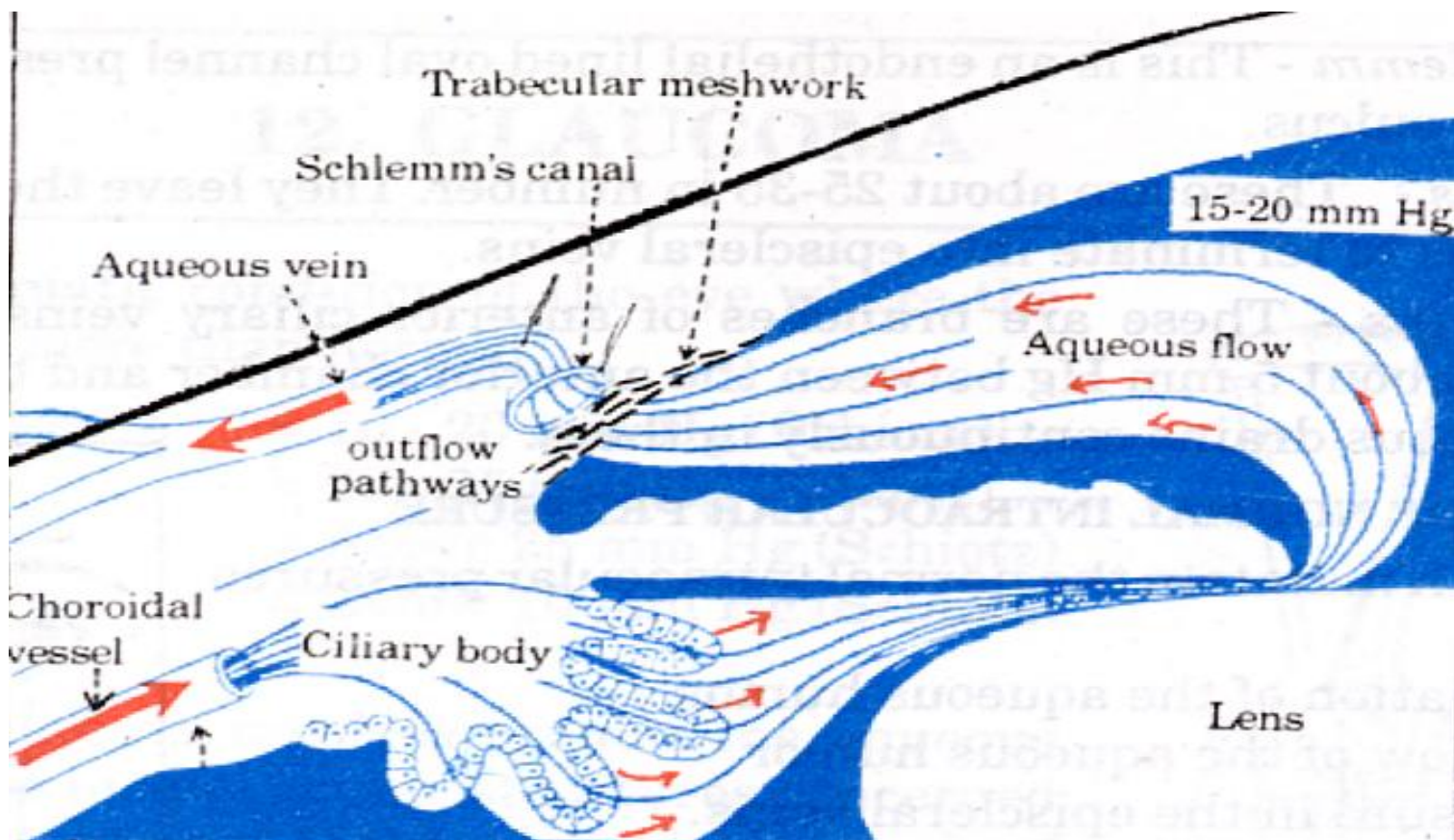


The Trabecular meshwork - is the eye's drain

The Ciliary Body - is the eye's "faucet" or "tap" where fluid is made

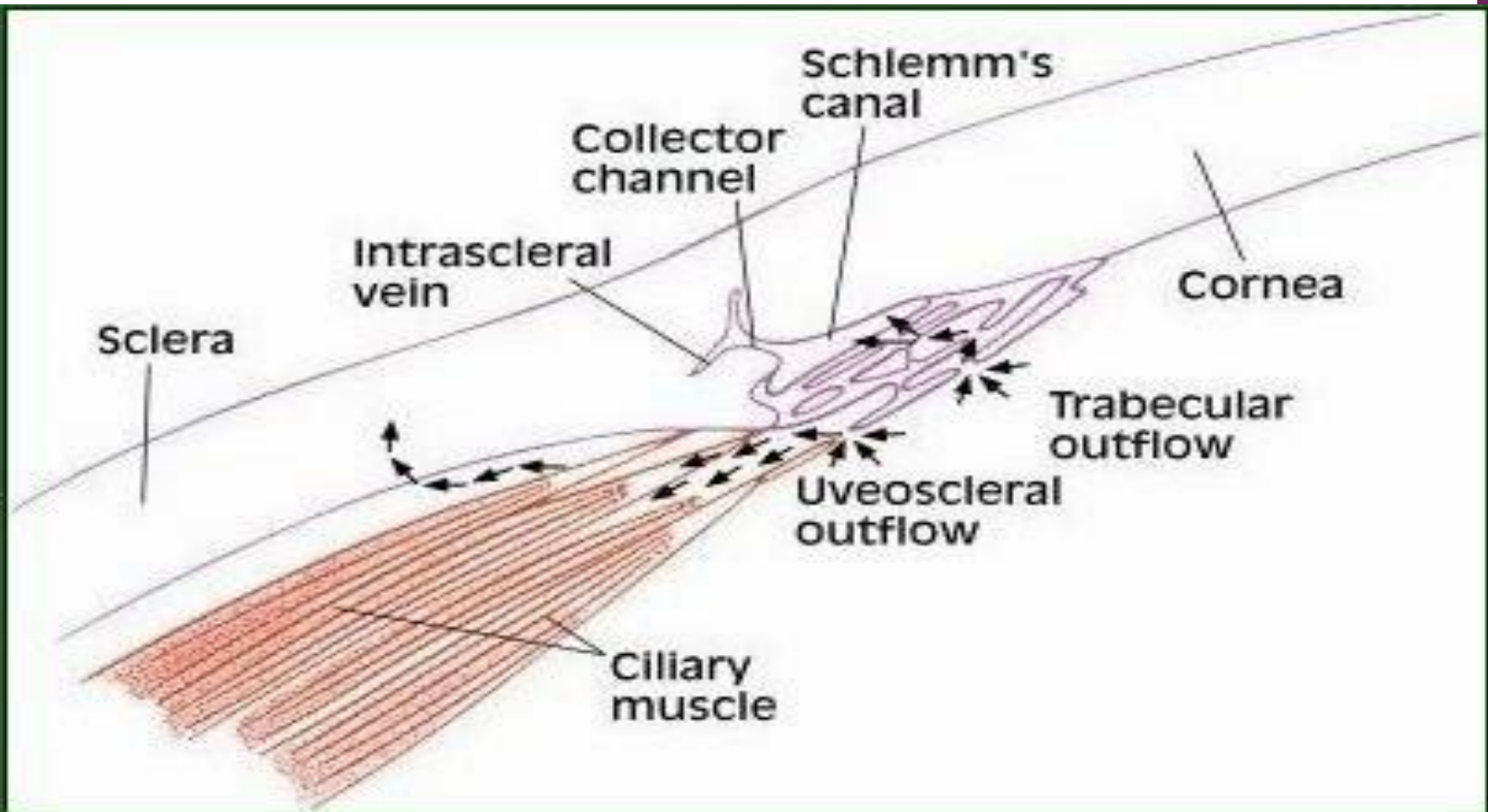
When this drainage of the fluid gets blocked, excess pressure is formed leading to Glaucoma

