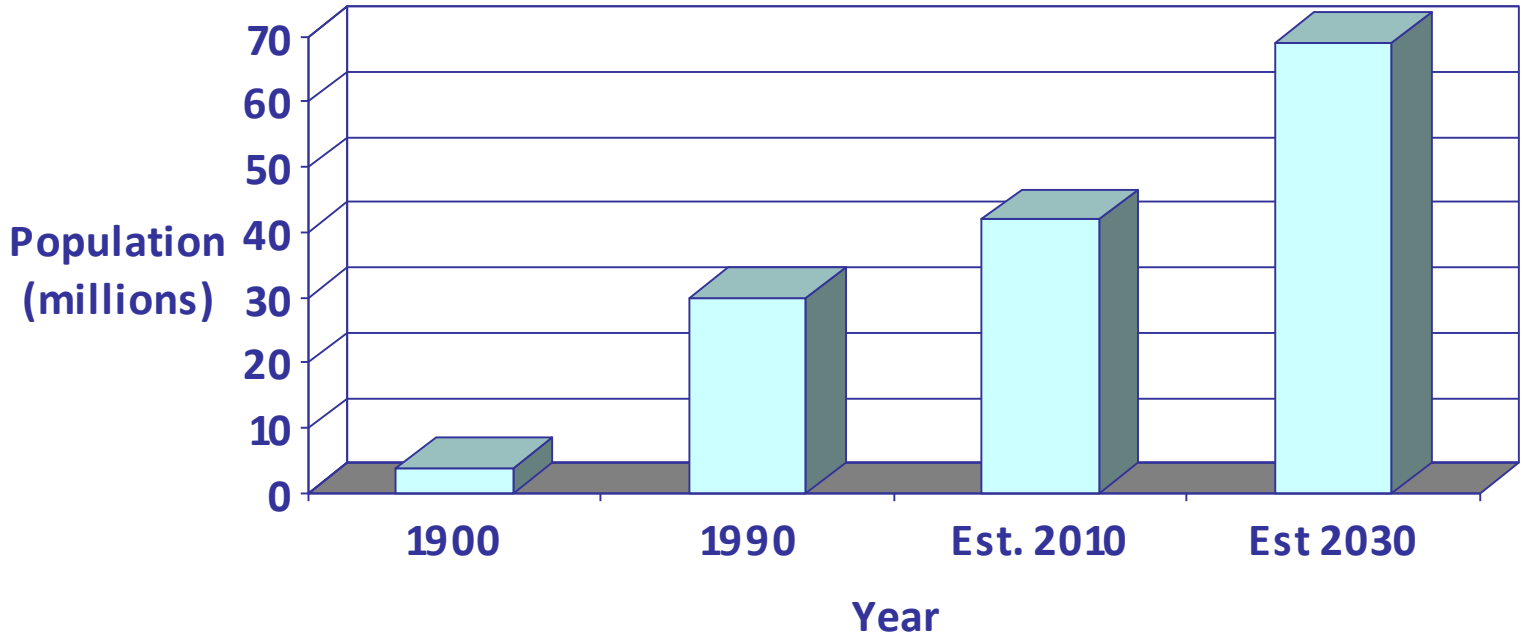
U.S. POPULATION AGE 65 AND OVER



WHAT'S POTENTIALLY DIFFERENT ABOUT PEOPLE AS THEY AGE?

- Multiple chronic illnesses
- Multiple medications
- Physiologic changes lead to adverse drug effects, altered illness presentations
- Cognitive/functional limitations
- Increased importance of social/familial support

GOALS OF GERIATRIC CARE

- Maintain or improve functional abilities
- Prevent disease
- Avoid iatrogenic illness
- Cooperate with multidisciplinary team
- Incorporate family into care

OLDER PATIENT ASSESSMENT

- Medical
- Cognitive
- Affective
- Environmental
- Economic
- Social
- Functional

FUNCTIONAL STATUS

- Complete functional tasks and fulfill social roles
- Activities of daily living (ADLs)
  - Personal care tasks
- Instrumental activities of daily living (IADLs)
  - Home management tasks

PRESCRIBING FOR OLDER PATIENTS

- Consider nonpharmacologic measures
- Ask about all medication use, including over-the-counter products
- Use lowest effective dose
- Increase dose slowly
- Consider functional status

SUMMARY

- Goal of care: maintain or improve function, quality of life
- Assess patient's status thoroughly
- Consider status in therapeutic regimen
- Work with other MDs as needed
- Involve family caregivers

VISUAL LOSS ASSOCIATED WITH AGING

- 1 in 3 may face some visual loss by age 65
- Potential consequences
  - Daily activities curtailed
  - Social isolation, depression
  - Less mobility, falls and fractures
  - Loss of independent living

POTENTIAL EFFECTS OF AGING ON VISION

- Decline in visual acuity
- Increase in visual impairment
- Legal blindness

AGING AND THE CRYSTALLINE LENS

- Lens
  - Yellows: May affect color discrimination
  - Opacifies: Cataract
  - Hardens: Nuclear sclerosis
- Ciliary body/lens
  - Loses accommodative ability: presbyopia

SYSTEMIC DISEASES AND THE AGING EYE

- Hypertension: retinal vein occlusion
- Arthritis: dry eye
- Diabetes: glaucoma, cataracts, diabetic retinopathy

VISION LOSS IN THE AGING EYE: LEADING CAUSES

- Age-related macular degeneration
- Glaucoma
- Cataract
- Diabetic retinopathy

VISUAL IMPAIRMENT OFTEN UNTREATED

- Leading causes of blindness in the aging eye (Baltimore Study):
  - Unoperated cataract
  - Primary open-angle glaucoma
  - Age-related macular degeneration
- 1/3 of new blindness is avoidable

EVALUATION: HISTORY

- Problems with vision?
- Was vision decrease sudden or gradual?
- Any pain with vision loss?
- Any eye operations?
- Using any eyedrops?

EVALUATION: EXAMINATION

- Visual acuity
- Lids and orbits
- Pupils
- Visual fields
- Motility
- Anterior segment
- Intraocular pressures
- Posterior segment

EVALUATION: FREQUENCY

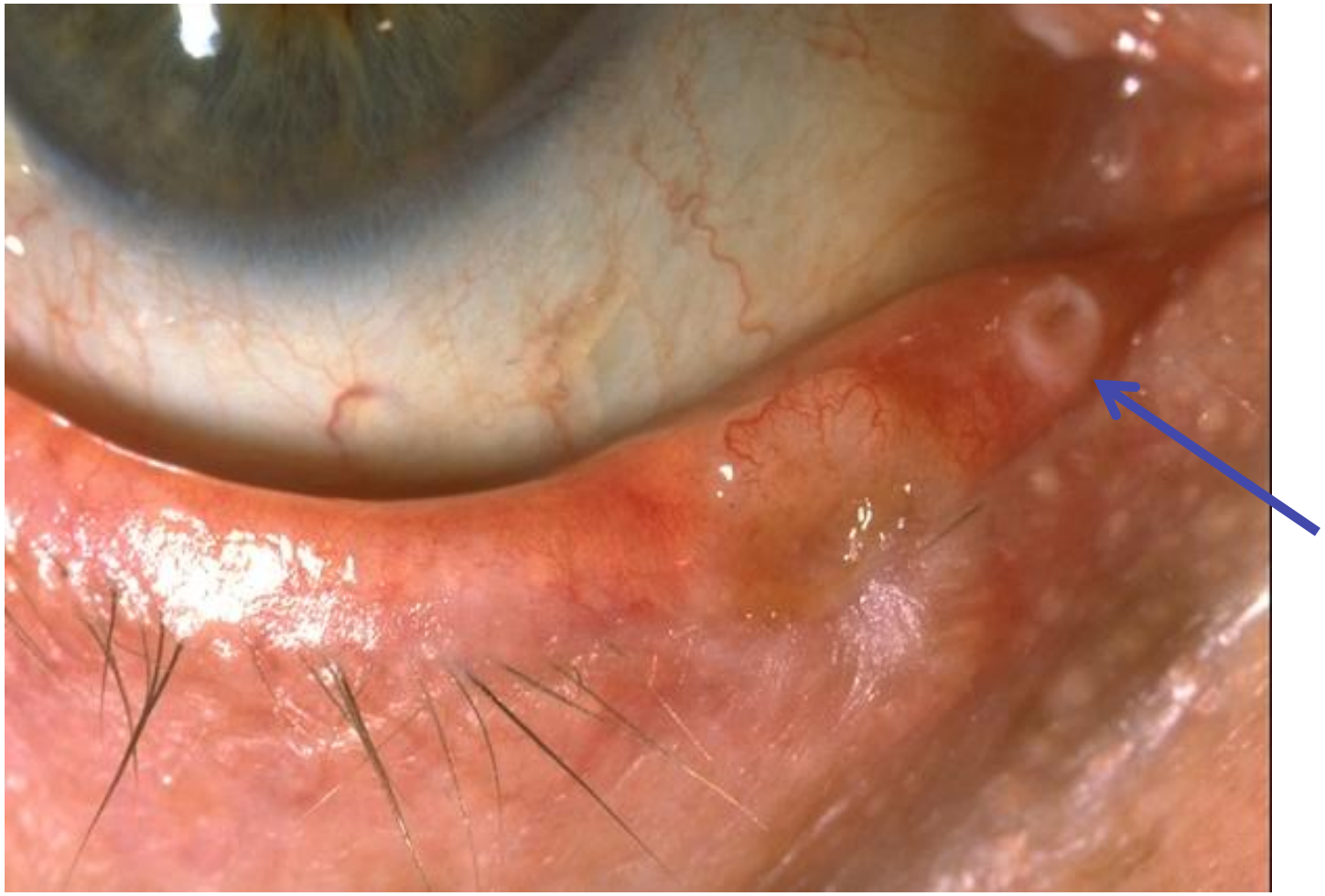
- Asymptomatic patients 65+: Every 1–2 years
- Symptomatic patients: Evaluate and refer on presentation
- Decreased visual acuity: Routinely refer
- Treatment goal: Optimize visual function

