

**Eye Care Skills: Presentations for Physicians
and Other Health Care Professionals Version 3.0**

Eye Care for the Aging Eye

Speaker Notes

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 **AMERICAN ACADEMY
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CONTENTS

A GUIDE TO PRESENTING <i>EYE CARE FOR THE AGING EYE</i>	3
SPECIAL CONSIDERATIONS IN GERIATRIC CARE.....	4
Assessing and Treating Older Patients	6
Summary: Special Considerations in Geriatric Care	8
PRINCIPAL PROBLEMS OF THE AGING EYE	9
Evaluation	12
Eyelid Problems	14
Blepharitis	14
Entropion and Ectropion	15
Ptosis and Dermatochalasis.....	16
Basal Cell Carcinoma of the Lid.....	17
Cornea/External Eye Problems	18
Dry Eyes.....	18
Herpes Zoster Ophthalmicus.....	19
Age-Related Macular Degeneration	19
Symptoms and Diagnosis.....	22
Treatment	24
Glaucoma	26
Primary Open-Angle Glaucoma	27
Angle-Closure Glaucoma.....	28
Age-Related Cataract.....	30
Diabetic Retinopathy	33
Retinal Vascular Disorders	35
Posterior Vitreous Detachment.....	39
Retinal Detachment.....	39
Neuro-Ophthalmic Disorders.....	40
Cranial Nerve Palsies.....	40
Ischemic Optic Neuropathy	42
Temporal Arteritis.....	42
Low Vision.....	44
CONCLUSION.....	45
REFERENCES	46
APPENDIX 1: Resources	47
APPENDIX 2: Eye Care Referral Recommendations for Older Patients.....	48
APPENDIX 3: Principal Side Effects of Common Glaucoma Medications	49

A GUIDE TO PRESENTING

Eye Care for the Aging Eye

The population of the United States that is 65 years and older grew from 3.1 million in 1900 to 35 million in 2000. Aging baby boomers are expected to increase the older population from 40 to 70 million between 2010 and 2030. Because visual acuity tends to decline with age and older patients are more likely to be affected by eye disease, primary care providers can expect to encounter increasing numbers of older patients with eye diseases

Eye Care for the Aging Eye provides primary care providers with the latest information about eye diseases that affect older patients. Specifically, disorders of the eyelid and cornea, age-related macular degeneration, glaucoma, cataract, retinal disorders, and neuro-ophthalmic problems are discussed, with pertinent information about signs, symptoms, and treatment.

Approximate Running Time

50–90 minutes

Suggested Audience

- Internists
- Geriatricians
- Family physicians
- Emergency physicians
- Medical students, interns, residents
- Nurse practitioners
- Emergency room personnel (non-MD)
- State and local meetings of the national medical societies: AGS, AAFP, AAP, ACP, ACEP

SPECIAL CONSIDERATIONS IN GERIATRIC CARE

SLIDE

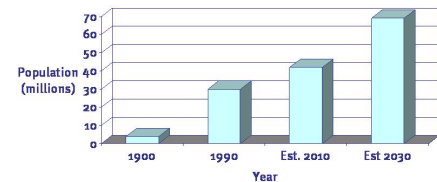
1

The average life expectancy at birth in the United States has increased from 47 years in 1900 to 77 years in 2000. The U.S. population age 65 and older has grown from 3.1 million in 1900 to 35 million in 2000. Between 2010 and 2030, aging baby boomers are expected to swell the older population in the U.S. by 75%, from 40 million to 70 million, while the population under 65 will increase by only 6.5%.

This dramatic growth in the older population has tremendous implications for all physicians. Although aging per se does not result in illness, the number of physician visits per year increases with age. Of visits to specialists by older persons, ophthalmologists register the most—about 14% of all office visits to any physician. Therefore, understanding the special issues associated with geriatric care will become more important for all physicians. To assist all who provide eye care to the elderly, this presentation gives an overview of the most common or important conditions of the aging eye.

Special Considerations in Geriatric Care

U.S. POPULATION AGE 65 AND OVER



As people age they may have physiologic, medical, and social differences from younger patients that affect their medical care. Eighty-five percent of Americans aged 65 and over have one or more chronic illness. These individuals are therefore more likely to be taking multiple medications. With aging, physiologic changes occur that result in altered pharmacokinetic and pharmacodynamic effects, so patients 65 and over are more susceptible to adverse effects from medications. Such physiologic changes also probably contribute to the higher frequency of altered presentations of illness in the elderly. Older patients may also have cognitive or functional limitations, which increase the importance of their social support, particularly family.