AQUEOUS HUMOR: TRABECULAR MESHWORK FLOW



- 50% trabecular meshwork
- 50% Uveoscleral outflow

AQUEOUS HUMOR: UVEOSCLERAL OUTFLOW



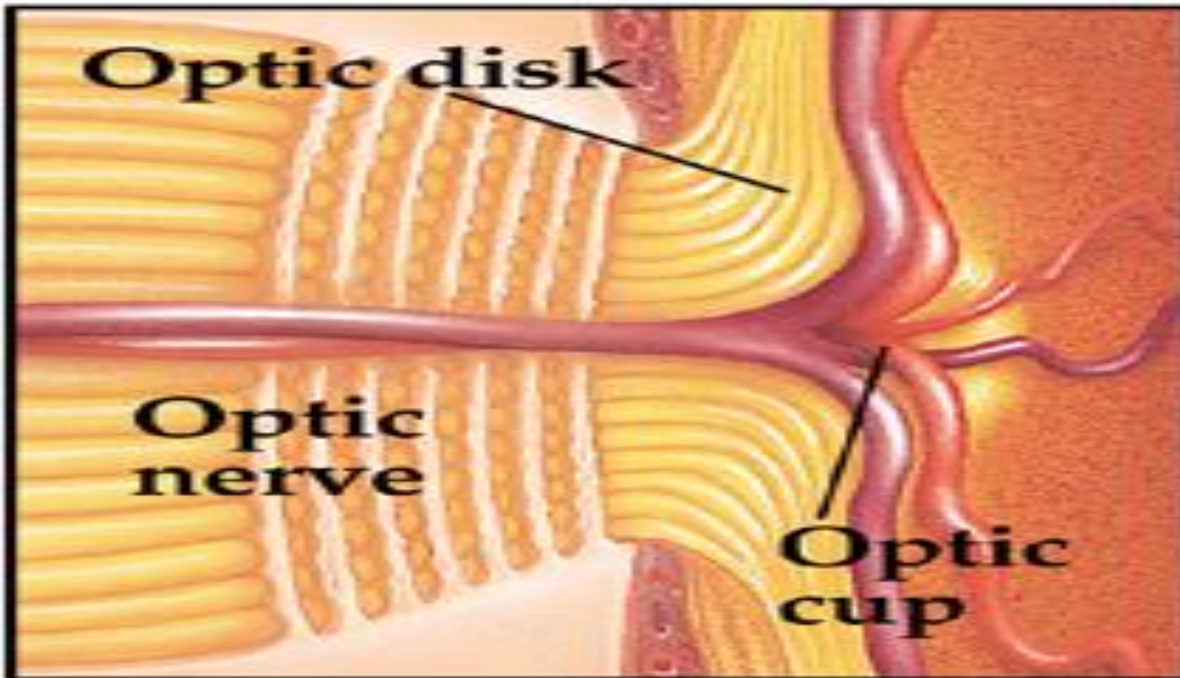
INTRAOCULAR PRESSURE

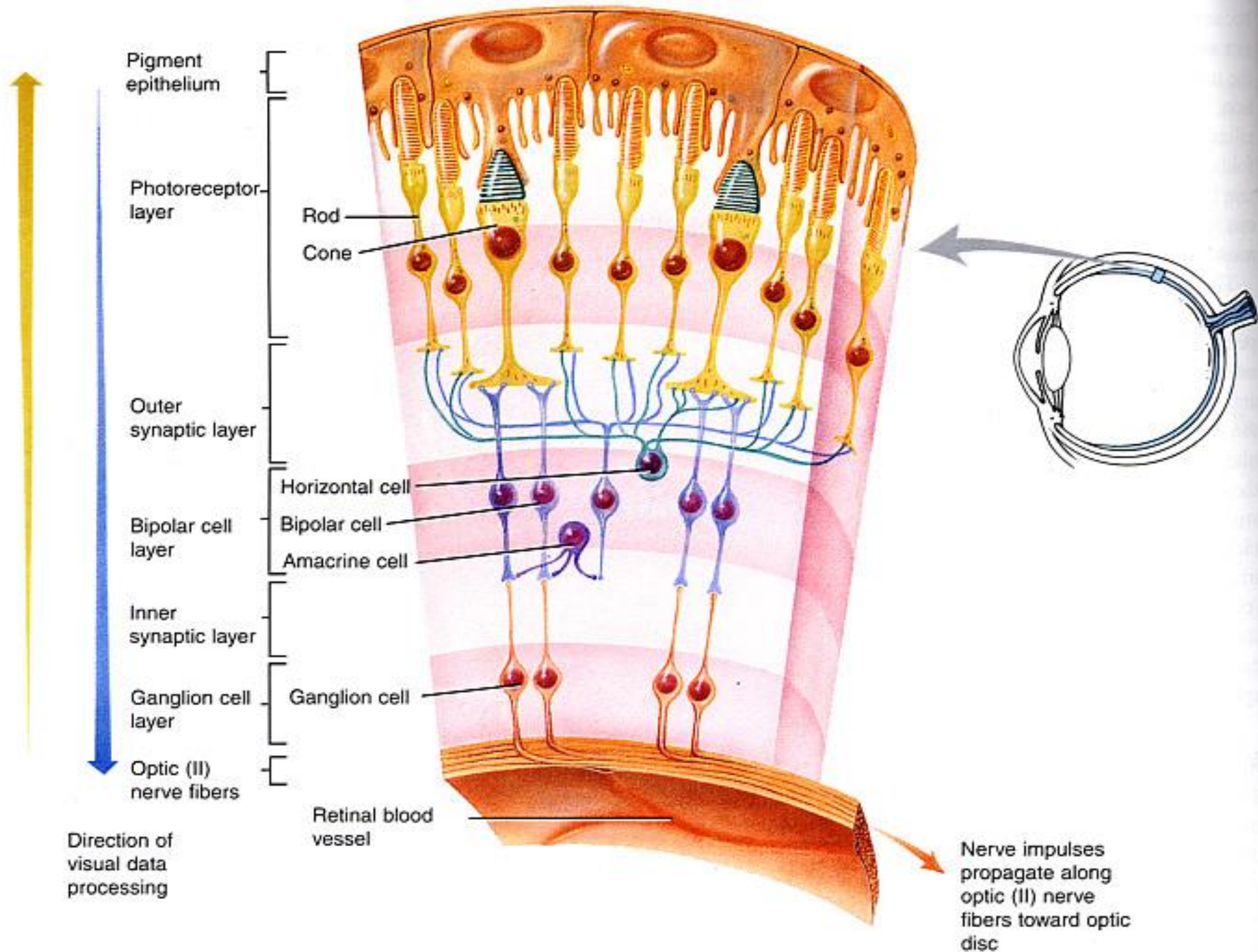
Definition

- *Intraocular pressure (IOP) is the pressure maintained inside the eyeball under normal conditions, created by the volume of its liquid and solid contents (i.e. the aqueous humor and vitreous humor)*
- *Normal intraocular pressure = 10 -21 mm Hg*