Blepharitis

Entropion of left lower lid

Ectropion

Ptosis



Basal cell carcinoma

Corneal damage: severe dry eye

Herpes zoster ophthalmicus

AGE-RELATED MACULAR DEGENERATION (AMD)

- Most common cause of irreversible visual loss in the aging eye
- Loss of central vision
- Risk factors
  - Advanced age
  - Family history of AMD
  - Smoking, CV disease

Principal Problems of the Aging Eye

Medium-size drusen

Large drusen inferonasal to macular center

Large drusen (125 + µm)

AMD: RISK OF PROGRESSION

- Early AMD
  - May not have any increased risk of advanced AMD compared to people without drusen
- 1 eye intermediate AMD, 1 eye without AMD
  - 5% risk of progression to advanced AMD within 5 years
- Both eyes intermediate AMD
  - 25% risk of progression to advanced AMD within 5 years
- 1 eye advanced AMD
  - 50% risk of advanced AMD in second eye within 5 years

AMD: CENTRAL VISION LOSS IN ADVANCED STAGES

- "Dry" AMD
  - Atrophy of photoreceptors and choriocapillaris
  - Gradual vision loss
- "Wet" AMD
  - Neovascularization between retina and choroid
  - Disc edema, disciform scar
  - More sudden visual loss

AMD: SYMPTOMS

- Intermediate stage
  - No symptoms or slight difficulty with reading, driving, etc, due to atrophy not yet involving center of macula
  - Straight lines may appear crooked
- Advanced stage
  - Central blind spot
  - Peripheral vision usually remains intact

Central blind spot

Fluorescein angiogram: neovascular AMD

TREATMENTS FOR AMD

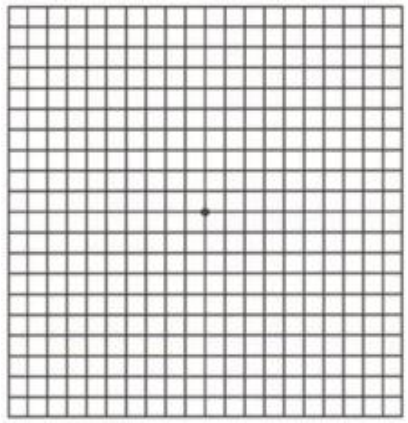
- Aim to reduce risk of progression in intermediate to advanced stage
  - Dietary supplements such as used in the Aged-Related Eye Disease Study (vitamin C 500 mg, vitamin E 400 IU, beta carotene 15 mg, and zinc oxide 80 mg)
- Reducing risk of vision loss in selected cases of neovascular AMD
  - Laser photocoagulation
  - Photodynamic therapy with verteporfin
  - Intraocular injection therapy with anti-VEGF drugs (some may increase chance of improving vision)

AMD: MINIMIZING VISION LOSS

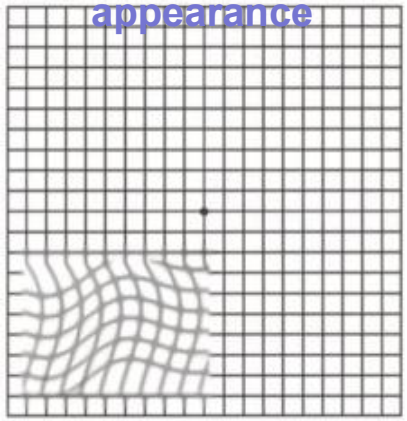
Patients with intermediate stage of AMD:

- Consider dietary supplement such as that used in AREDS
- Periodic monitoring at home and office for progression to CNV
- Prompt notification of vision changes suggesting CNV
- Periodic educational update

Home Monitoring with Amsler Grid



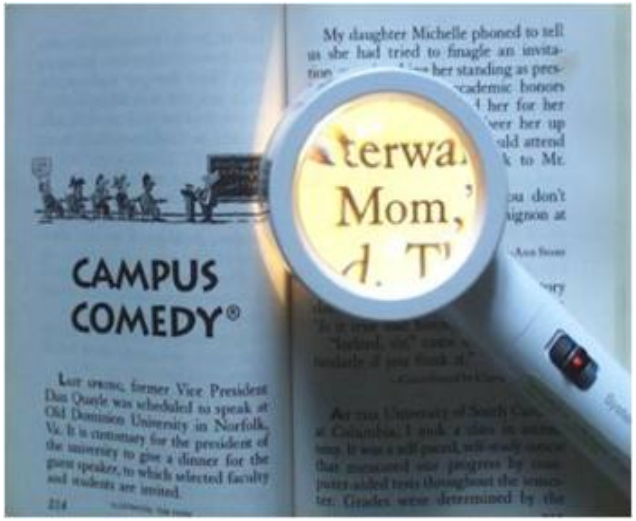
Normal appearance



Abnormal distortion

AMD: DEALING WITH VISION LOSS

- Low vision aids
- Treatment of depression and anxiety when indicated

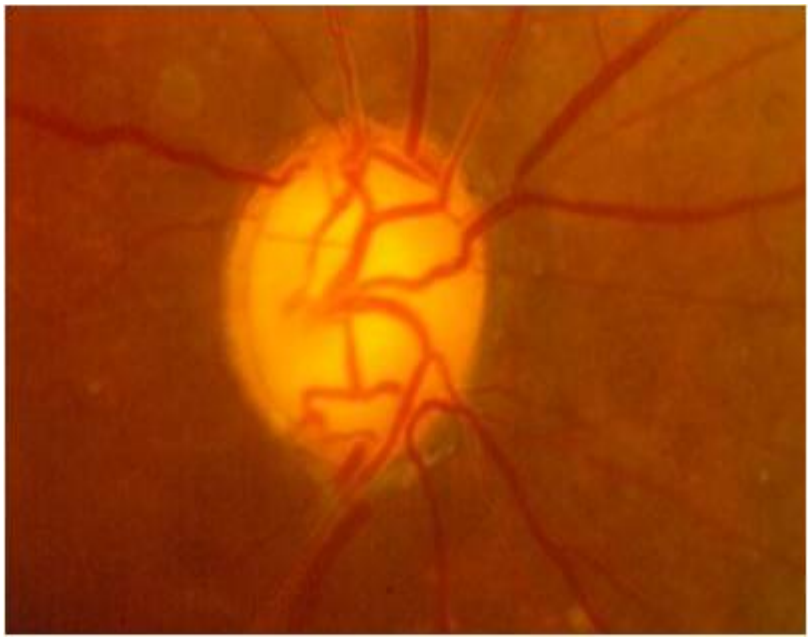


GLAUCOMA

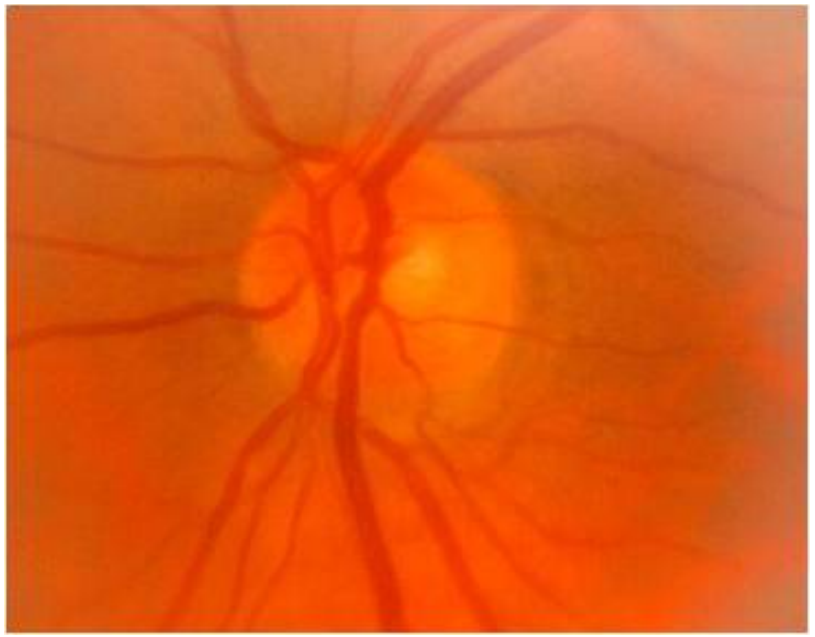
- Second most common cause of visual loss in older people
- Affects
  - 10% African-Americans ≥ 70
  - 2% Caucasians ≥ 70
- Early detection and treatment can prevent blindness