These unique characteristics mean that older patients may have unique goals of care. Because older people may suffer primarily from chronic illness, cure is often not possible. Therefore, improvements in or maintenance of functional abilities and the overall quality of life become the goal. In addition, avoidance of illness in general, and iatrogenic illness in particular (which is common in elderly patients), is an important part of geriatric care. Because older patients commonly have combinations of medical, functional, socioeconomic, cognitive, and affective problems, a multidisciplinary or interdisciplinary team is often necessary to provide care. In addition, incorporating family members into the care process, with permission of the patient, can be essential to ensuring compliance.

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

Assessing and Treating Older Patients

SLIDE

4

Before treatment, older patients need to be assessed thoroughly in order to devise the most effective therapeutic regimen. For example, a patient's cognitive abilities will affect that patient's ability to understand and comply with prescribed therapy. Also, patients living on fixed incomes or limited incomes may be unable to afford certain treatments. Dimensions on which they should be assessed include medical, cognitive, affective, environmental, economic, social, and functional, as well as overall quality of life.

SLIDE

5

The determination of functional status is vital to this assessment process. Functional assessment is the measurement of a patient's ability to complete functional tasks and fulfill social roles. If the patient cannot provide the necessary information, much of the information on functional and cognitive status can be obtained from the family. The standard functional status measures are divided into two classes, personal care tasks and home management tasks. The personal care tasks are called the activities of daily living (or ADLs) and include bathing, dressing, toileting, feeding, and continence. The more complex home management tasks are called instrumental activities of daily living (or IADLs). IADLs include using the telephone, shopping, preparing food, housekeeping, using public transportation, taking medications, and managing finances. More than 70% of the community-dwelling older population report no problems in performing ADLs or IADLs; however, limitations in functional status and the need for personal assistance grow dramatically with advancing age.

Special Considerations in Geriatric Care

OLDER PATIENT ASSESSMENT

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

Special Considerations in Geriatric Care

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

Patients aged 65 and over account for 15% of the population, but they consume 33% of all medications. Whenever possible, physicians should use nonpharmacologic measures, to minimize the use of multiple medications and adverse effects. Before prescribing medication for an older patient, always inquire about the patient's current medication, including nonprescription medications (two out of every five medications taken by older patients are over-the-counter medications). These over-the-counter medications could include, for example, dietary supplements or medications to assist with sleep, nonsteroidal anti-inflammatory drugs, medications for allergies, or medications for peptic ulcer disease. Failure to identify the full list of medications a patient may be taking can result in duplicate medications, drug interactions, and the use of medications to treat symptoms resulting from adverse reactions to other medications. When initiating drug therapy, keep in mind the unique characteristics of older patients with regard to medications. For instance, always start with the lowest effective dose and titrate upward slowly. Make sure to consider the patient's functional status also, such as economic resources and mobility.

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: Special Considerations in Geriatric Care

SLIDE

7

Because of the growing population aged 65 and older and increasing life spans, knowing the special issues associated with geriatric care is becoming more important for all physicians. The unique physiologic, medical, and social characteristics of older patients require different goals of care—namely, improvements in or maintenance of functional abilities and the overall quality of life. Before treating older patients, thorough assessment is important to devising the most effective therapeutic regimen.

In prescribing for older persons, their unique characteristics need to be taken into account. Working with other physicians and with family caregivers, as needed and with permission of the patient, helps ensure that the patient may receive complete care. Following these basic principles will provide the most effective care for older patients.

Special Considerations in Geriatric Care

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

PRINCIPAL PROBLEMS OF THE AGING EYE

SLIDE

8

Visual loss as people age is a major problem. One out of three individuals has some form of eye disease that potentially could reduce vision by the age of 65. A loss of vision can be both emotionally and financially devastating for anyone but especially for an older person on a fixed or limited income. Difficulty recognizing people and inability to drive can lead to social isolation, depression, and poorer quality of life.

Reduced vision is a risk factor for falls and fractures as people age. Finally, visual loss may render people, as they age, unable to care for themselves, and force them to move from a family care situation to a more costly nursing facility.

SLIDE

9

Visual acuity tends to decline with age. The average best corrected visual acuity is 20/20 in people 43 to 54 years of age; in those 75 or older, the average best corrected visual acuity is 20/40. In one population-based study, visual impairment (20/40 or worse in the better eye) increased from 0.8% in people between the ages of 43 and 54 years to 21% in people 75 years of age or older. Similarly, legal blindness (20/200 or worse in the better eye) increased from 0.1% in people between 43 and 54 to 2.0% in those 75 and older. Although it makes up only 12% of the U.S. population, the population over age 65 represents more than 50% of the blind population and 55% of new cases of blindness.