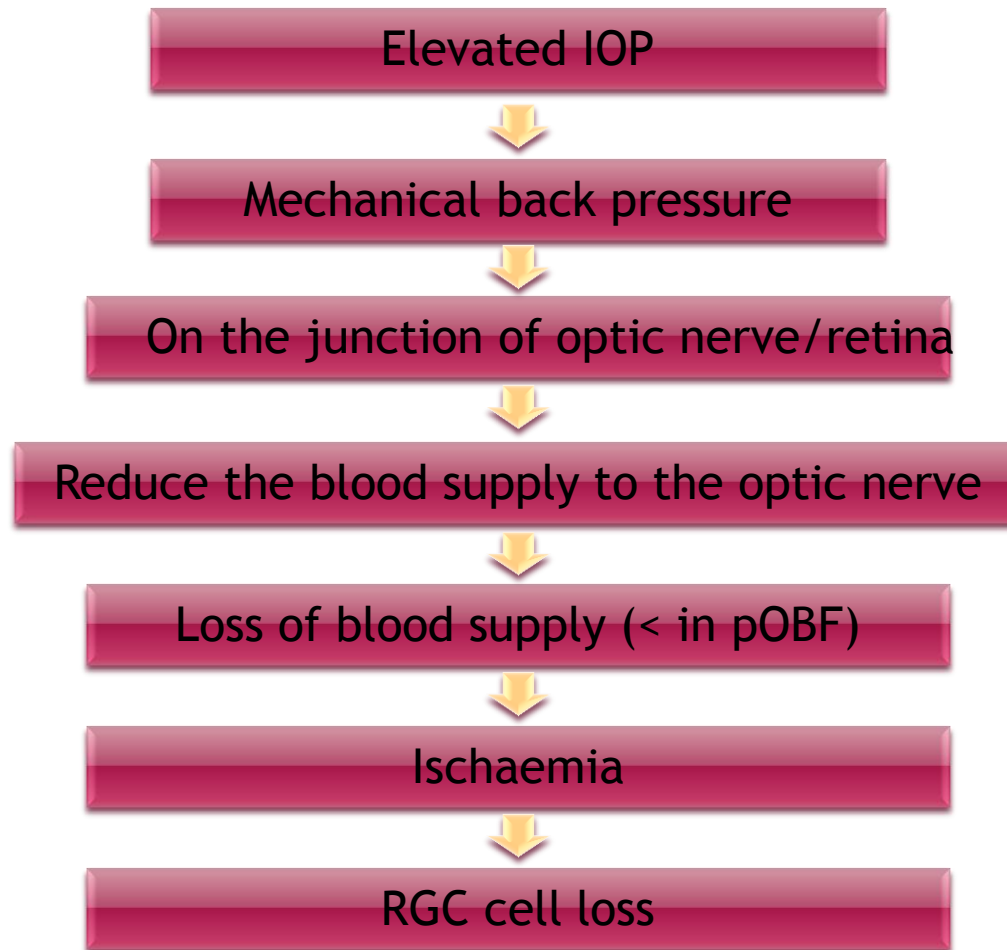
OPTIC DISC/OPTIC CUP/OPTIC NERVE

Normal optic nerve

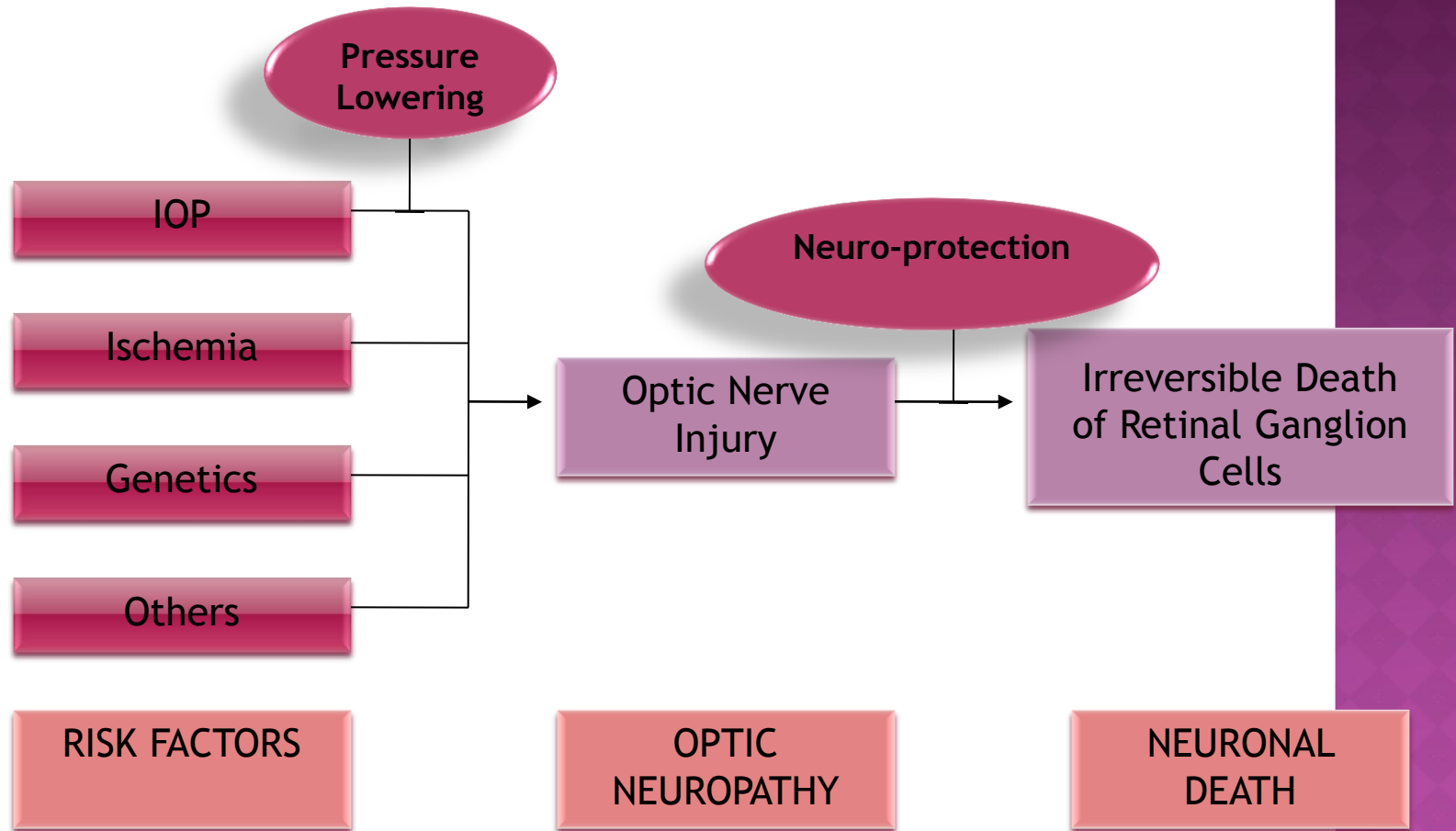




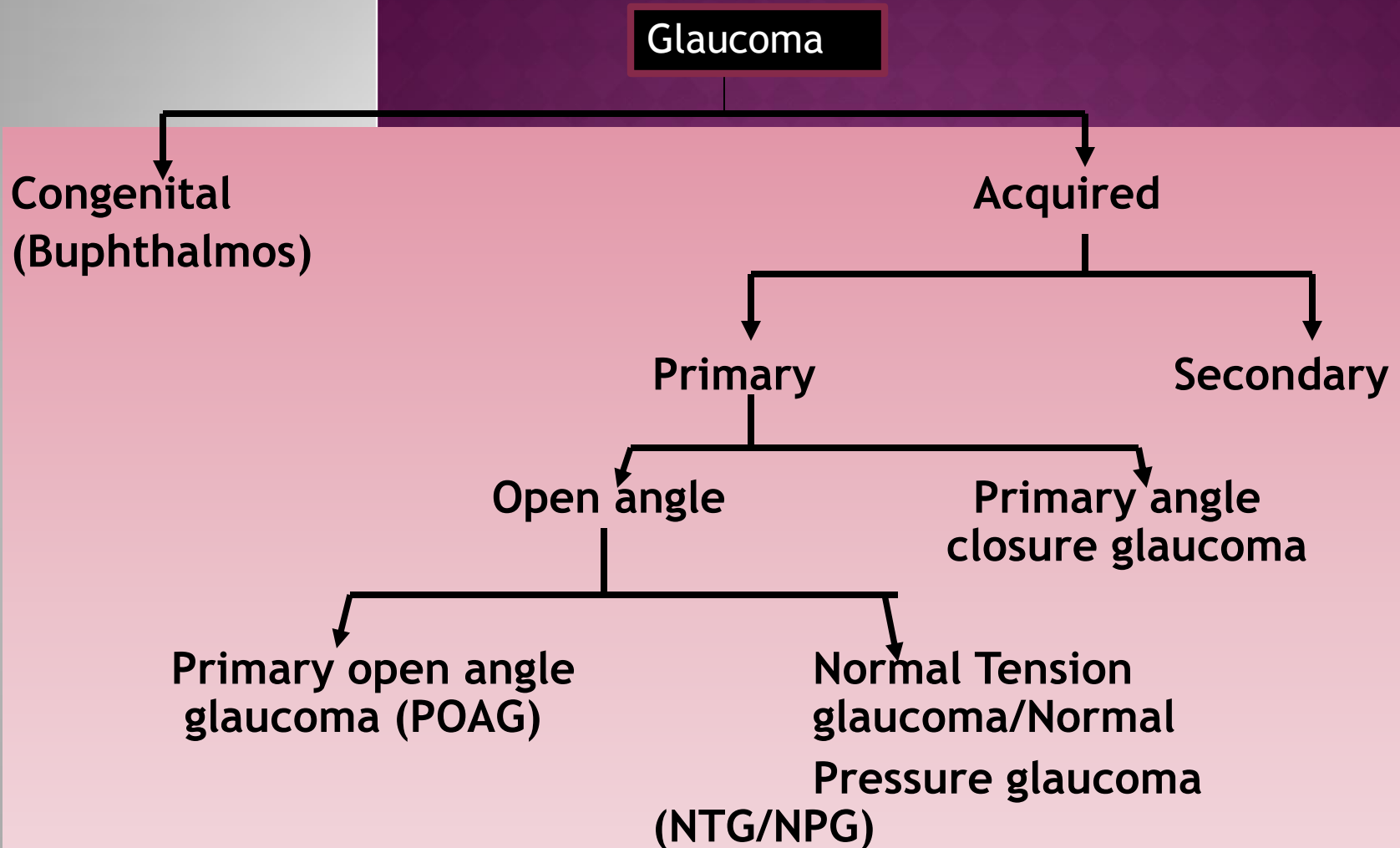
GLAUCOMA: OPTIC NERVE DAMAGE



HOW GLAUCOMA LEADS TO RGC DEATH



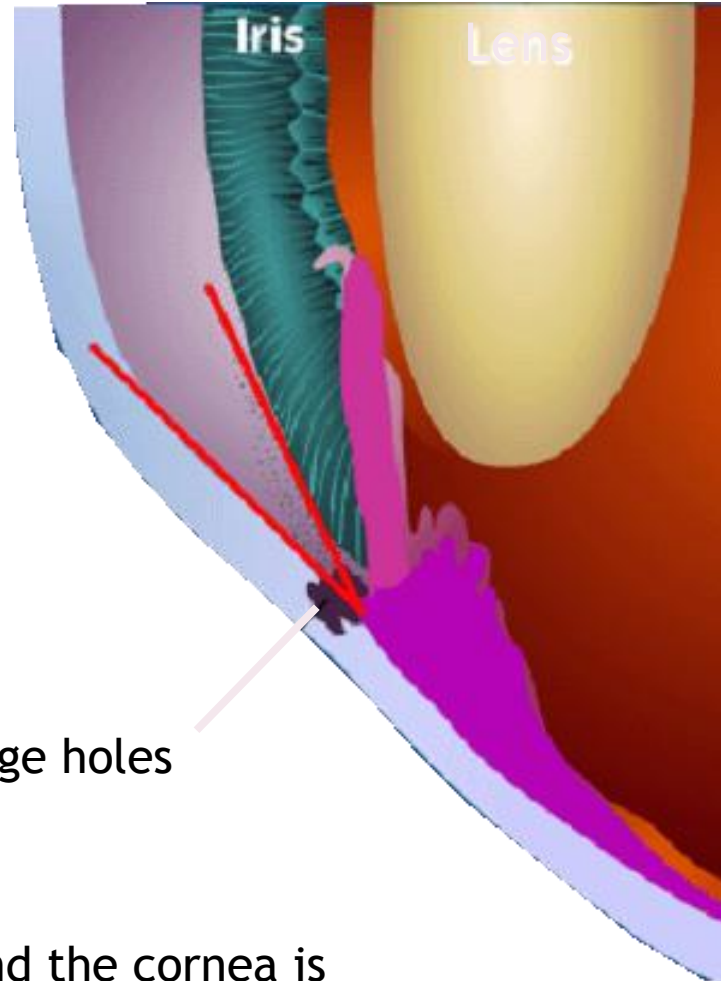
GLAUCOMA : CLASSIFICATION



Glaucoma: Types of Glaucoma

Chronic or
Primary Open
Angle Glaucoma

Clogged Drainage holes

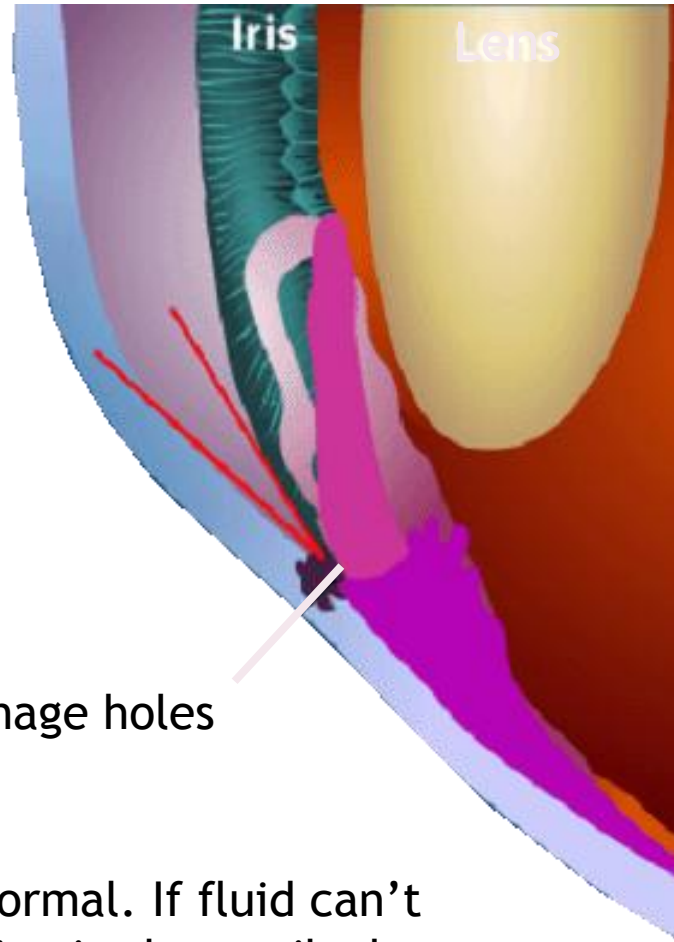


The angle between the iris and the cornea is normal, but the drainage holes get clogged from the inside.

Glaucoma: Types of Glaucoma

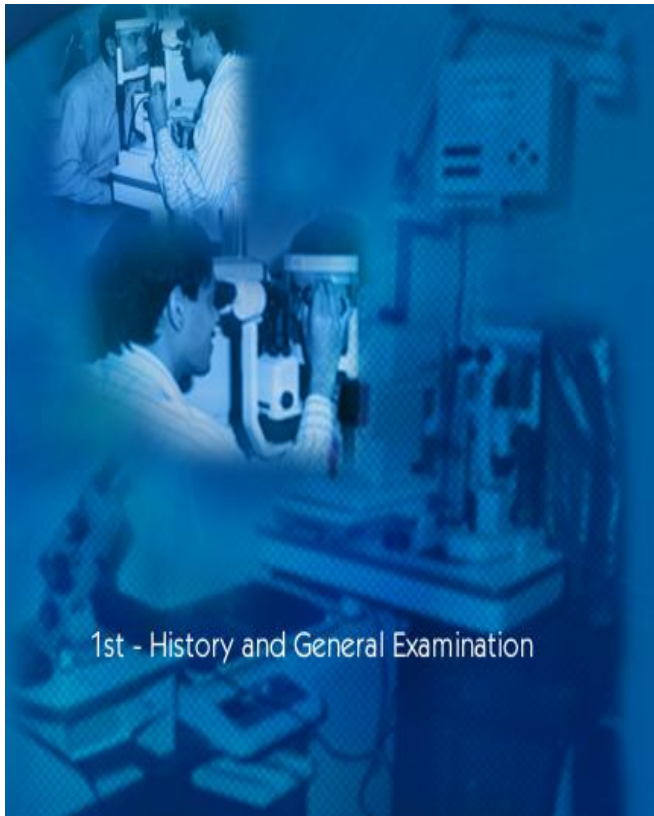
Acute Angle Closure Glaucoma

Blocked Drainage holes



The angle is narrower than normal. If fluid can't flow easily through the opening in the pupil, the iris pushes forward and blocks the drainage holes.

GLAUCOMA : DIAGNOSIS



Tonometry

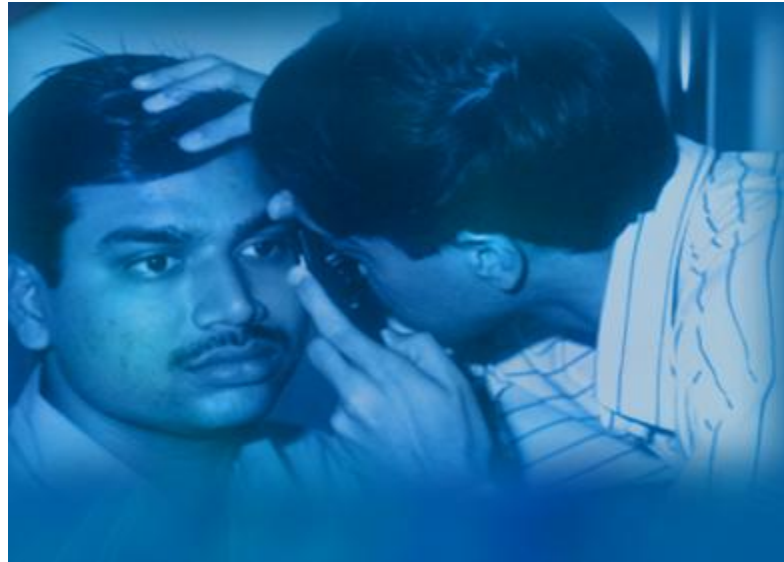
Measurement of I.O.P.