GLAUCOMA: RISK FACTORS

- IOP may be high
- African racial heritage
- Advanced age
- Family history of glaucoma
- Hypertension, diabetes, myopia



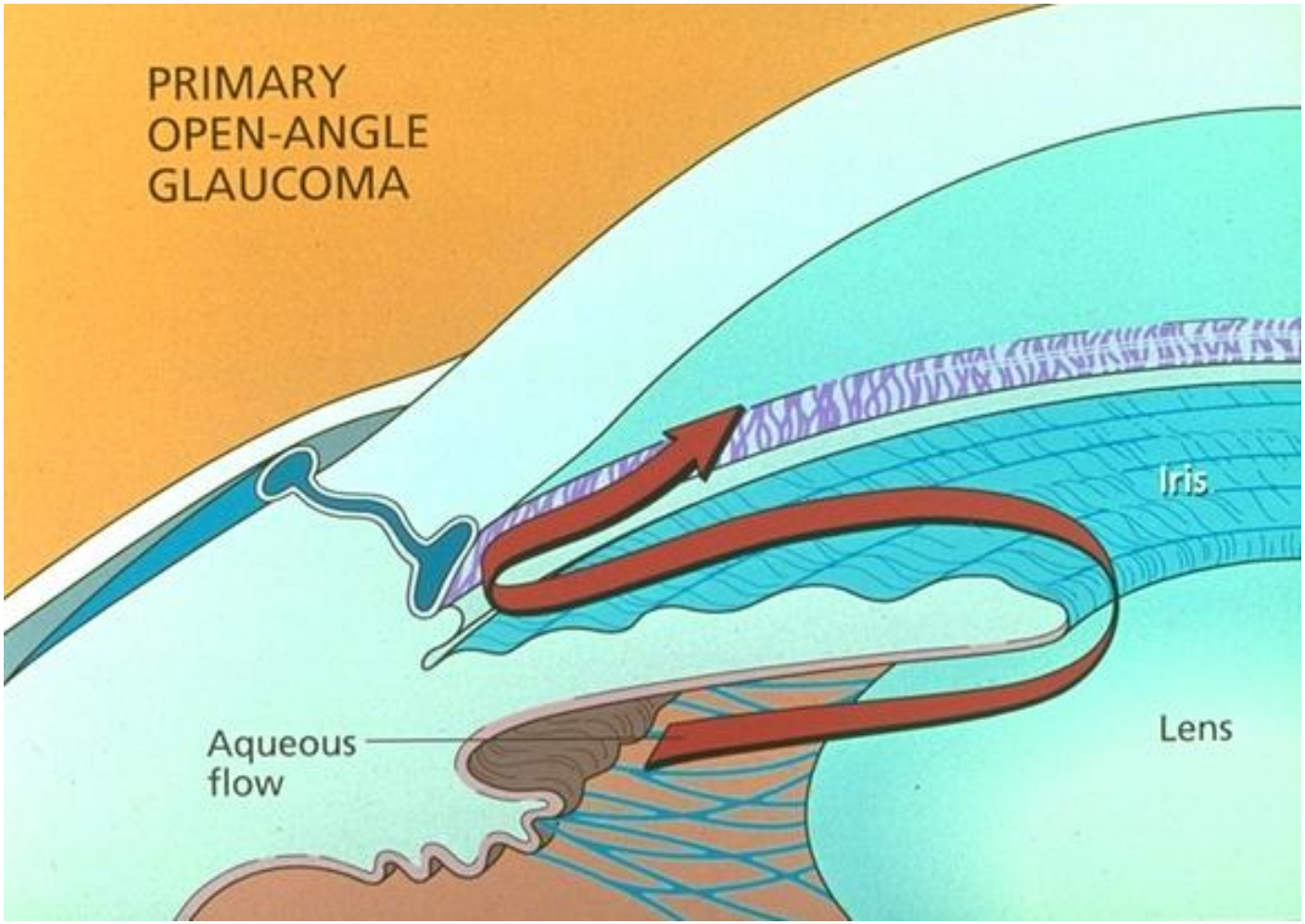
Glaucomatous optic nerve



Normal optic nerve

TYPES OF GLAUCOMA

- Primary open-angle glaucoma (POAG)
  - Most common type in people over age 50
- Angle-closure glaucoma



