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DEPARTMENT: NURSING

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ASSIGNMENT

1. Discuss the defects of the eye.

Answer

Myopia (also called nearsightedness) is the most common cause of impaired vision in people under age 40. In recent years, its prevalence is growing at an alarming rate.

Globally, research suggests that in the year 2000, roughly 25 percent of the world's population was nearsighted but by the year 2050, it's expected that roughly half the people on the planet will be myopic.

## Symptoms of Myopia.

If you are nearsighted, you will have difficulty reading road signs and seeing distant objects clearly, but will be able to see well for close-up tasks such as reading and computer use.

Other signs and [symptoms of myopia](https://www.allaboutvision.com/conditions/myopia-faq/myopia-symptoms.htm) include squinting, [eye strain](https://www.allaboutvision.com/cvs/irritated.htm) and [headaches](https://www.allaboutvision.com/conditions/myopia-faq/nearsighted-headaches.htm). Feeling fatigued when driving or playing [sports](https://www.allaboutvision.com/sports/) also can be a symptom of uncorrected nearsightedness.

If you experience these signs or symptoms while wearing your glasses or contact lenses, schedule an eye exam with your [optometrist](https://www.allaboutvision.com/eye-doctor/choose.htm) or [ophthalmologist](https://www.allaboutvision.com/eye-exam/what-is-an-ophthalmologist/) to see if you need a stronger prescription.

## Causes of myopia.

Myopia occurs when the eyeball is too long, relative to the focusing power of the cornea and lens of the eye. This causes light rays to focus at a point in front of the [retina](https://www.allaboutvision.com/resources/retina.htm), rather than directly on its surface.

Nearsightedness can also be caused by the [cornea](https://www.allaboutvision.com/resources/cornea.htm) and/or lens being too curved for the length of the eyeball. In some cases, myopia occurs due to a combination of these factors.

Myopia typically begins in childhood, and you may have a higher risk if your parents are nearsighted. In most cases, nearsightedness stabilizes in early adulthood but sometimes it continues to progress with age.

## Myopia treatment

Nearsightedness can be corrected with [eyeglasses](https://www.allaboutvision.com/eyeglasses/), [contact lenses](https://www.allaboutvision.com/contacts/) or [refractive surgery](https://www.allaboutvision.com/visionsurgery/).

Depending on the degree of your myopia, you may need to wear your glasses or contact lenses all the time or only when you need very clear distance vision, like when driving, seeing a chalkboard or watching a movie.

Good choices for eyeglass lenses for nearsightedness include [high-index lenses](https://www.allaboutvision.com/lenses/highindx.htm) (for thinner, lighter glasses) and lenses with [anti-reflective coating](https://www.allaboutvision.com/lenses/anti-reflective.htm). Also, consider [photochromic lenses](https://www.allaboutvision.com/lenses/photochromic.htm) to protect your eyes from UV rays and high-energy blue light and to reduce the need for a separate pair of prescription sunglasses outdoors.

If you're nearsighted, the first number ("sphere") on your [eyeglasses prescription](https://www.allaboutvision.com/eyeglasses/eyeglass-prescription.htm) or [contact lens prescription](https://www.allaboutvision.com/contacts/contact-lens-rx.htm) will be preceded by a minus sign (–). The higher the number, the more nearsighted you are.

Refractive surgery can reduce or even eliminate your need for glasses or contacts. The most common procedures are performed with an excimer laser.

* In [PRK](https://www.allaboutvision.com/visionsurgery/prk.htm) the laser removes a layer of corneal tissue, which flattens the cornea and allows light rays to focus more accurately on the retina.
* In LASIK — the most common refractive procedure — a thin flap is created on the surface of the cornea, a laser removes some corneal tissue, and then the flap is returned to its original position.

Then there’s [orthokeratology](https://www.allaboutvision.com/contacts/orthok.htm)a non-surgical procedure where you wear special rigid gas permeable ([RGP or GP](https://www.allaboutvision.com/contacts/rgps.htm)) contact lenses at night that reshape your cornea while you sleep. When you remove the lenses in the morning, your cornea temporarily retains the new shape, so you can see clearly during the day without glasses or contact lenses.