- Schiotz tonometry
- Applanation tonometry
- Non contact tonometry

GLAUCOMA : DIAGNOSIS



Applanation Tonometry



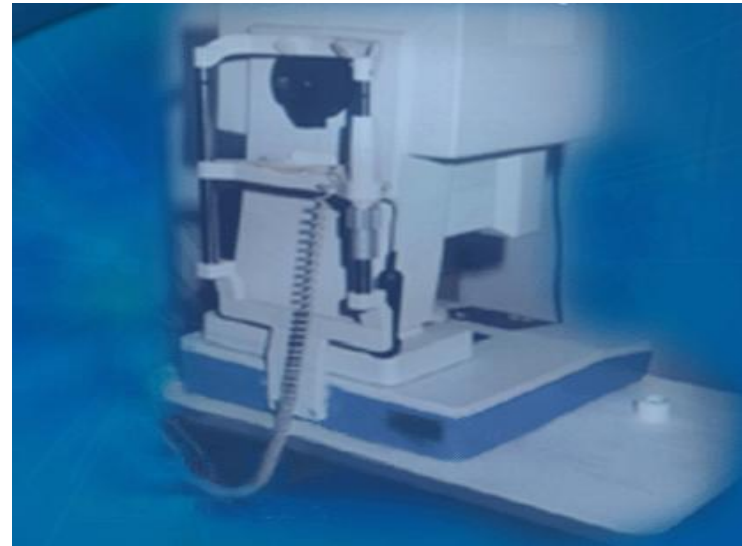
Ophthalmoscopy
Examination of optic disc

GLAUCOMA : DIAGNOSIS



Gonioscopy

Measurement of anterior chamber angle



Perimetry

Actual measurement of visual field looking for any dark areas in field of vision

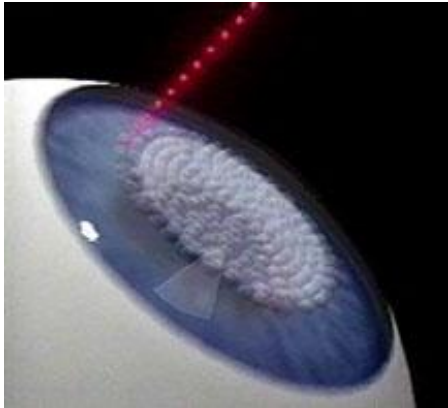
TREATMENT



Eye drops



Pills



Laser surgery

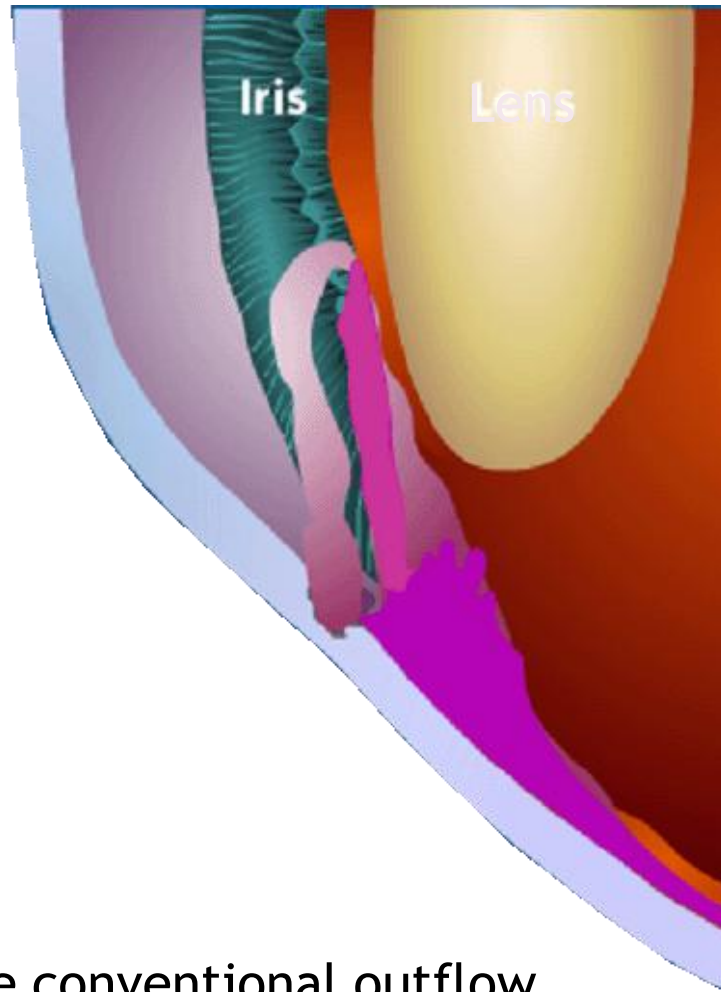


Eye operations

Combination
method

Glaucoma: Treatment

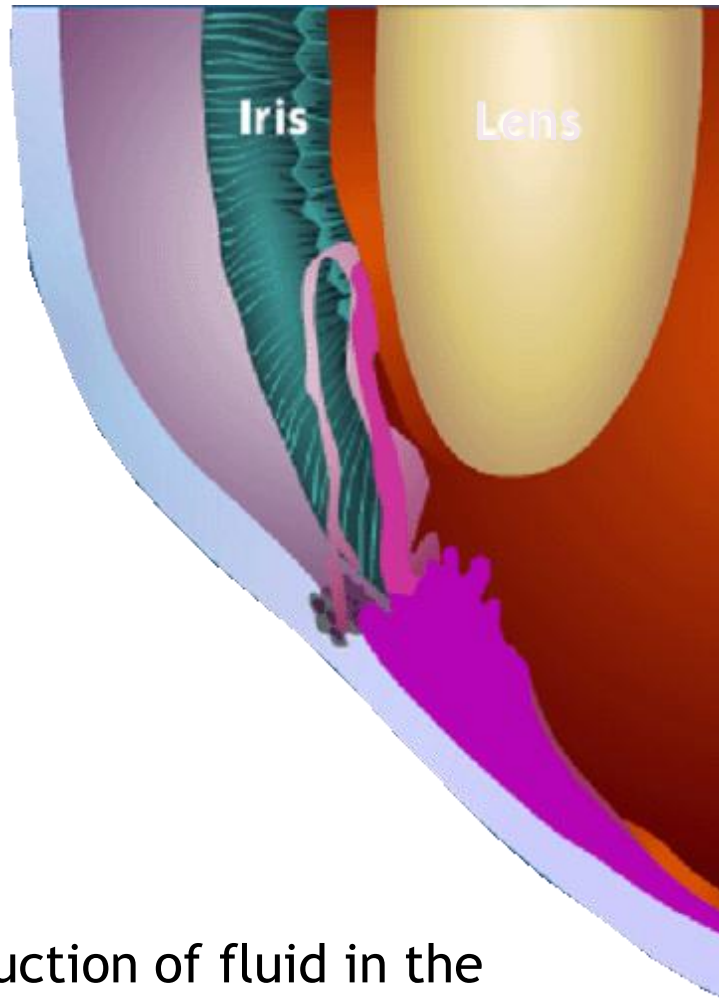
MEDICAL



Drugs increase conventional outflow.

Glaucoma: Treatment

MEDICAL

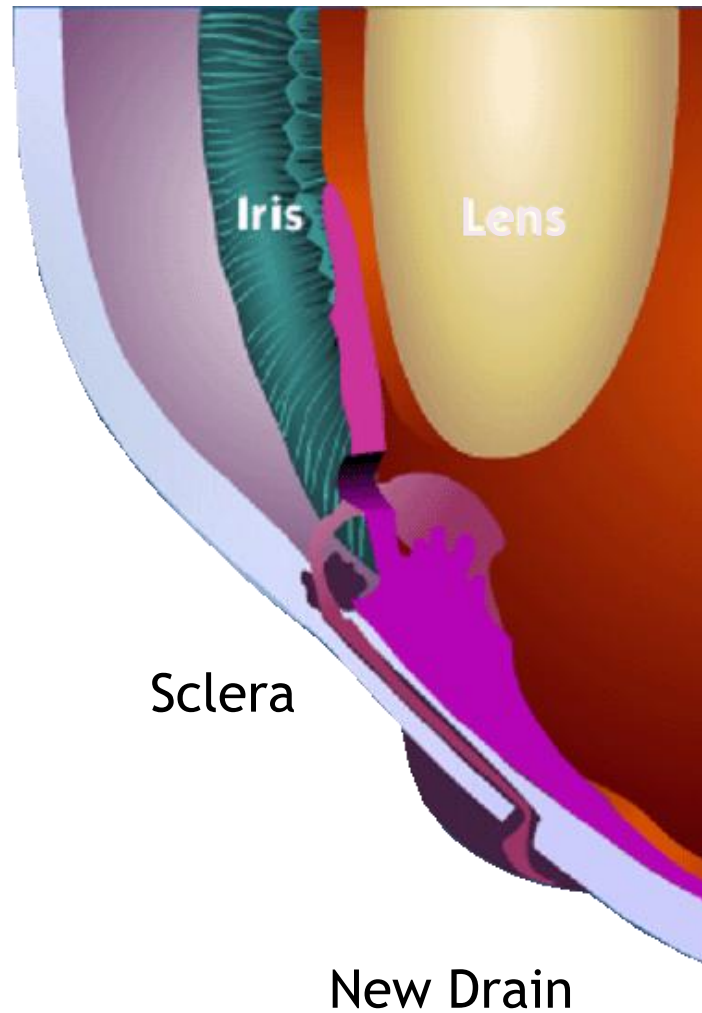


Drugs reduce production of fluid in the eye.