Primary open-angle glaucoma

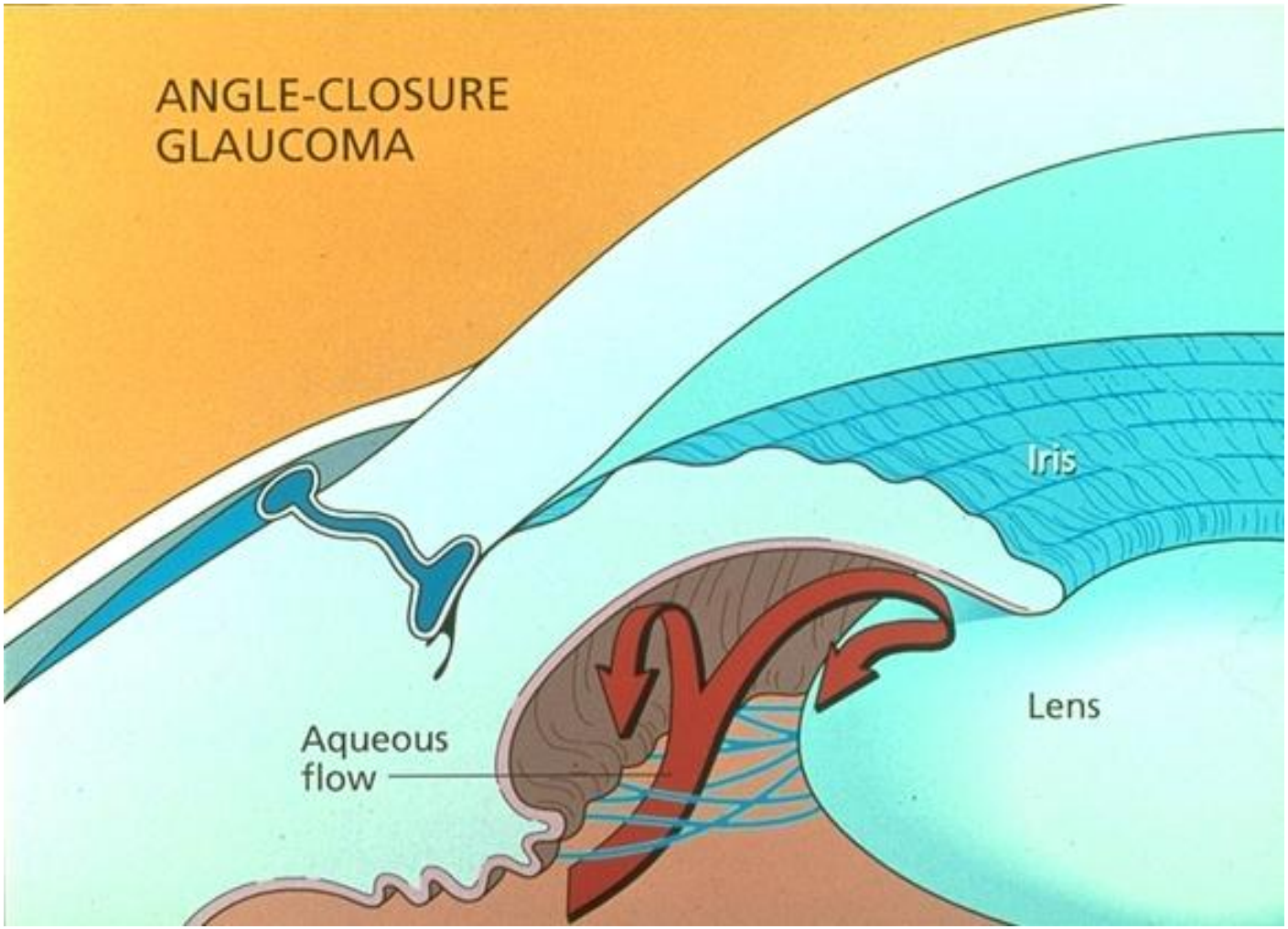
Visual field testing

POAG: MANAGEMENT

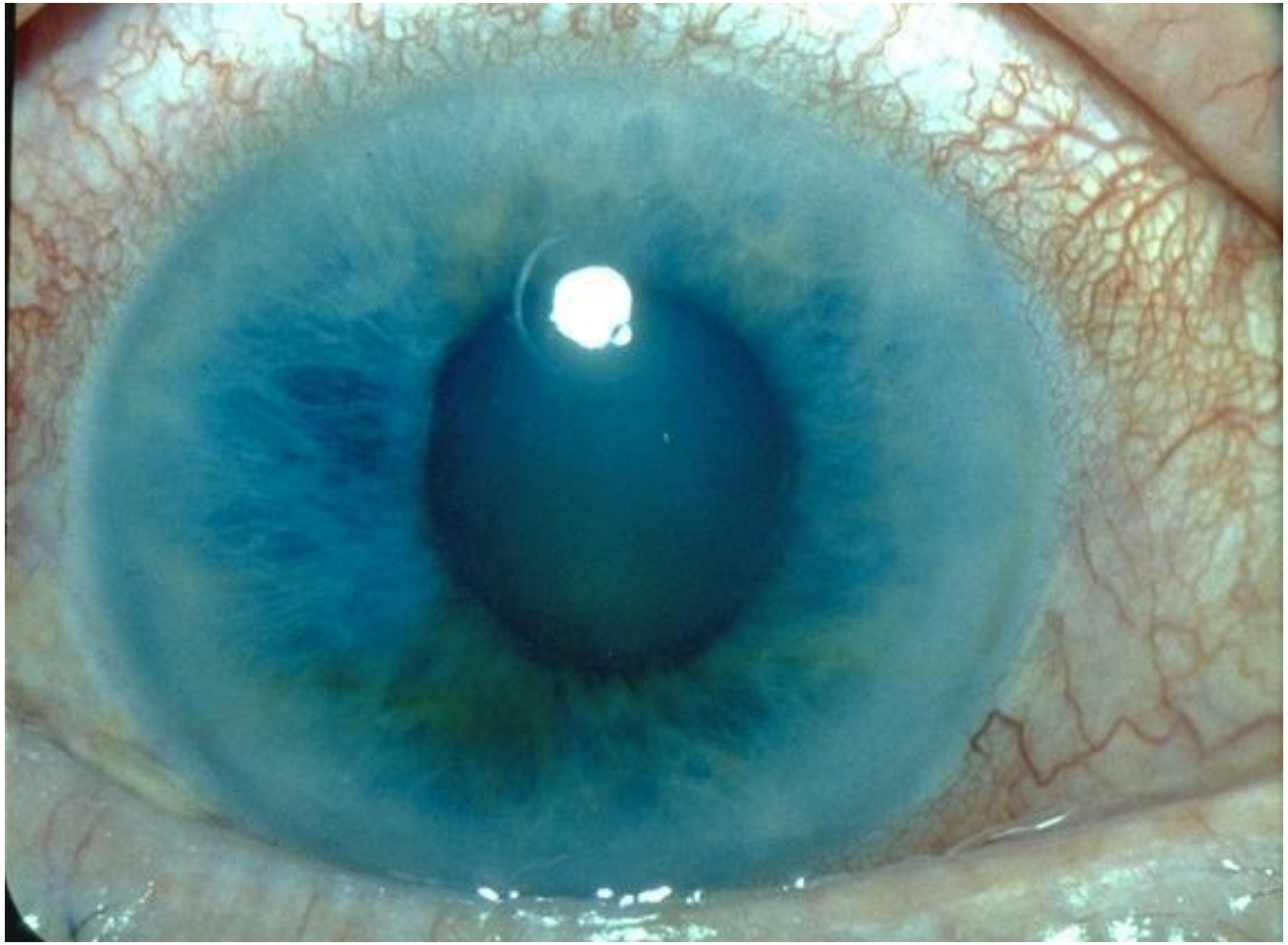
- Halt visual field loss
- Prevent further optic nerve damage
- Use medications to lower IOP
- Consider laser surgery, glaucoma filtration surgery, other interventions where warranted

ANGLE-CLOSURE GLAUCOMA

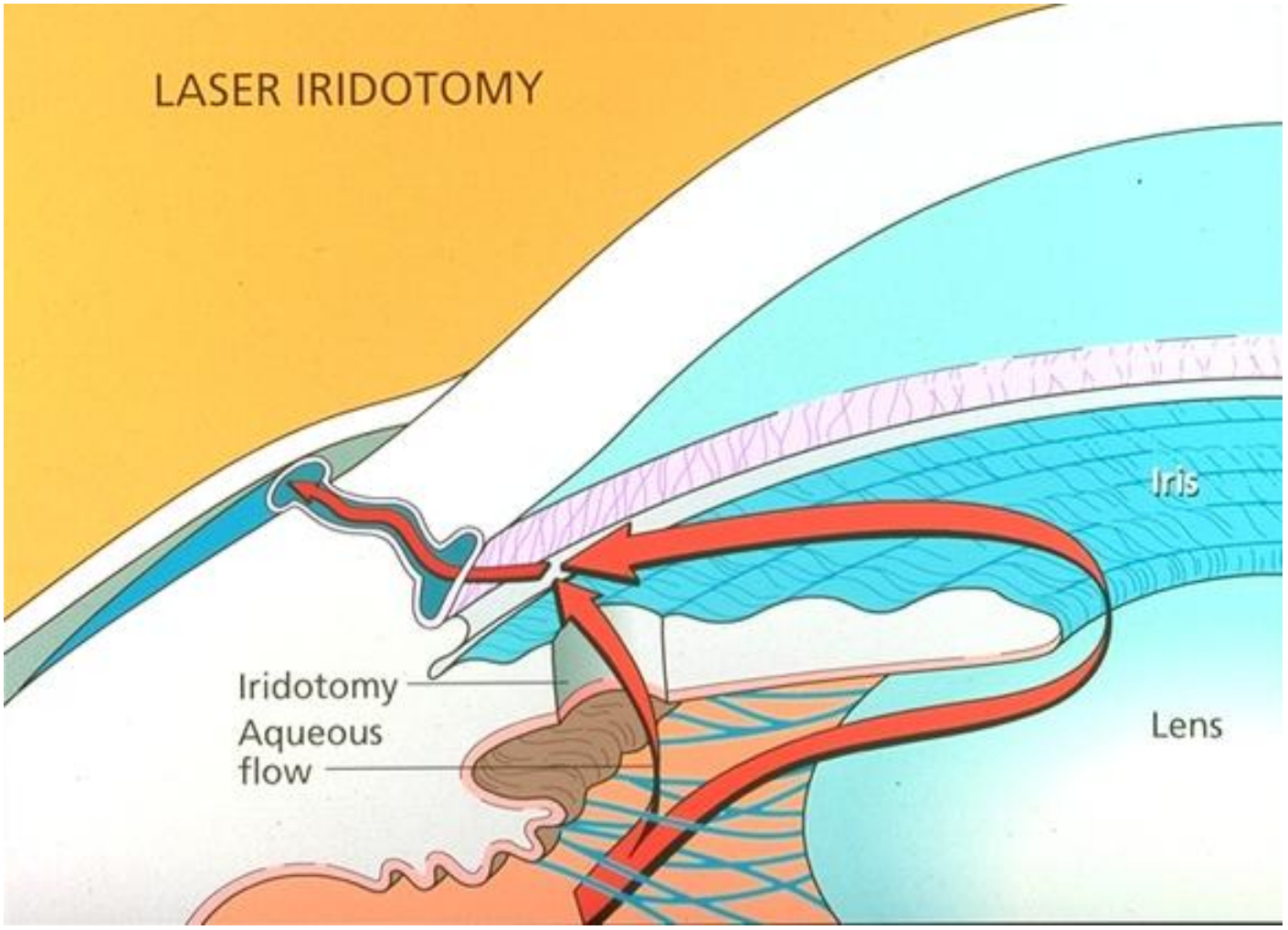
- Approximately 10% of glaucoma cases in U.S.
- More common in ages 50+
- More common in some Asian groups
- Risk factors: female with hyperopia