Orthokeratology and a related GP contact lens procedure called corneal refractive therapy (CRT) have been proven effective at temporarily correcting mild to moderate amounts of myopia. Both procedures are good alternatives to surgery for individuals who are too young for LASIK or are not good candidates for refractive surgery for other reasons.

Implantable lenses known as [phakic IOLs](https://www.allaboutvision.com/visionsurgery/implantable-lenses.htm) another surgical option for correcting nearsightedness, particularly for individuals with high amounts of myopia or thinner-than-normal corneas that could increase their risk of [complications from LASIK](https://www.allaboutvision.com/visionsurgery/lasik_complication_1.htm) or other laser vision correction procedures.

Phakic IOLs work like contact lenses, except they are surgically placed within the eye and typically are permanent, which means no maintenance is needed. Unlike IOLs used in [cataract surgery](https://www.allaboutvision.com/conditions/cataract-surgery.htm), phakic IOLs do not replace the eye’s natural lens, which is left intact.

## Controlling myopia

With more people becoming nearsighted, there is a lot of interest in finding ways to control the progression of myopia in childhood.

A number of different techniques have been tried — including fitting children with [bifocals](https://www.allaboutvision.com/lenses/multifocal.htm), [progressive lenses](https://www.allaboutvision.com/lenses/progressives.htm) and gas permeable contact lenses. All of these have delivered mixed results.

Recent clinical trials showed that low-dose atropine eye drops could slow myopia progression in school-age children, with significantly fewer side effects compared with higher concentrations.

A dual-focus daily disposable contact lens decreased the progression rate of myopia in children between 8 and 12 years old when compared to a single vision lens, according to a study presented in 2017 at the American Academy of Optometry meeting.

The specially designed multifocal lenses reduced [myopia progression](https://www.allaboutvision.com/parents/myopia-progression.htm) by 59 percent at one year, 54 percent at two years and 52 at three years, compared with the myopia progression experienced by children who wore conventional contact lenses.

“There were good correlations between change in refractive error and change in eyeball growth,” said Paul Chamberlain, who presented the research and is senior manager of clinical research at CooperVision.

## Degenerative myopia

In most cases, nearsightedness is simply a minor inconvenience and poses little or no risk to the health of the eye. But sometimes myopia can be so progressive and severe it is considered a degenerative condition.

Degenerative myopia (also called malignant or pathological myopia) is a relatively rare condition that is believed to be hereditary and usually begins in early childhood. About 2 percent of Americans are afflicted, and degenerative myopia is a leading cause of [legal blindness](https://www.allaboutvision.com/lowvision/legally-blind.htm).

In malignant myopia, the elongation of the eyeball can occur rapidly, leading to a quick and severe progression of myopia and loss of vision. People with this condition have a significantly increased risk of retinal detachment and other degenerative changes in the back of the eye (such as bleeding in the eye from abnormal blood vessel growth).

Degenerative myopia also may increase the risk of [cataracts](https://www.allaboutvision.com/conditions/cataracts.htm).

 If you are having trouble seeing near objects or find you are holding books (or your smartphone) farther away to better make out the words, you should [see your eye doctor](https://www.allaboutvision.com/locator/#/?geo=true). Nearsightedness can be treated and in some cases slowed in children.

1. Hyper myopia.

**Hypermetropia (hyperopia, long-sightedness or far- sightedness)**is a form of refractive error in which parallel rays of light coming from infinity are focused behind the light sensitive layer of the retina, when the eye is at rest.

Small hypermetropia may be corrected by voluntary accommodation. Even high errors of refraction may be corrected this way, but convex glasses may be required if symptoms are not relieved.

**Emmetropia** is the condition where the eye has no refractive error and requires no correction for distance vision. Refractive error (ametropia) results when cornea and lens inadequately focus the light rays, resulting in blurred images. The measuring unit for refractive error is dioptre (D), which is defined as the reciprocal of the focal length in meters.