Glaucoma: Treatment

SURGERY

Trabeculectomy



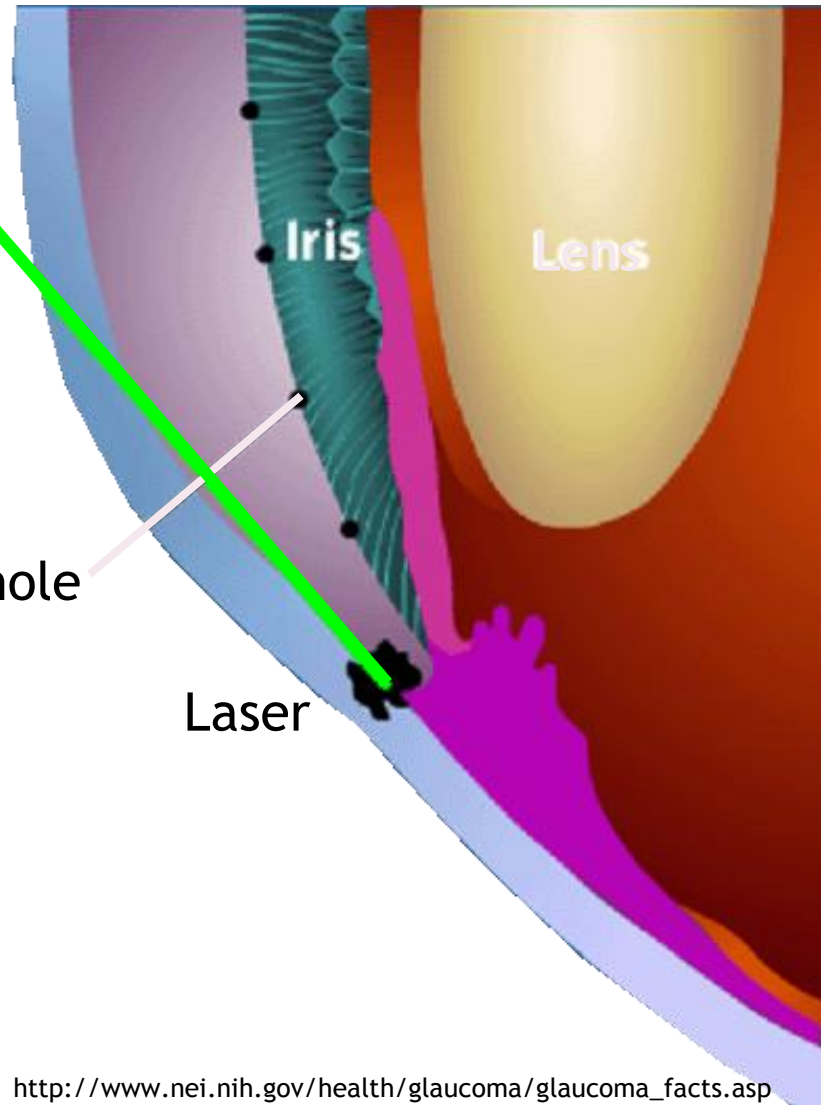
Glaucoma: Treatment

SURGERY

Trabeculoplasty

Open Drainage hole

Laser



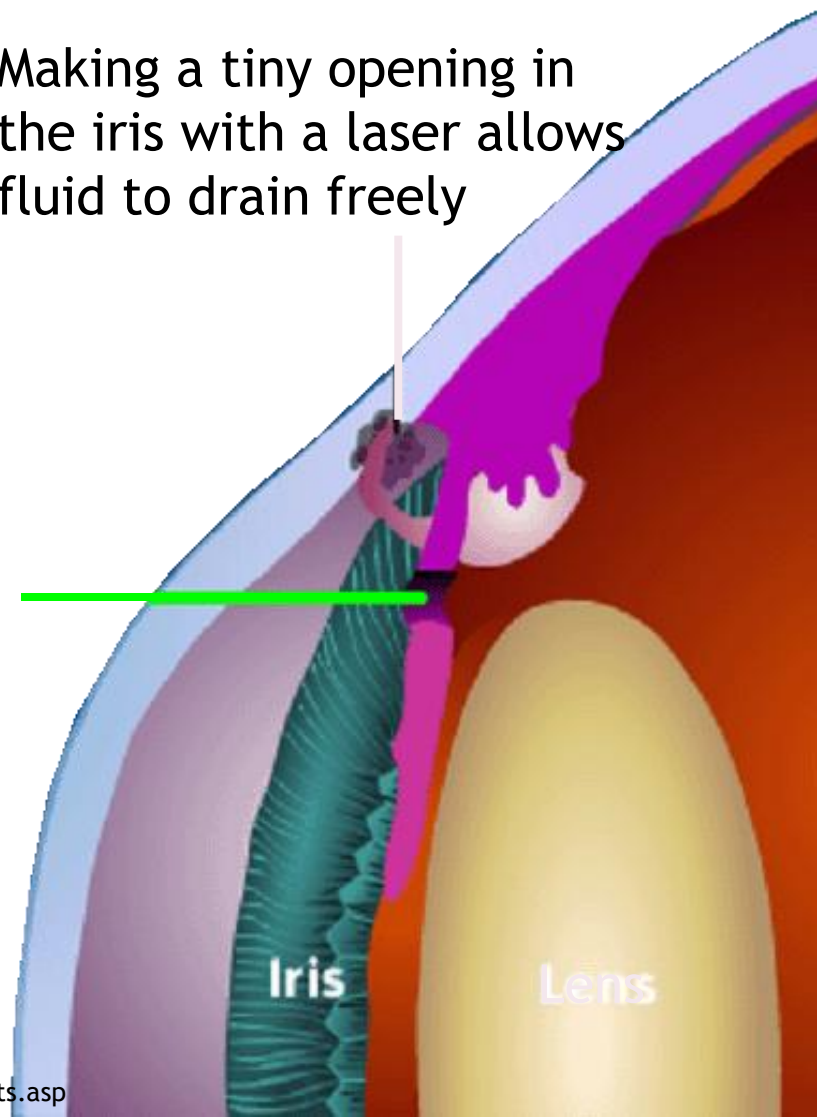
Glaucoma: Treatment

SURGERY

Iridotomy

Making a tiny opening in the iris with a laser allows fluid to drain freely

Laser



Iris

Lens



AGE RELATED MACULAR DEGENERATION (AMD) *Takes Centerstage*

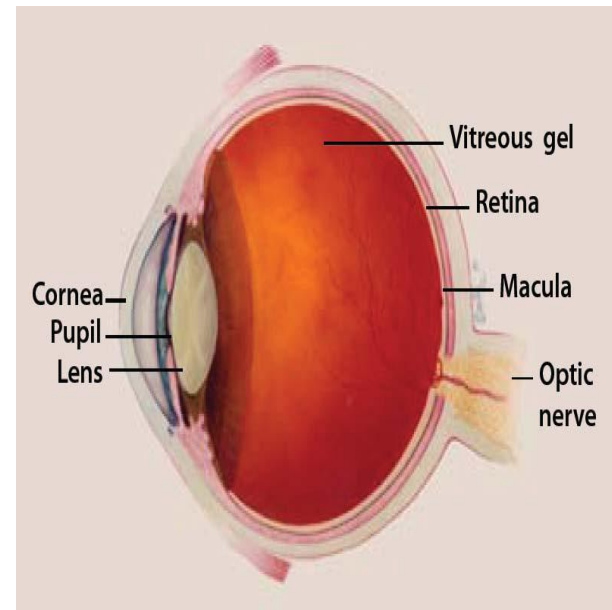
***The prevalence increases from 1.6%
in 52-64 years to 11% in 65-74
years and 27.9% in more than 74
years²***

Adapted from:

1. The NIH, The Word on Health, January 1999
2. http://www.bhj.org/journal/2002_4403_jul/md_318.htm

AGE RELATED MACULAR DEGENERATION (ARMD)

- ◉ AMD is a common eye condition among people age 50 and older
- ◉ It is a leading cause of vision loss in older adults
- ◉ It gradually destroys the macula, the part of the eye that provides sharp, central vision needed for seeing objects clearly





Normal
vision

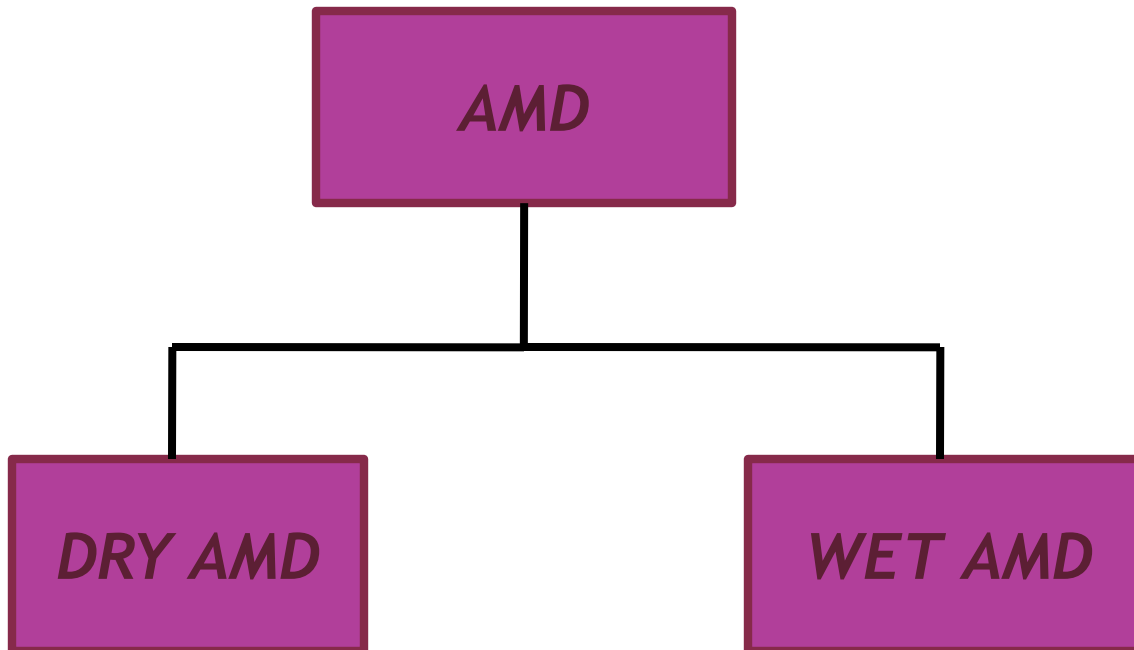


Vision in AMD

RISK FACTORS

- ◉ *Smoking* - Research shows that smoking increases the risk of AMD two-fold.
- ◉ *Race* - Caucasians are much more likely to get AMD than people of African descent.
- ◉ *Family history* - People with a family history of AMD are at higher risk.

FORMS OF AMD



DRY AMD

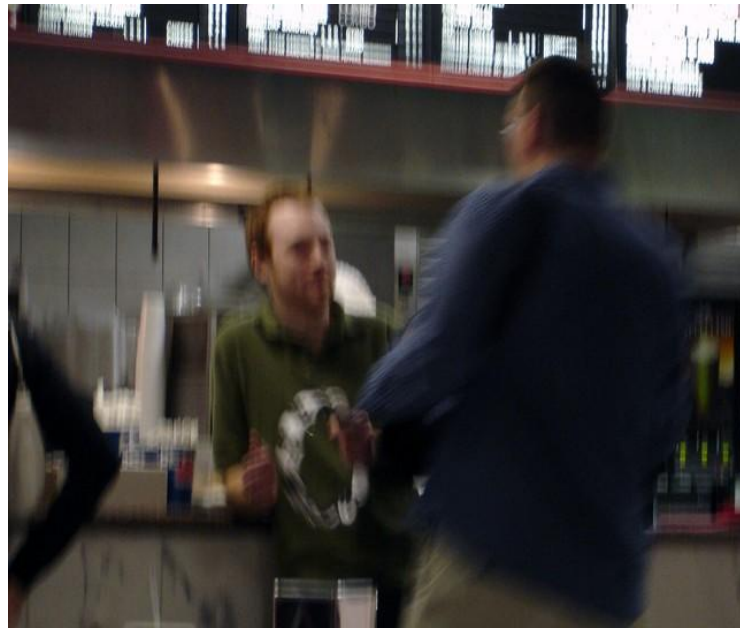
- ◉ Dry AMD is the most common form of AMD in its early or intermediate stages.
- ◉ It occurs in about 90 percent of the people with the condition
- ◉ Dry AMD happens when the light-sensitive cells in the macula slowly break down, gradually blurring central vision in the affected eye.
- ◉ As dry AMD progresses, a blurred spot in the center of vision is seen



SYMPTOMS IN DRY AMD



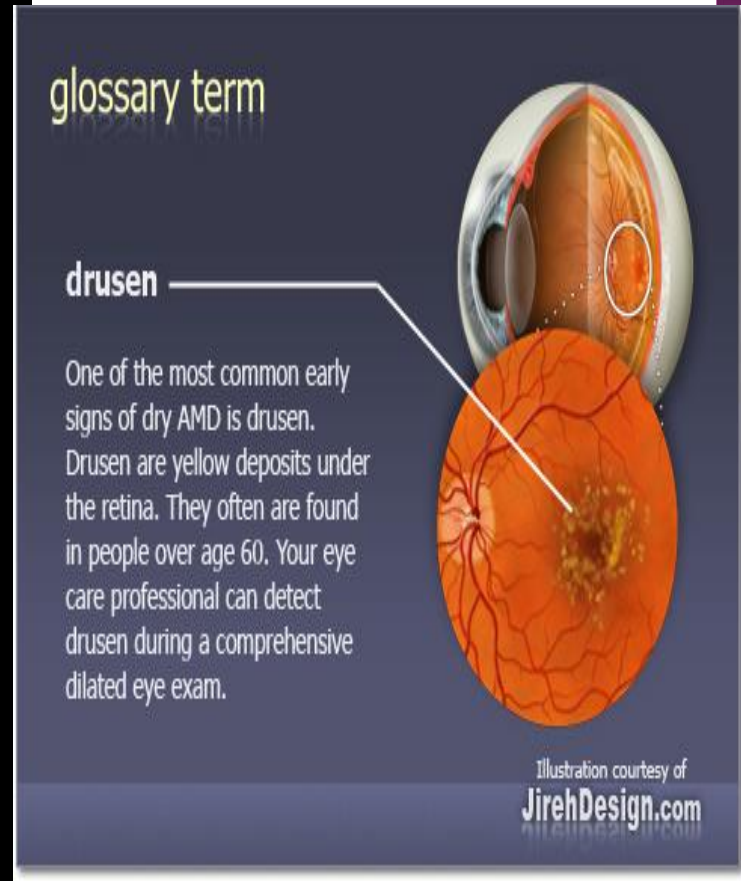
**Blurred
vision**



**Trouble
recognizing
faces**

WHAT IS DRUSEN?