Angle-closure glaucoma



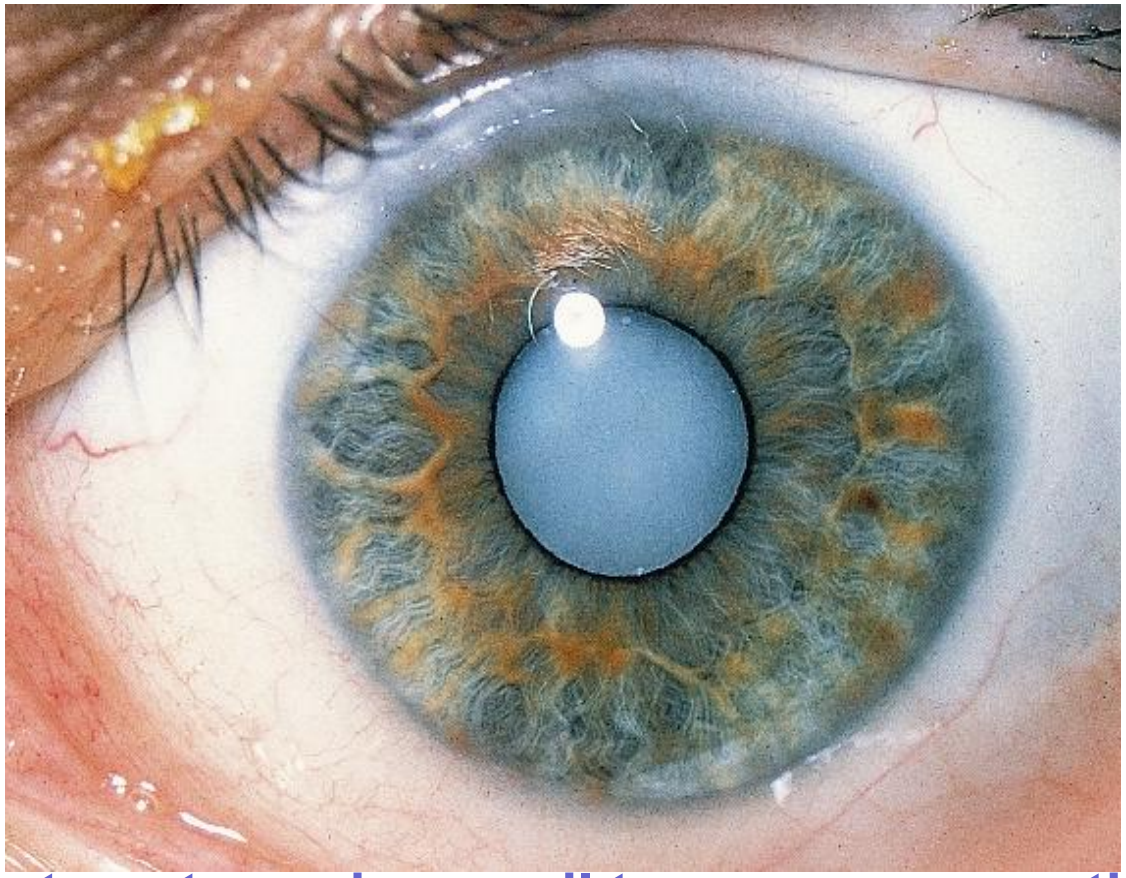
Acute angle-closure glaucoma



Laser iridotomy

AGE-RELATED CATARACT

- Third most common cause of visual loss in older people
- Decreased vision (Framingham Eye Study)
  - 65–74 years = 18%
  - 75–85 years = 46%



Dense cataract causing pupil to appear gray rather than black

CATARACT: SYMPTOMS

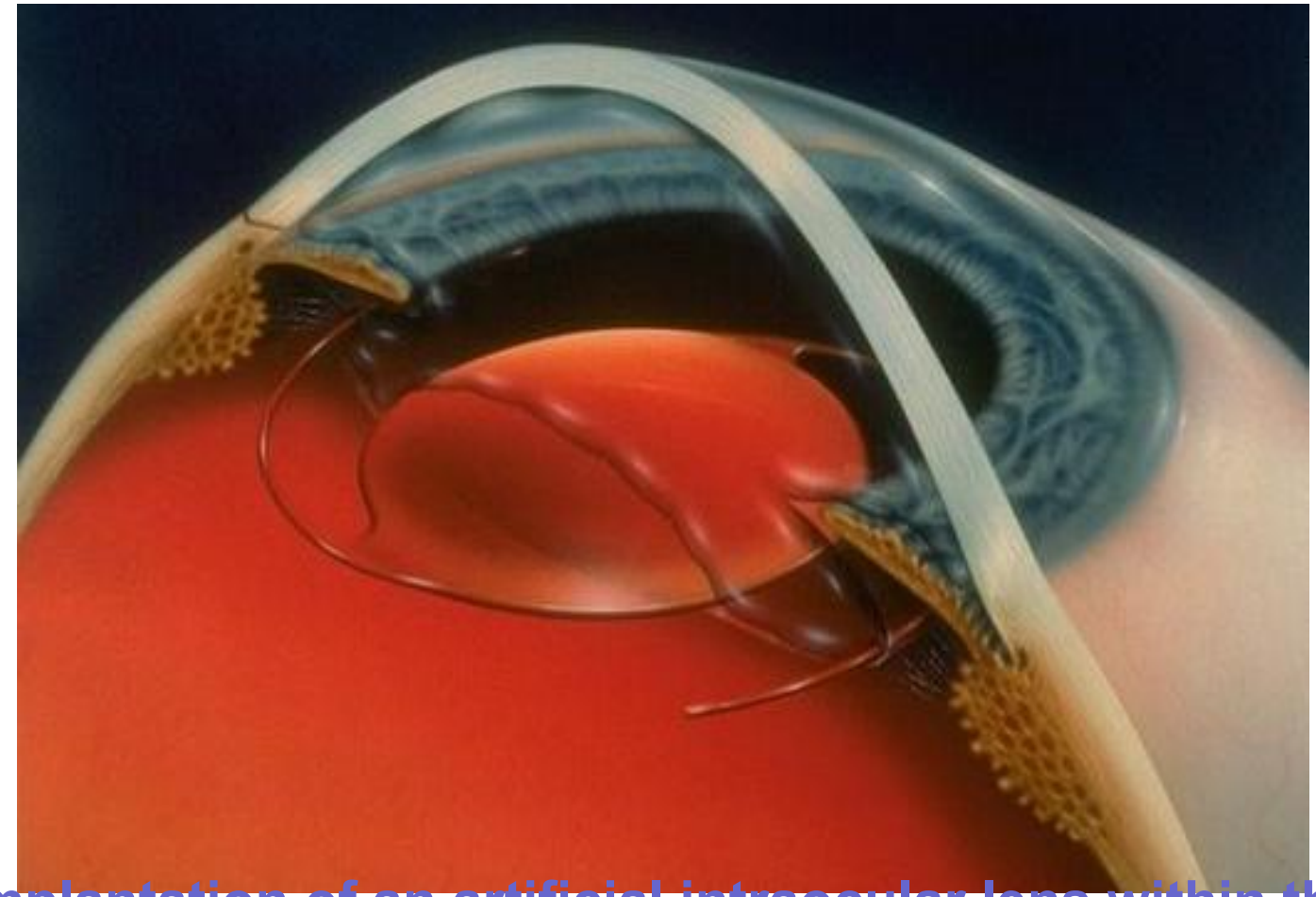
- Disturbance of near or distance vision at first
- Progresses to diminution of vision
- Cataract severity and location determine impairment
- Glare is bothersome

CATARACT: TREATMENT

- Surgery indicated if
  - Significant visual impairment
  - Daily activities curtailed (eg, problems driving, reading, etc.)
- No current medical treatment

CATARACT: PRE-OP EVALUATION

- Often done in consultation with PCP
- Factors to consider
  - Local (retrobulbar, peribulbar, or topical) anesthesia
  - May use IV sedation
  - Requires lying supine–optimize pulmonary function