Principal Problems of the Aging Eye

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

Principal Problems of the Aging Eye

POTENTIAL EFFECTS OF AGING ON VISION

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

Many visual changes as people age result from age-related physical changes in the crystalline lens. With age, the normally transparent lens gradually yellows, resulting in some difficulty with color discrimination. It can also become cloudy, resulting in cataract that can interfere with vision. The lens also develops increasing rigidity, a condition called nuclear sclerosis. Together with changes in the ciliary body, this rigidity can result in a significant loss of accommodative ability. This loss of accommodative ability often means a loss of near vision, a condition called presbyopia

In addition, with age, certain systemic diseases increase in prevalence. Some of these diseases are also associated with eye disease, such as the following:

- Hypertension, which is associated with retinal vein occlusion
- Arthritis, which is associated with dry eye
- Diabetes, which is associated with glaucoma, cataracts, and diabetic retinopathy.

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

The most common causes of vision loss in the aging eye are the result of chronic eye diseases. In the U.S., these are age-related macular degeneration, glaucoma, cataracts, and diabetic retinopathy. Age-related macular degeneration is the most common cause of new cases of legal blindness in Americans over age 65. Glaucoma is the second most common cause of blindness overall, and the most common among African-Americans. In the United States, cataract is the most common cause of decreased vision not correctable with glasses; half of Americans over 65 have some cataract formation. Diabetic retinopathy causes about 7% of legal blindness in Americans age 65 and over.

Visual impairment in the aging eye is both common and often untreated. In a random sample of older residents living in East Baltimore, the leading causes of blindness were unoperated age-related cataract, primary open-angle glaucoma, and age-related macular degeneration. In this study, one-third of the legal blindness was due to unoperated cataracts. Therefore, the importance of the elderly individual promptly responding to eye symptoms with a visit to the physician cannot be overestimated in terms of benefits to the individual and society. About one-third of all new blindness is potentially avoidable if existing treatments and available technology are fully utilized.

VISION LOSS IN THE AGING EYE: LEADING CAUSES

1. Age-related macular degeneration
2. Glaucoma
3. Cataract
4. 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

SLIDE 14

Patients with eye problems often present first to their primary care providers. Obtaining accurate and complete historical information is important in managing eye problems and in deciding when to refer patients to an ophthalmologist. The problem-oriented history should include questions such as:

- Are you having any problems with your vision?
- If so, was the vision decrease sudden or gradual?
- Have you had any pain with these vision problems?
- Have you ever had any operations on your eyes? If so, what for and when?
- Are you currently using prescription eye drops? If so, which and for what condition?

SLIDE 15

The eye examination should include these elements:

- Visual acuity measurement, to help detect decreased vision
- External examination (lids and orbits), to help detect eyelid abnormalities and tumors
- Pupillary examination, to help detect relative afferent defects
- Visual fields assessment, to help detect abnormalities of the central nervous system
- Extraocular motility evaluation, to help detect eye muscle paresis
- Examination of the anterior segment, to help detect cataracts and inflammation
- Intraocular pressure measurement, to help detect glaucoma
- Examination of the posterior segment, to help detect glaucoma, diabetic retinopathy, and macular degeneration.

EVALUATION: HISTORY

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

EVALUATION: EXAMINATION

1. Visual acuity
2. Lids and orbits
3. Pupils
4. Visual fields
5. Motility
6. Anterior segment
7. Intraocular pressures
8. Posterior segment

For individuals 65 years of age or older, asymptomatic, and without disease, the American Academy of Ophthalmology recommends a comprehensive eye examination every 1 to 2 years. Symptomatic patients should be evaluated and referred on presentation. Patients with known eye disease should be referred as frequently as indicated by the severity of their disease and treatment plan. Because of the high prevalence of uncorrected refractive error, the primary care physician should routinely refer any individual with decreased visual acuity for ophthalmic evaluation. In patients with ophthalmic manifestations of systemic diseases, primary care physicians and ophthalmologists will need to work in concert to reduce vision loss. Recommend a comprehensive eye examination every 1 to 2 years to detect treatable common conditions that may not have symptoms, such as glaucoma, diabetic retinopathy, or age-related macular degeneration.