- Drusen are another early sign of dry AMD
- They are yellow deposits under the retina
- They can be small or large in size
- People with large drusen are at risk of developing a more severe form of AMD, which results in severe vision loss



Stages of Dry AMD



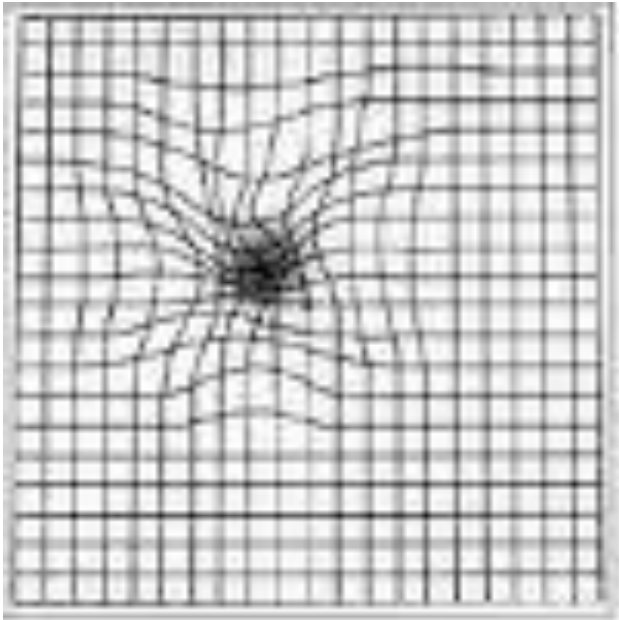
(a) Healthy subject, (b) early AMD with small drusen, (c) intermediate AMD (d) advanced AMD

WET AMD



- ◉ Affects about 10 percent of all people with AMD
- ◉ More severe than the early and intermediate stages of the dry form
- ◉ Wet AMD happens when abnormal blood vessels behind the retina start to grow under the macula.
- ◉ These new blood vessels can be fragile and leak blood and fluid
- ◉ The blood and fluid cause the macula to swell and damage occurs rapidly

SYMPTOMS IN WET AMD



**Straight lines
appear wavy**



**Blind spot in
the centre**

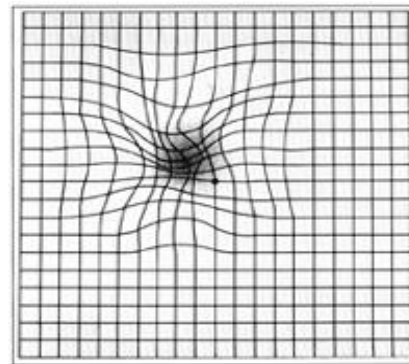
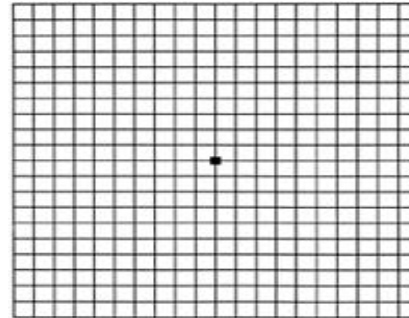
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health
National Eye Institute

DIAGNOSIS

Visual acuity test



Amsler Grid test

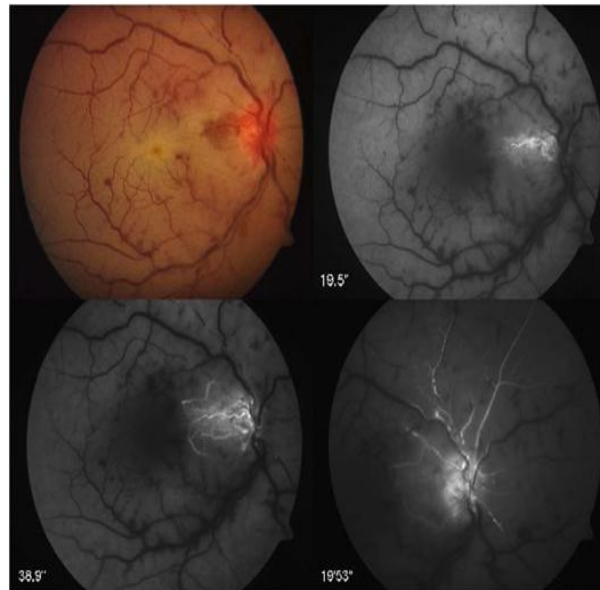


DIAGNOSIS

Retinal Examination



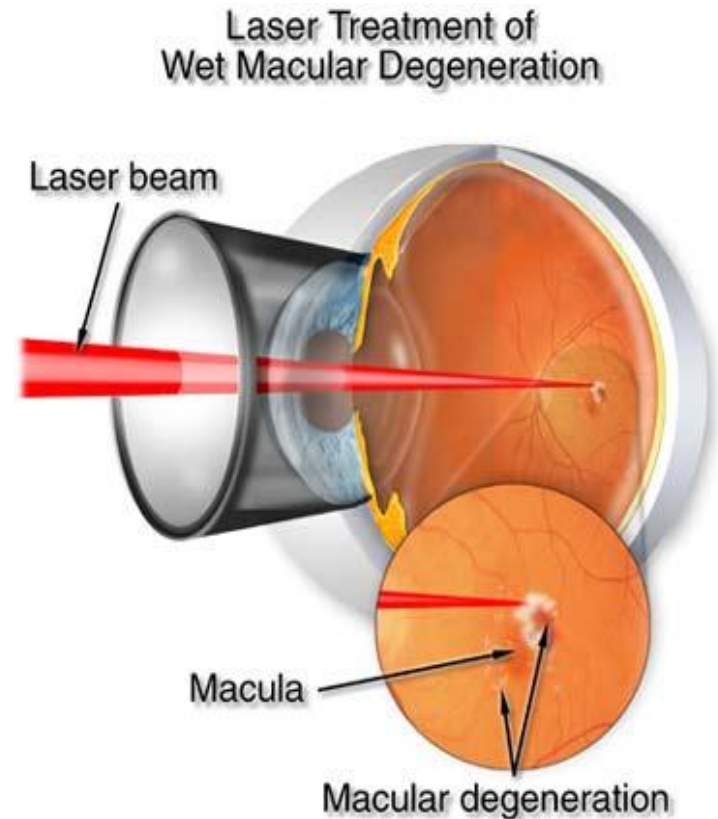
Fluorescein angiography



MANAGEMENT

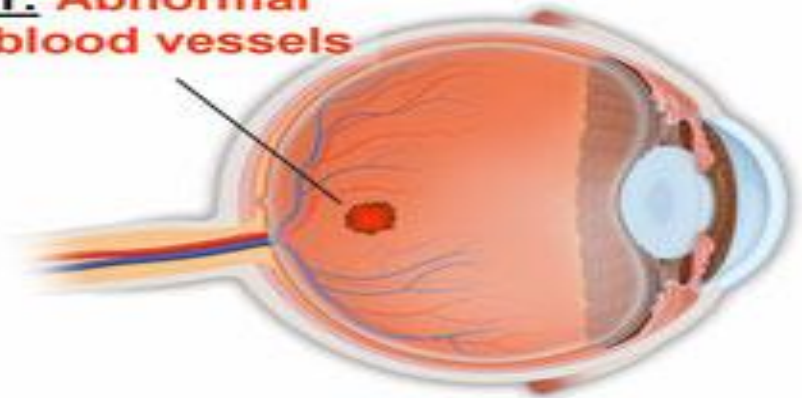
LASER SURGERY

- ⦿ Uses a laser to destroy the fragile, leaky blood vessels
- ⦿ High energy beam of light is aimed directly onto new blood vessels and destroys them



MANAGEMENT

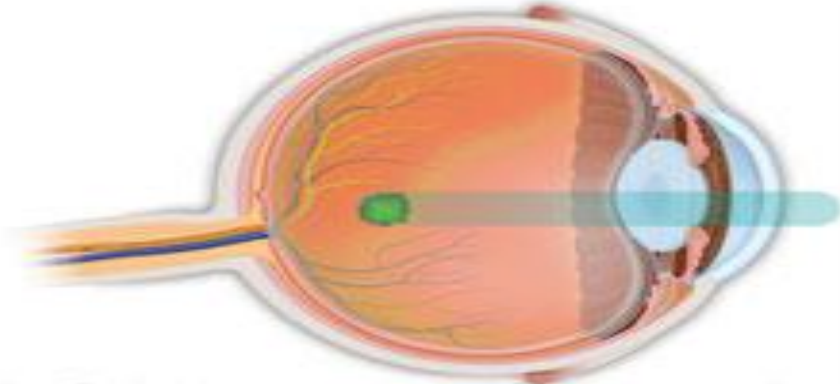
1: Abnormal blood vessels



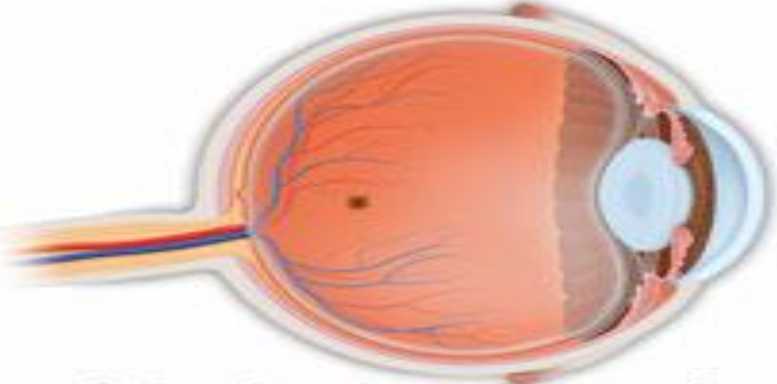
2: Circulation of photosensitive dye



3: Cold laser activates dye only in abnormal blood vessels



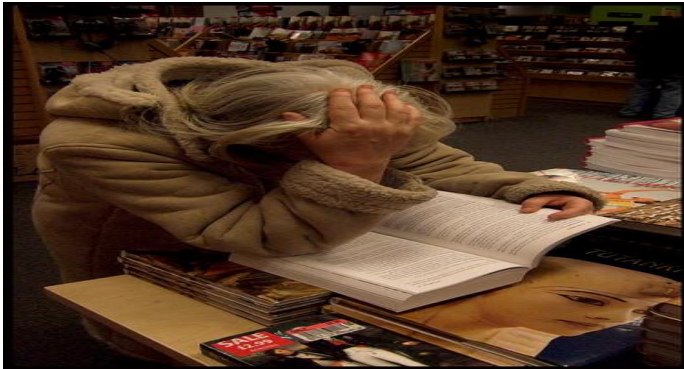
4: Selective destruction of abnormal blood vessels



PATIENT AWARENESS

WILL AMD AFFECT MY QUALITY OF LIFE?

AMD will have its impact on



Reading



Shopping



Watching TV



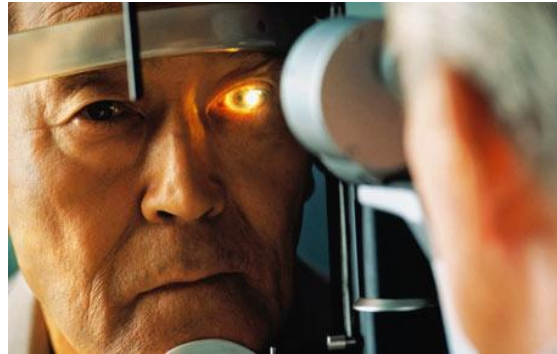
Cooking

CAN MY AMD BE TREATED?