In hypermetropia, the cornea is flatter or the axial length is too short. Therefore, the images do not focus by the time they reach to the retina. For clear vision, a hypermetropic eye must accommodate to increase its lenticular power to bring distant objects in focus on retina. This requires contraction of ciliary muscle, and therefore, far-sighted eye is never at rest and work even harder to see near objects clearly. Hypermetropic corrections add positive focusing power to the eye for clear vision.

**Accommodation:** The degree of hypermetropia corrected by accommodative effort is known as facultative hypermetropia. Remaining uncorrected hypermetropia is called absolute hypermetropia. Total hypermetropia after abolishing voluntary accommodation is known as manifest hypermetropia (facultative plus absolute). With advancing age, accommodative effort cannot be sustained, and hypermetropia becomes absolute till the effort of accommodation fails to correct any hypermetropia. Thus the facultative hypermetropia becomes abolished and there remains no difference between absolute and manifest hypermetropia.

Some of the hypermetropia is corrected by the inherent tone of the ciliary muscles and this is called latent hypermetropia. The degree of latent hypermetropia is high in young persons and becomes less with advancing age. Complete cycloplegia (paralysis of accommodation) can abolish latent hypermetropia. The refractive error estimated under complete cycloplegia is called total hypermetropia (manifest plus latent).

### Symptoms

The symptomsvary depending upon the age of the patient and the severity of refractive error. Patient may be asymptomatic. Small amount of refractive error in young patients is usually corrected by mild accommodative effort, without producing any symptoms.

Symptomatic patients may present with:

**When hypermetropia is fully corrected:** At times the hypermetropia is fully corrected (thus vision is normal) but due to sustained accommodative efforts the patient develops asthenopic symptoms.

* Asthenopia (eyestrain).
* Frontal or fronto-temporal headache.
* Watering.
* Mild aversion to light.

These symptoms worsen as the day progresses and are aggravated by prolonged near work.

**When hypermetropia is not fully corrected:**When hypermetropia is not fully corrected by the voluntary accommodative efforts, then the patient complains of defective vision more for near than distance, due to sustained accommodative effort. Patient present with:

* Asthenopia.
* Defective vision more for near.

**When hypermetropia is high:** When hypermetropia is high (more than 4 D), the patients usually do not accommodate and they suffer with:

* Marked defective vision for both near and distance.

**When there is more of absolute hypermetropia:** With ageing the eye move from latent and facultative hypermetropia to greater degrees of absolute hypermetropia. This leads to progressive defective vision. Patient present with:

* Blurring of vision at a younger age than in emmetrope.

**When there is Spasm of accommodation:** Spasm of accommodation may induce pseudo-myopia. It may be detected by cycloplegic refraction. It presents as:

* Intermittent sudden blurring of vision.

In general, child may also present with lid diseases (like blepharitis, stye or chalazion), convergent squint or amblyopia.

### Causes

**Hypermetropia**may be:

* **Axial hypermetropia:** Axial hypermetropia is the commonest type. The total refractive power of the eye is normal but there is axial shortening of the eyeball. About 1 mm shortening of the antero-posterior length of the eye results in about 3 Dioptres (D) of hypermetropia.
* **Curvature hypermetropia:** Curvature hypermetropia is that condition in which curvature of the cornea, lens or both is increased (flatter) than the normal, resulting in change in refractive power of the eye. About 1 mm increase in radius of curvature results in 6 D of hypermetropia.
* **Index Hypermetropia:**Index Hypermetropia occurs due to change in refractive index of the crystalline lens with age.
* **Positional hypermetropia:** Positional hypermetropia results from posteriorly placed crystalline lens of the eye.
* **Absence of crystalline lens:** Absence of crystalline lens either congenital absence or acquired (following surgical removal or posterior displacement) leads to aphakia. There is high hypermetropia in aphakia.

It may also be functional, as is seen in presbyopia or may be induced by cycloplegic drugs.