Implantation of an artificial intraocular lens within the capsular bag

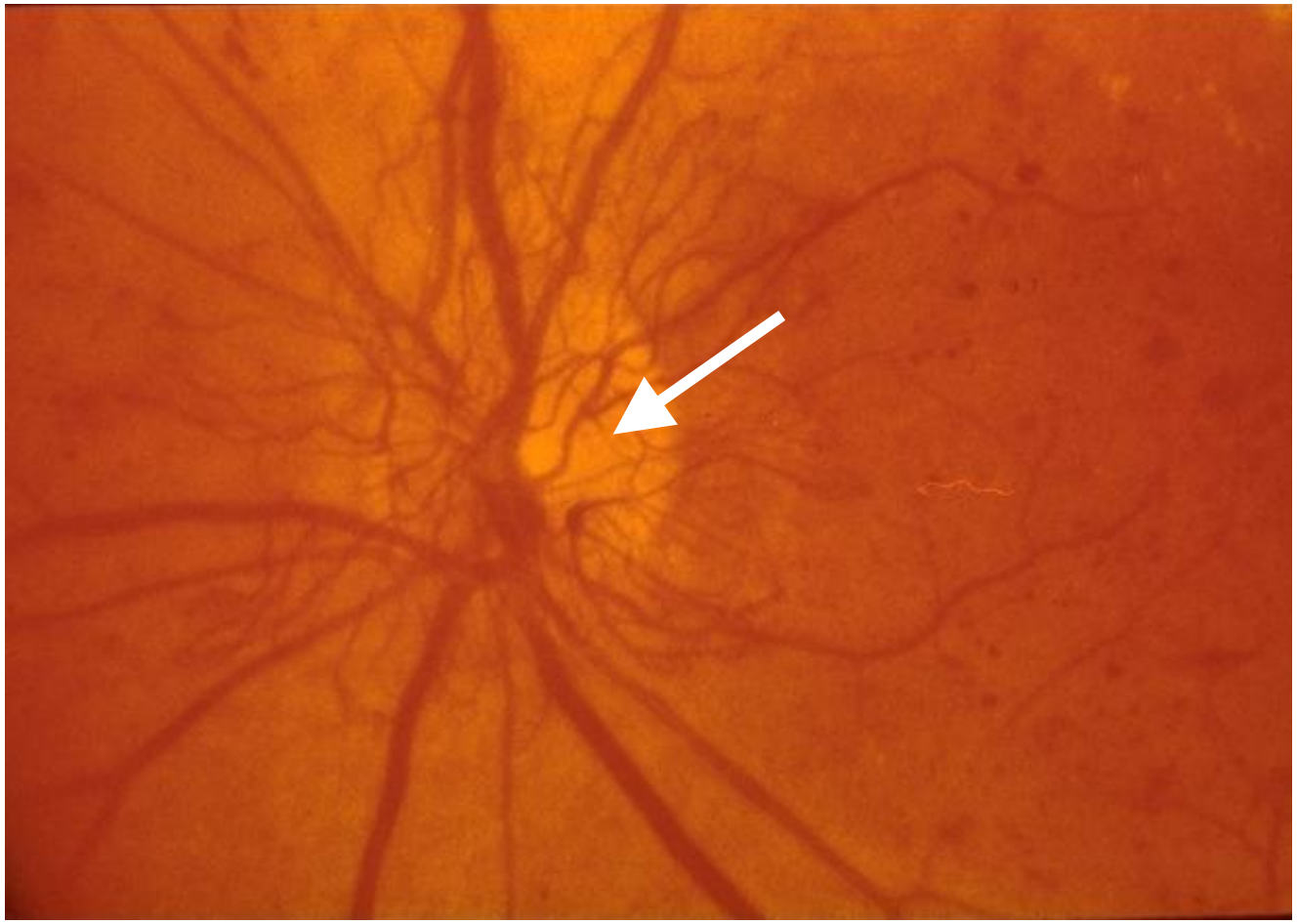
CATARACT: PROGNOSIS & FOLLOW-UP

- 90% achieve 20/40 vision or better
- Infrequent complications
  - Infection
  - Glaucoma
  - Retinal swelling or detachment
- Capsular bag opacifies, requiring Nd:YAG laser capsulotomy in 15%

DIABETIC RETINOPATHY (DR)

- Fourth most common cause of visual loss in people over age 55
- Type II diabetes more likely in people over age 55
- Macular edema more common with type II

Hard exudates and macular edema



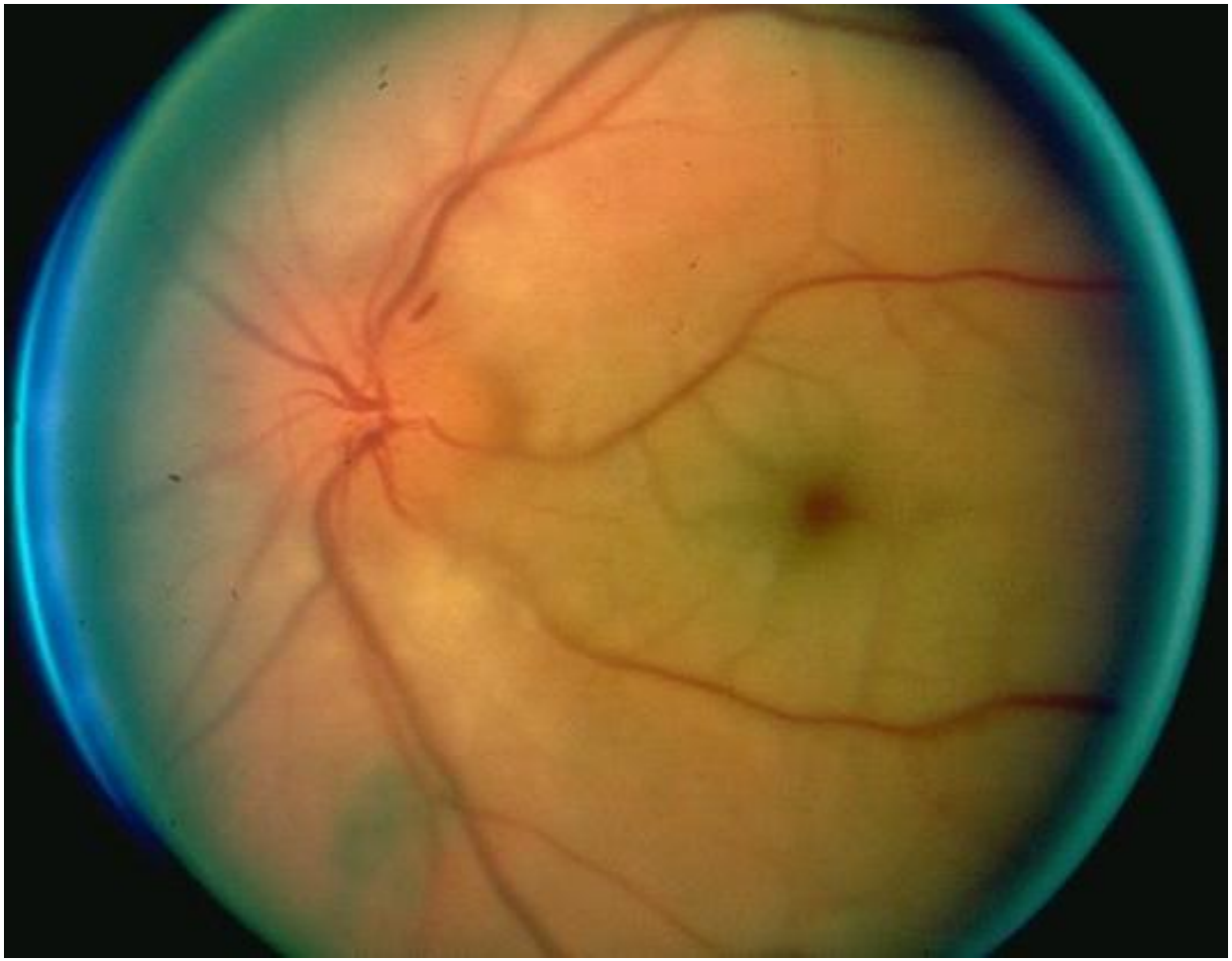
Neovascularization of the disc (NVD)

DR: MINIMIZING EFFECTS

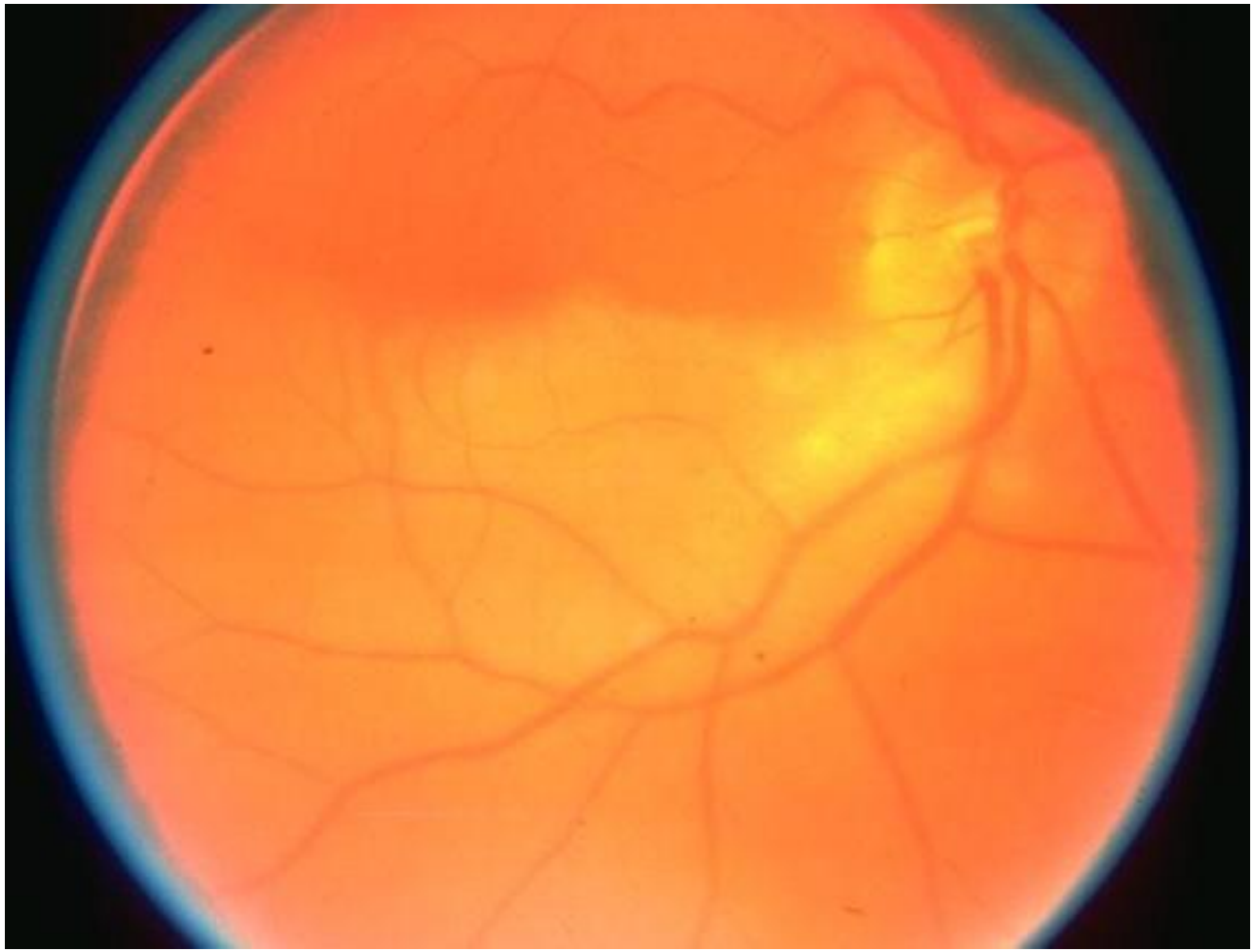
- PCP and ophthalmologist work together
  - Type I: Annual eye exam beginning 5 years after diagnosis
  - Type II: Eye exam at time of diagnosis, and then annually
- Good glycemic control
  - Type I: Insulin
  - Type II: Diet, exercise, weight loss