When correcting refractive error in the aging eye of an individual, visual acuity of 20/20 may not always be achievable, but correction from, for example, 20/200 to 20/40 would mean a major improvement in function. By working together more closely, primary care physicians and ophthalmologists will be able to provide care that will allow patients to maintain the best visual function possible as they age.

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

Eyelid Problems

Blepharitis

SLIDE

17

Eyelid and external eye problems are common in the aging eye. One of the most common eyelid problems affecting elders is blepharitis, or chronic inflammation of the eyelid, as shown in this slide. The symptoms include burning, itching, tearing, and crusting of the eyelid. This condition is thought to be due to colonization of the eyelashes and oil glands with *Staphylococcus aureus* bacteria. There is no cure for the problem, but symptoms can be controlled with lid hygiene, which involves scrubbing the lashes with a cotton swab soaked in a solution of half baby shampoo and half water. A mild topical antibiotic with activity against *S aureus* may also be helpful. Occasionally, blepharitis can also be associated with meibomian gland dysfunction and rosacea. In these cases, consultation with an ophthalmologist is indicated and treatment with tetracycline or other medications may be prescribed.

Although blepharitis is a common cause of red eye in the aging eye, there are many other causes. The American Academy of Ophthalmology offers a separate educational slide program on this subject, entitled *Managing the Red Eye*.

Principal Problems of the Aging Eye



Blepharitis

Entropion and Ectropion

SLIDE 18

With age and time, the connective tissue of the eyelid can involute or develop some scarring, leading to several lid conditions. Entropion, or an inward turning of the eyelids and lashes, as shown on this slide, can occur as a result of such involution or scarring. Entropion can lead to trichiasis, or rubbing of the eyelashes on the cornea. If trichiasis goes untreated, the corneal epithelium can break down and become infected. Entropion can be treated surgically. Because a lid disorder may damage a patient's corneas even when fluorescein dye and cobalt blue light show no defects, such patients should be referred if they are symptomatic.



Entropion of left lower lid

SLIDE 19

Ectropion, or outward turning of the eyelids and lashes, can also occur in the aging eye, as seen in the lower lid of this patient. Ectropion is usually due to involutional changes, although scarring and laxity from loss of innervations due to cranial palsies can also cause this condition. Patients with this condition often complain about epiphora, or tears that run down onto the cheeks. Exposure and secondary drying of the cornea, with consequent corneal epithelial loss, can also occur. The eye should be protected with lubricant if the eyelid does not completely close. The treatment is surgical. Again, patients should be referred to an ophthalmologist if they are symptomatic.



Ectropion

Ptosis and Dermatochalasis

SLIDE 20

This slide shows a person with ptosis, a droopy eyelid. This condition can be due to mechanical or neurologic factors; for example, it can occur after eye surgery. However, evaluation of ptosis should include examination of extraocular muscles and pupils. The possibilities of a third-nerve palsy, Horner's syndrome, and myasthenia gravis should be considered. If there is any doubt, eyelid problems should be referred to an ophthalmologist for thorough evaluation. With time and age the layers of skin over the eyelids can lose their elasticity and droop, a condition called dermatochalasis. Sagging skin that starts to interfere with the superior visual field can be removed surgically. In general, any patient whose eyelid obscures his or her central pupil should be referred.

Principal Problems of the Aging Eye



Ptosis

Basal Cell Carcinoma of the Lid

SLIDE 21

The most common eyelid malignancy is basal cell carcinoma. Basal cell carcinomas, which account for 90% of eyelid tumors, affect the lower lids more commonly than the upper. This slide shows a typical basal cell carcinoma, with its characteristic firm, raised, pearly, and nodular appearance. Histologically, the tumor arises from the basal cell layer of the skin epithelium. A biopsy is indicated if the diagnosis is at all in question. Surgical resection is the treatment of choice for basal cell carcinoma, because it facilitates complete removal, has the lowest recurrence rate, and allows for adequate cosmetic reconstruction. Because tumors growing near the medial canthus can be deeply infiltrative, they may need wider surgical excisions to ensure cancer-free margins. Cryotherapy and radiation are two other treatment options, but they have higher recurrence rates.