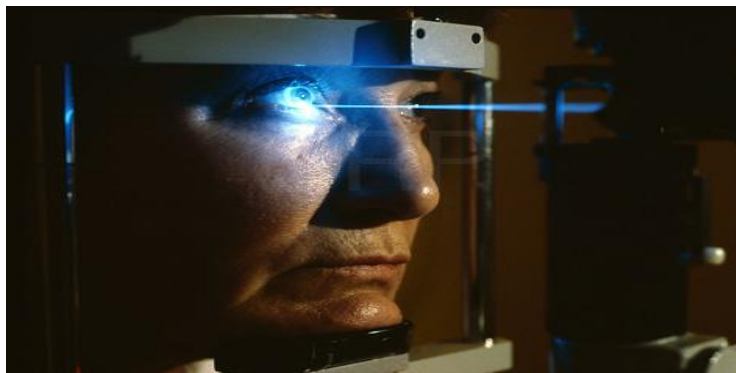
YES



Anti - VEGF injection



Laser therapy



Photodynamic therapy

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health
National Eye Institute

Tips to prevent AMD

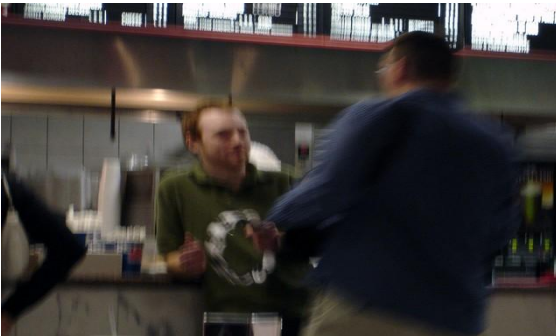
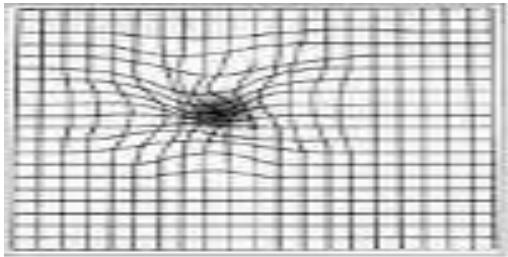
VISIT EYE DOCTOR REGULARLY

- ◉ Above 65 yrs, a complete eye exam must be done every one or two years even in case of normal vision



LEARN & WATCH THE SIGNS & SYMPTOMS OF AMD

- ◉ Check the central vision in both the eyes everyday
- ◉ Report any changes to the eye doctor



TAKE CARE OF YOURSELF



EAT HEALTHY



STAY ACTIVE



QUIT SMOKING

TIPS FOR LIVING WITH ARMD

MAKE THINGS BRIGHTER

Many people with AMD see better in bright light



***Paint rooms & ceilings
white to add extra
brightness***



***Pull back curtains to
allow more sun into the
room***

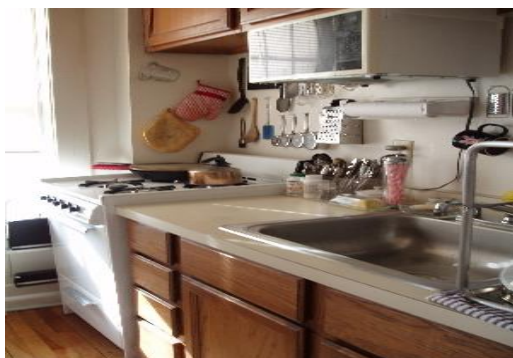
CHOOSE THE RIGHT LIGHT



***Make sure that light
doesn't shine directly into
eyes***



***Add lights or spotlights
around dark areas of house***



***While cooking, there should be
enough light around the stove,
gas***



***While reading, install
light directly on the work
area***

USE LOW - VISION AIDS



Talking books on cds, cassettes



Magnifying lenses to read



Large print books & magazines



Closed circuit TV's



Large screen computers

EATING HABITS



- *Eat dark colored fruits & vegetables - an important source of antioxidants*
- *Antioxidants provide health benefits & are likely to reduce the risk of AMD*



DIABETIC RETINOPATHY (DR)

Timely Treatment Is Key

The final major age-related eye disease whose symptoms are often ignored is diabetic retinopathy¹

Diabetic retinopathy is the most common and serious ocular complication

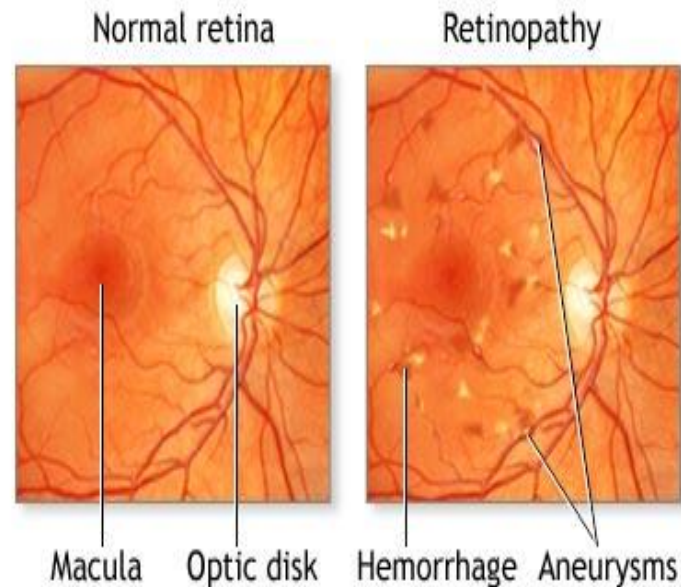
Of the 246 million people with diabetes, about a third have signs of diabetic retinopathy, and a third of these might have vision-threatening retinopathy²

Adapted from:

1. The NIH, The Word on Health, January 1999
2. *Lancet* 2010; 376: 124-36

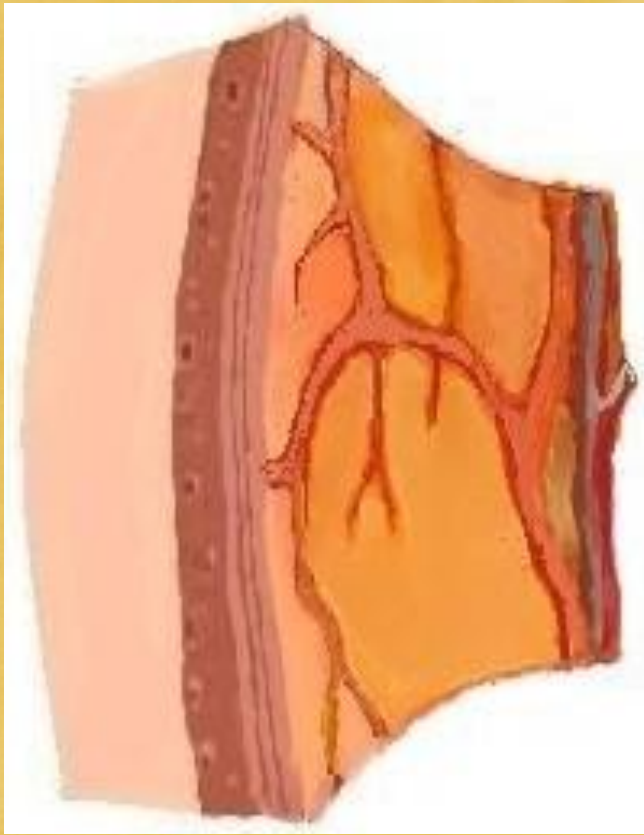
DIABETIC RETINOPATHY (DR)

- ◉ *The most common eye disease among people with diabetes*
- ◉ *High blood sugar levels and high blood pressure (BP) can damage the tiny vessels (capillaries) in the back of eye (retina)*
- ◉ *In some people, fluid leaks through the damaged vessels, injuring the retina and causing loss of vision*

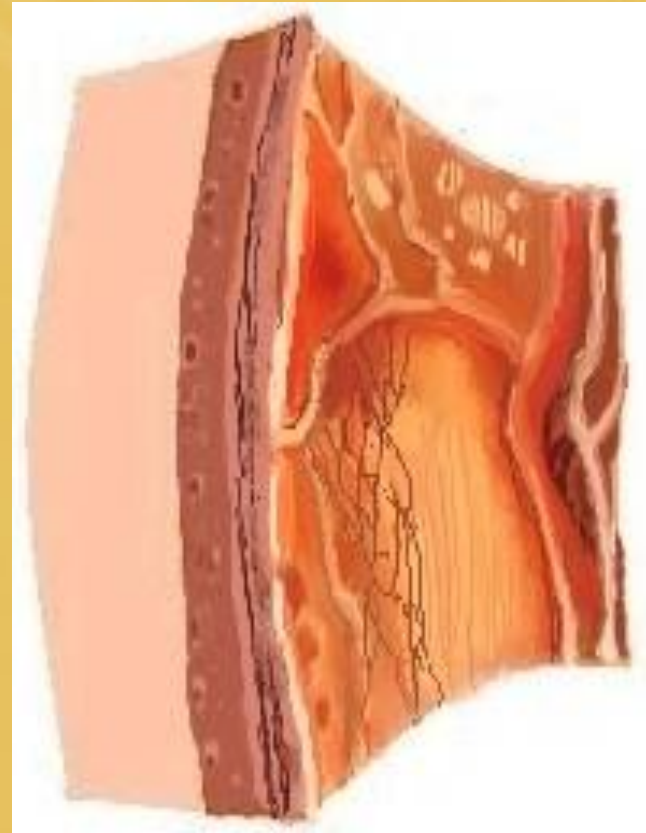


ADAM.

Changes in Diabetic Eye



Healthy Eye



Diabetic Eye

SYMPTOMS



Blurred vision



Double vision



Floaters



Normal vision



Vision with
diabetic retinopathy

RISK FACTORS

- ◉ *All people with diabetes-both type 1 and type 2*
- ◉ *During pregnancy, diabetic retinopathy may be a problem for women with diabetes*

Hyperglycaemia



Non-proliferative diabetic retinopathy

Pericyte loss, basement membrane thickening,
vascular leakage, alterations in blood flow,
tissue hypoxia



Pre-proliferative diabetic retinopathy

Hypoxia, oedema, microaneurysms,
soft exudates, venous beading



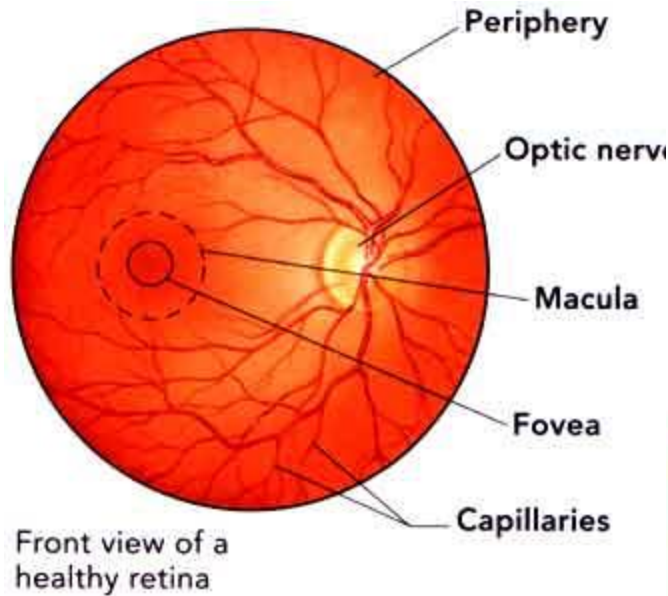
Proliferative diabetic retinopathy

Angiogenesis, fibrovascular ridge,
retinal detachment, blindness

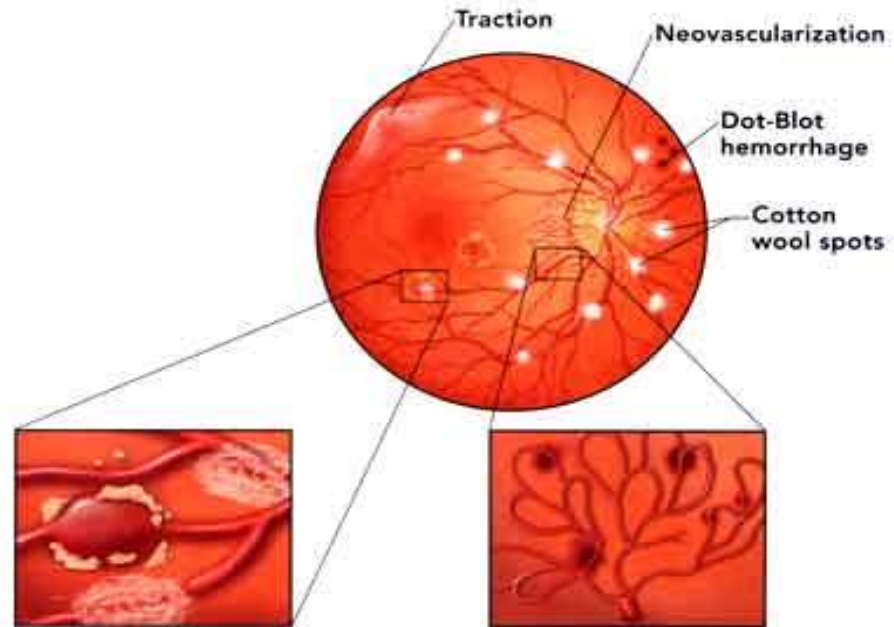
**Stages of vascular dysfunction
in diabetic retinopathy**

Expert Reviews in Molecular Medicine
©2004 Cambridge University Press

Healthy Retina



Diabetic Retina



Damaged capillaries can interfere with vision.