RETINAL VASCULAR OCCLUSIONS

- Cause sudden visual loss
- Transient or permanent
- Refer to ophthalmologist, and possibly neurologist or vascular surgeon

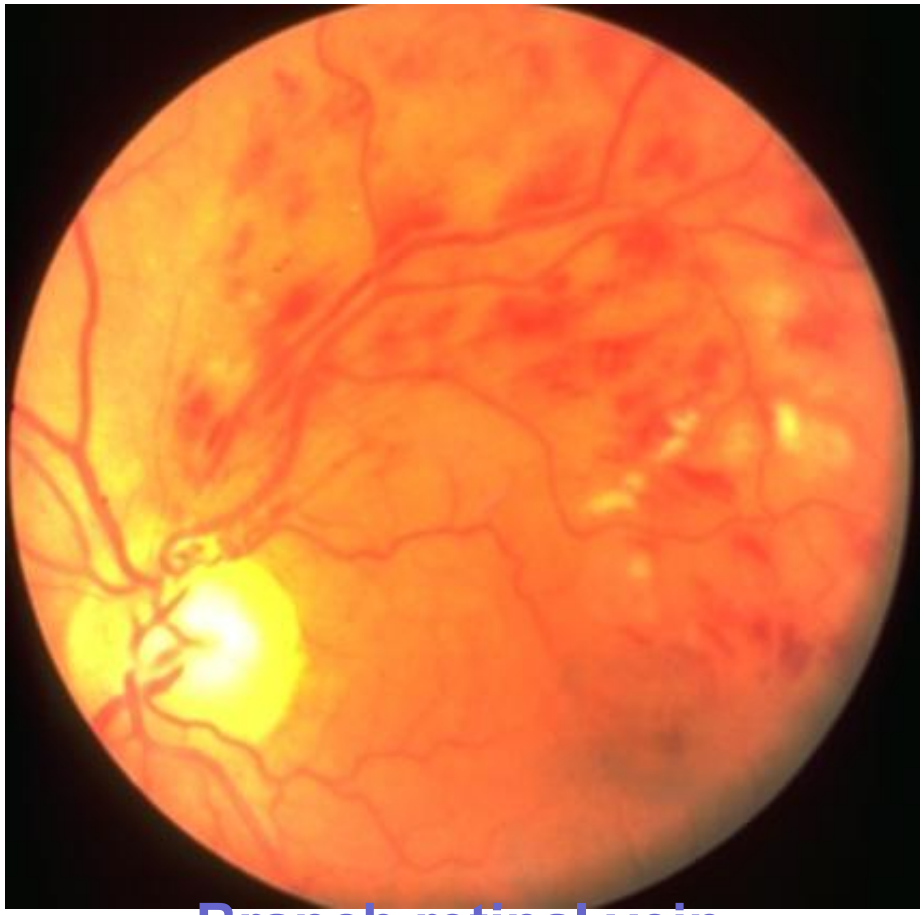


Central retinal artery occlusion

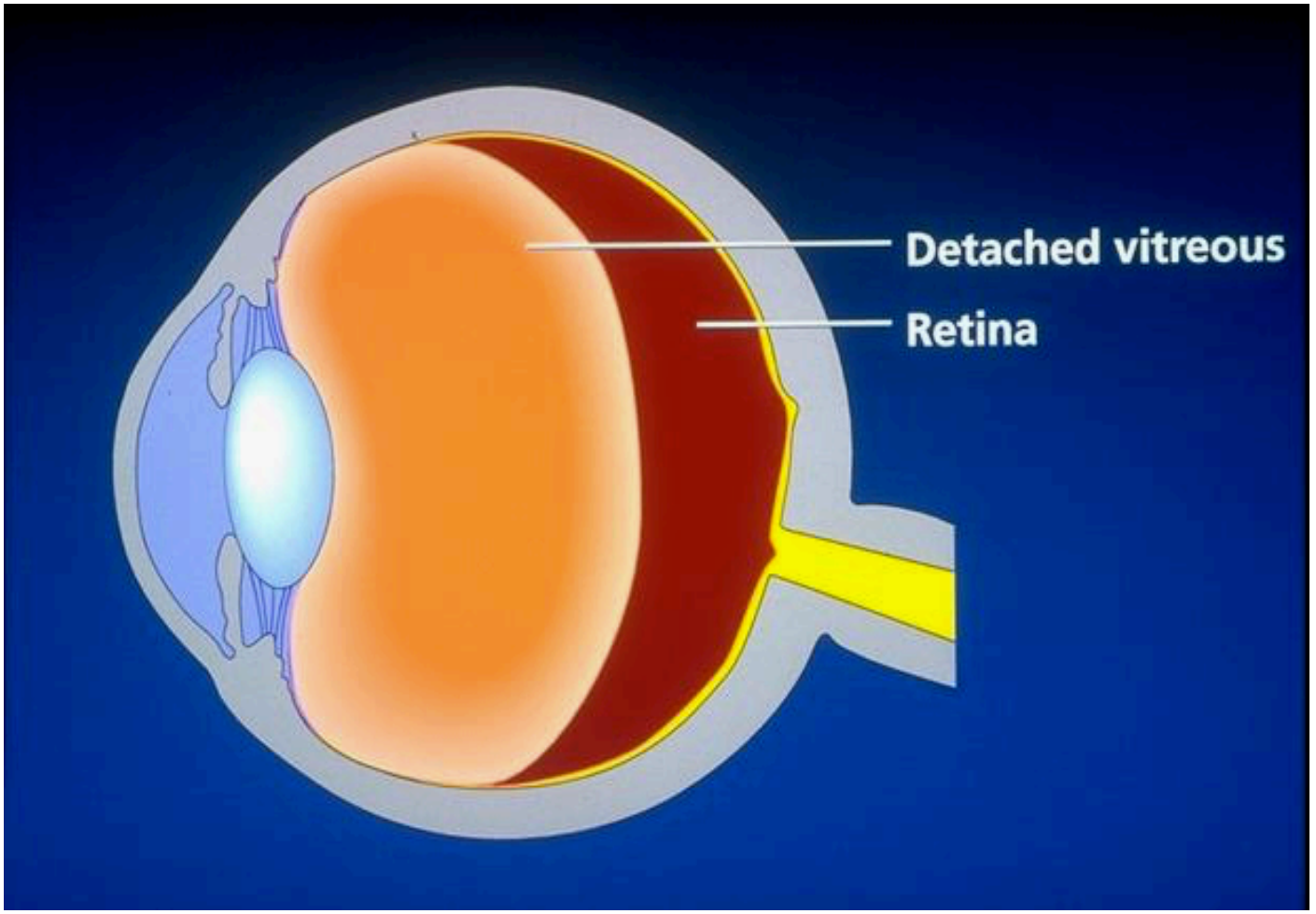


Branch retinal artery occlusion

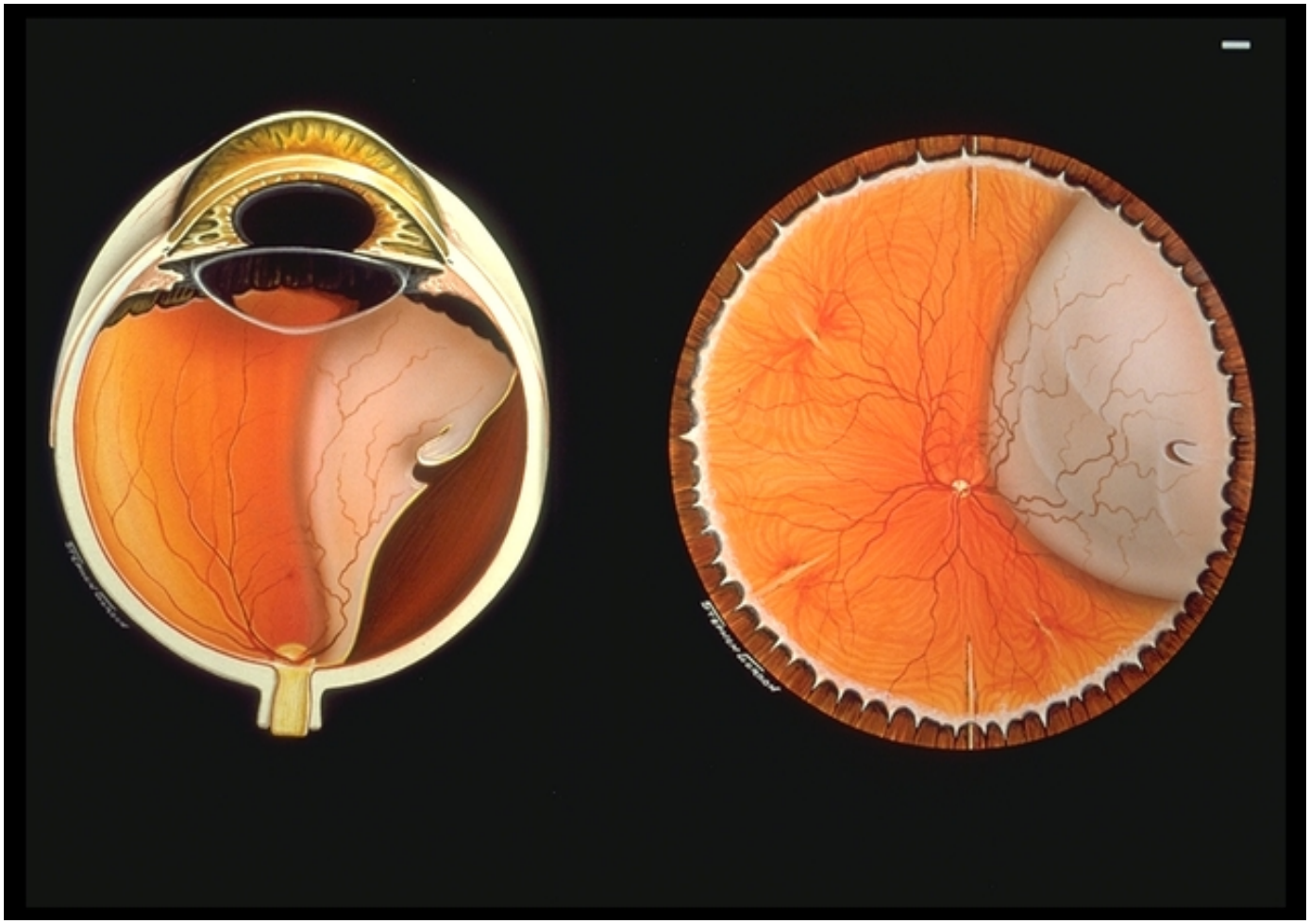
Central retinal vein occlusion



Branch retinal vein occlusion



Posterior vitreous detachment



Retinal detachment

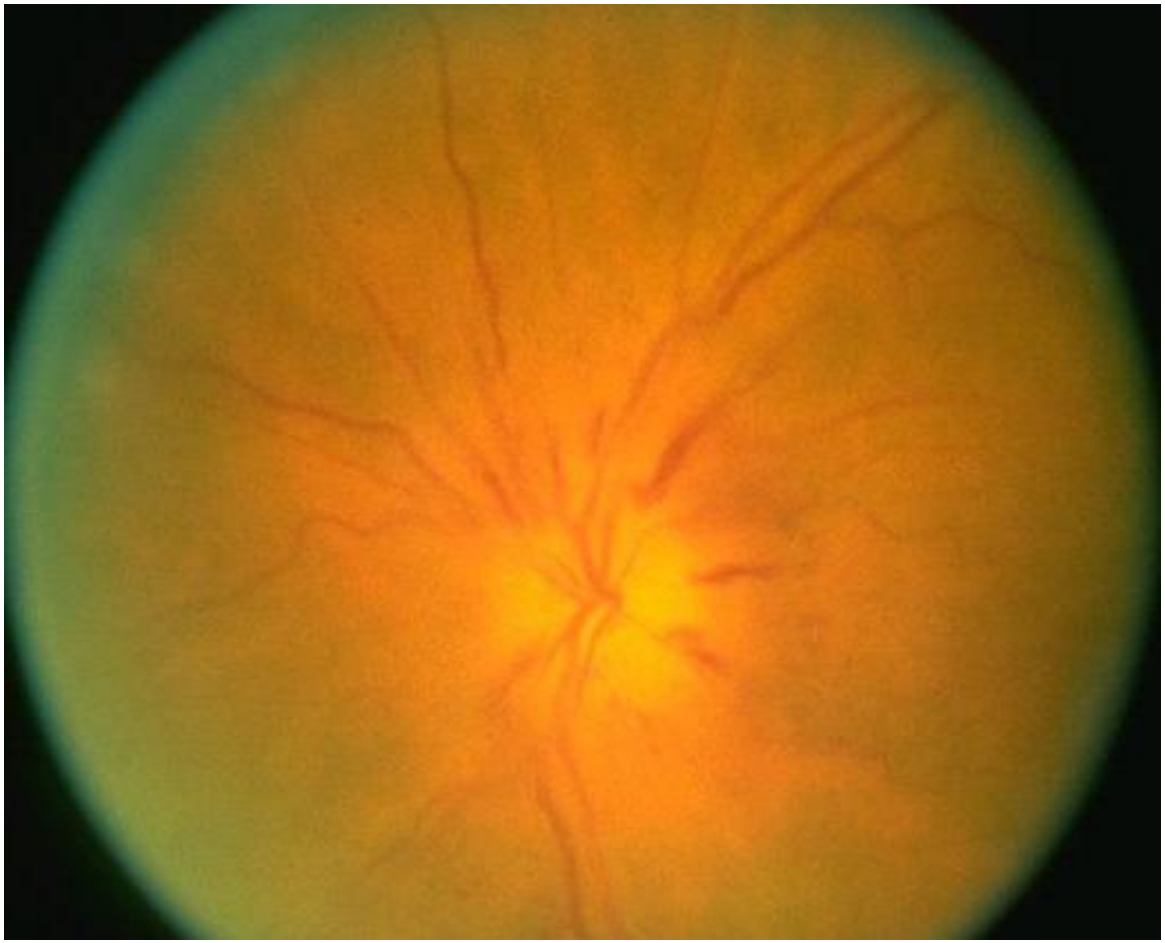
Retinal detachment

CRANIAL NERVE PALSIES

- Systemic ischemic disease can lead to palsies
- Cranial nerves III, IV and VI control extraocular movements
- PCP and ophthalmologist manage together

Third-nerve palsy of right eye: patient attempting to look up

Sixth-nerve palsy of right eye: patient attempting to look to the right



Ischemic optic neuropathy

TEMPORAL ARTERITIS

- Vasculitis affecting medium-sized vessels
- May cause
  - Ischemic optic neuropathy
  - Cranial nerve palsies
  - Retinal vascular occlusions

TEMPORAL ARTERITIS: SYMPTOMS

- Headaches
- Malaise
- Night sweats
- Weight loss
- Jaw claudication
- Polymyalgia rheumatica

TEMPORAL ARTERITIS: DIAGNOSIS

- A diagnosis based on history and clinical findings
- Sedimentation rate often elevated, but test has low sensitivity and specificity
- C-reactive protein level may also be elevated.
- Temporal artery biopsy usually confirms giant cell infiltration
- If untreated, may progress to vision loss

TEMPORAL ARTERITIS: TREATMENT

- Oral corticosteroids
- Start treatment on diagnosis
- Biopsy not affected if performed within 1 week of beginning treatment

MODERATE LOW VISION (~ 20/70 to 20/160)

- Refractive devices
  - Special spectacles
  - Contact lenses
  - Telescopes
  - Electronic magnification
- Increased lighting
  - General for ambulation
  - Intense for near vision tasks

SEVERE LOW VISION (20/200 to 20/400 or worse)

- Magnifiers for near vision tasks
- Electronic magnification
- Special household appliances
  - "Talking" clocks
  - Computers with voice-recognition capability

CARE OF THE AGING EYE

- Decreased vision with age
- Common eye conditions affect people over the age of 50
- Many conditions are preventable or treatable
- Improve or maintain visual function
- Coordination between PCPs and ophthalmologists ensures best care