Principal Problems of the Aging Eye



Basal cell carcinoma

Cornea/External Eye Problems

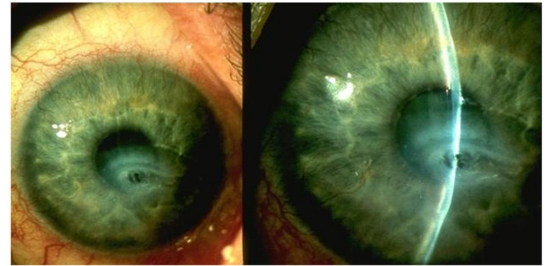
Dry Eyes

SLIDE

22

The most common condition affecting the cornea in the aging eye is poor tear production. The production of tears normally decreases with age. When tear production falls to such an extent that the patient becomes symptomatic, the condition is called dry eye syndrome or keratoconjunctivitis sicca. Tears maintain the integrity of the cornea by lubricating, protecting against disease, and removing debris. A decrease in tear production can produce symptoms of burning, scratchiness, redness, and even excessive tearing. Markedly dry eyes can lead to damage of the cornea, as seen in this slide, and so can result in vision loss. The primary care provider can prescribe artificial tears to be instilled in the eyes several times a day, as needed for comfort, and can refer patients with refractory symptoms for ophthalmic treatment. Treatment for dry eyes may include occlusion of the lacrimal puncta to preserve the tear film and topical cyclosporine drops (Restasis [Allergan]), an immunosuppressive agent. Topical cyclosporine improves tear production in some patients by inhibiting ocular inflammation that affects the lacrimal gland. Dry eyes are associated with Sjögren's syndrome, so patients should be asked about other symptoms such as dry mouth and arthritis.

Principal Problems of the Aging Eye



Corneal damage: severe dry eye

Herpes Zoster Ophthalmicus

SLIDE 23

Reactivation of the herpes zoster virus, or shingles, in the fifth cranial nerve can lead to herpes zoster ophthalmicus. In this condition, dendrite keratopathy along with uveitis can lead to marked pain and visual loss. Involvement of the skin at the tip of the nose, supplied by the nasociliary nerve, is often associated with ocular involvement. Treatment with oral acyclovir or its derivatives often can reduce symptoms and shorten the course of the disease. If ophthalmic involvement is suspected, the patient should be evaluated by an ophthalmologist. The recent introduction of a vaccine to prevent herpes zoster in patients more than 60 years old may have an impact on the incidence of herpes zoster ophthalmicus in the future.

Principal Problems of the Aging Eye



Herpes zoster ophthalmicus

Age-Related Macular Degeneration

SLIDE 24

The most common cause of visual loss in the elderly is age-related macular degeneration, or AMD. Patients with AMD experience loss of detailed central vision. AMD is seen most often in patients who are older and fair-skinned, and it tends to run in families. Risk factors also include smoking and cardiovascular disease.

Principal Problems of the Aging Eye

AGE-RELATED MACULAR DEGENERATION (AMD)

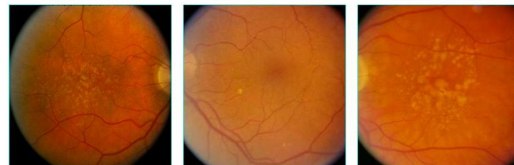
- Most common cause of irreversible visual loss in the aging eye
- Loss of central vision
- Risk factors
 - Advanced age
 - Family history of AMD
 - Smoking, CV disease

SLIDE

25

AMD may be asymptomatic at its early stages. The early stage of AMD is characterized by the presence of drusen, which are discrete yellowish deposits in the deep retina. Drusen in the early stage are smaller than 125 microns, which is approximately the width of a retinal vein as it crosses the optic nerve. The intermediate stage of AMD displays large drusen greater than 125 μm . The image at left shows numerous medium-size drusen (at least 63 μm but less than 125 μm). Center, at least one large druse is noted inferonasal to the center of the macula. At right are large drusen (at least 125 μm , the approximate width of a retinal vein as it crosses the optic nerve).

Principal Problems of the Aging Eye



Medium-size drusen

Large drusen inferonasal to macular center

Large drusen (125 + μm)

SLIDE

26

People with an early stage of AMD may not have any increase of progression to the advanced stage of AMD compared with someone who has no evidence of drusen. The early stage of AMD, while recognized in scientific studies, is not clinically relevant at this time. People with the intermediate stage of AMD in only one eye, without any vision loss from AMD in the other eye, have about a 5% chance of progressing to the advanced stage of AMD with vision loss over the next 5 years. People with the intermediate stage of AMD in both eyes have about a 25% chance of progressing to the advanced stage of AMD within 5 years. People who have already had vision loss in one eye from the advanced stage of AMD have about a 50% chance of developing vision loss from advanced AMD in the second eye within 5 years. Areas of hyperpigmentation also are associated with an increased chance of progression.

Principal Problems of the Aging Eye

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