Reduce the amount of blood nourishing the retina.

Reduced blood flow causes weak new capillaries to grow on the retina

As diabetic retinopathy progresses, vision loss can get worse.

Progression of Diabetic Retinopathy



Leaking vessels

**Tiny blood vessels ,
bulge swell and
ultimately leak**



Closed vessels

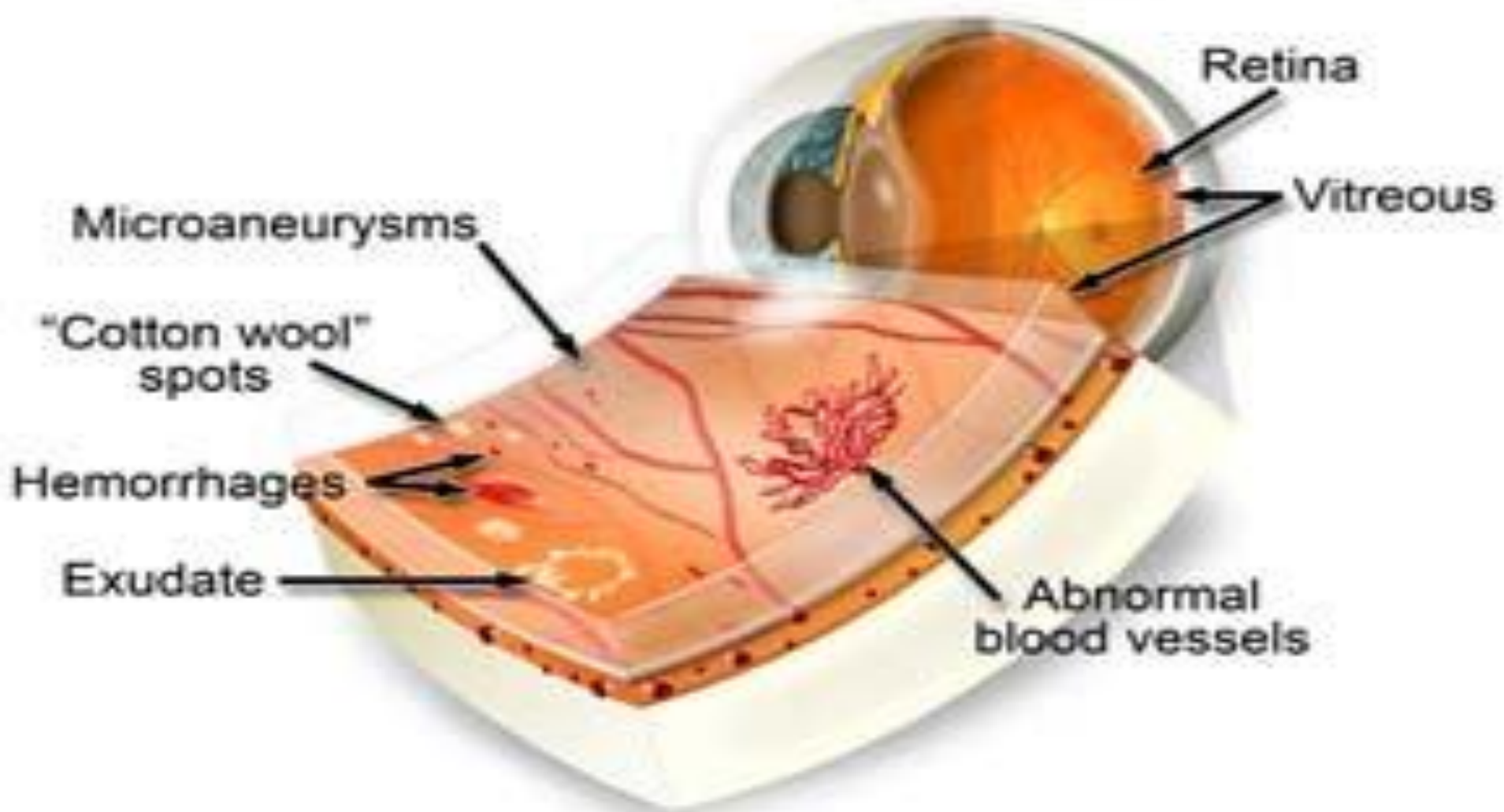
**Lack of oxygen causes
ischemic conditions leading
to
sealing and closing of
blood vessels**



Weak, new vessels

**Growth of weak fragile
capillaries lead to
easy bleeding of the same
leading to hemorrhage
and vision loss**

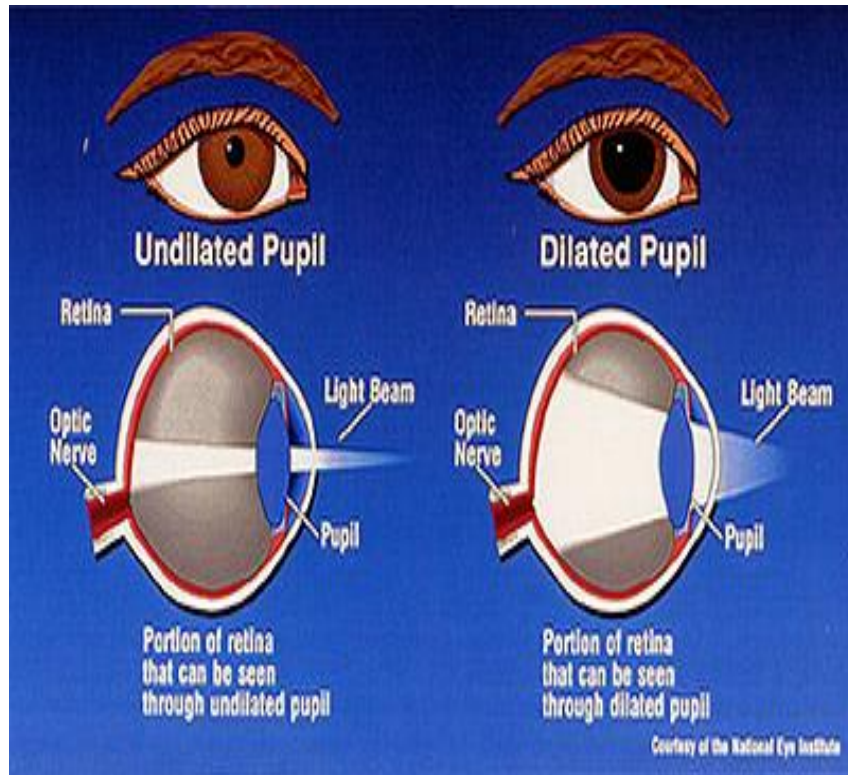
Diabetic Retinopathy



DIAGNOSIS

Dilated eye exam

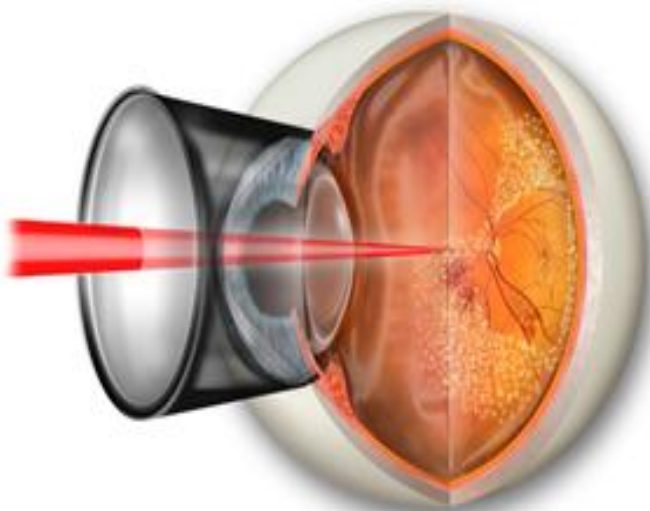
Visual acuity test



TREATMENT

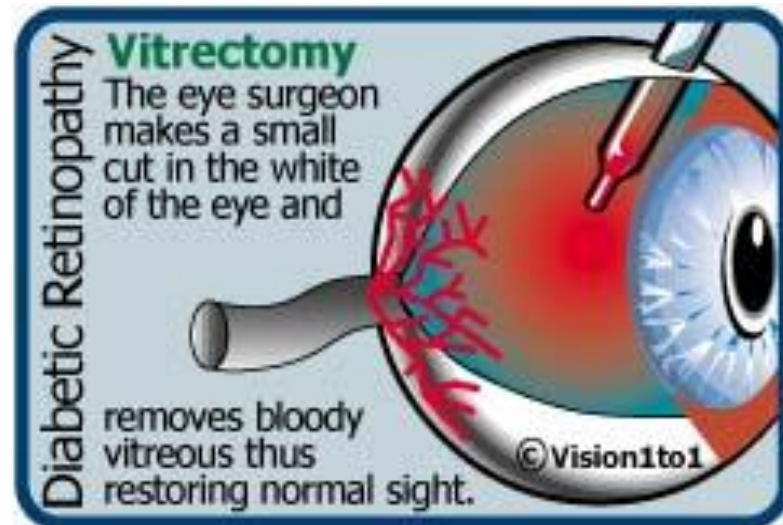
Laser photocoagulation

- Laser shrinks the abnormal blood vessels



Vitrectomy

- Vitreous gel filled with blood is removed
- It is replaced with salt solution



PATIENT AWARENESS

HOW SUCCESSFUL IS DIABETIC RETINOPATHY TREATMENT?

- ◉ Diabetic retinopathy treatment has a high success rate
- ◉ ***Laser photocoagulation*** is not intended to improve vision, but is successful at preventing further vision loss
- ◉ Undergoing ***Vitrectomy surgery*** will improve vision for most diabetic retinopathy patients who are good candidates for the procedure

PATIENT AWARENESS

***ARE THERE ANY OTHER EYE PROBLEMS
THAT CAN HAPPEN TO DIABETICS?***

- ◎ ***Cataract***
- ◎ ***Glaucoma***

PATIENT AWARENESS

***WILL I GO BLIND IF I SUFFER FROM DIABETIC
RETINOPATHY?***

Yes

If the disease progresses & is not treated, there is a chance of vision loss

PATIENT AWARENESS

WHAT CAN I DO IF I HAVE DR ?

- Keep your blood glucose and blood pressure as close to normal as you can



CONTD...

- ◉ Have an annual eye exam, and call your eye doctor between exams if you have any problems or questions



CONTD....

- ◉ Eat a healthful diet, watch your weight, and exercise according to your health care provider's recommendations



Adapted from:
Nursing2007, July 2007 ,Volume 37 ,Number7 :Pages 51 - 51

CONTD....

◉ Quit smoking



THANK - YOU