### Diagnosis

Diagnosis of hypermetropia is based on the symptoms and clinical signs observed.

**Clinical signs:**

* **Visual acuity:**Visual acuity varies with degree of hypermetropia and power of accommodation. Patients with low degree of refractive error may have normal visual acuity. However, there is decrease in visual acuity for seeing near objects.
* **Cover test:** Cover test reveals an accommodative convergent squint. Due to altered accommodative convergence (AC) and accommodation (A) balance (AC/A ratio), maintaining binocular vision becomes difficult. The advantages of binocular vision are sacrificed in favour of more obvious advantages of clear vision. The better eye dominates for vision and the other eye develops accommodative convergent squint.
* **Eyelids:** One may develop blepharitis, stye or chalazion. The correlation between lid conditions and hypermetropia is not clear.
* **Eyeball:** Size of the eyeball may be normal or small.
* **Cornea**: Cornea may also be slightly smaller in size. There may be associated condition of cornea plana (flat cornea).
* **Anterior chamber:** Anterior chamber is relatively shallow in high hypermetropia.
* **Glaucoma:** The eye is small in high hypermetropia along with small size of cornea and shallow anterior chamber. Due to increase in size of the lens with ageing, the eye becomes prone to an attack of narrow angle closure glaucoma.
* **Lens:** Lens may be dislocated backwards.
* **Fundus:** Fundus examination shows small optic disc which may look hyperaemic (vascular) with ill- defined margins. This appearance may simulate papillitis. Since there is no swelling of the disc, it is called pseudo-papillitis. The retina is shiny due to reflection of light, called as **shot silk appearance**. Reflex of retinal vessels may be accentuated simulating arteriosclerotic changes. Vessels may be tortuous and may show abnormal branching.
* **Ultrasonography or biometry:** A- scan ultrasonography or biometry may show decreased antero- posterior length of the eyeball.

**Clinical types of hypermetropia:**

**I. Simple hypermetropia:**Simple hypermetropia is the commonest type. It includes axial and curvature hypermetropia due to biological variations in the development of the eye. It may be hereditary.

**II. Pathological hypermetropia:**Pathological type is due to congenital or acquired conditions outside the normal biological variation of development. It may be

* **Senile or acquired hypermetropia:** It occurs in old age due to

–       **Curvature hypermetropia:** There is decreased curvature of the outer lens fibres with ageing.

–       **Index hypermetropia:** It is due to acquired sclerosis of the cortex (outer part) of crystalline lens. In young age, refraction of the cortex is less than nucleus (central part) of the lens. This inequality results in formation of a central lens surrounded by two converging menisci. This increases the refracting power of the lens. With ageing, this differentiation diminishes and the lens becomes more homogeneous with reduced converging power.

* **Positional hypermetropia:** It may occur due to posterior subluxation (partial dislocation) of the lens.
* **Aphakic hypermetropia:** Aphakia is the displacement of the lens from its normal pupillary position in the eye. It may be congenital or acquired condition. The eye is hypermetropic with marked defective vision for near and distance. On an average there is need of + 10 or + 11 D lens for correction.
* **Consecutive hypermetropia:** It is due to surgically overcorrected myopia or pseudo-phakia (eye with intraocular lens following removal of crystalline lens as in cataract surgery) with under-correction.

**III. Functional hypermetropia:**It results from paralysis of accommodation as is seen in patients with third intracranial nerve palsy and internal ophthalmoplegia.

### Management

**Medical optical therapy:**

**Assessment of Vision:**

The most common component of assessment of visual function is to test central vision through visual acuity. Visual acuity determines ability to read symbols of varying sizes at a standard testing distance. This reference distance approximates optical infinity and is typically 6 meters. A 6/6 letter on the standard eye chart devised by Snellen is considered normal visual acuity. Refractive errors may result in uncorrected visual acuities that fall below 6/6. In the absence of other diseases, the condition of hypermetropia may be corrected with restoration of normal visual function. This may be achieved with spectacles or contact lenses.

Basic principle of therapy is to converge and focus the light rays on the retina with the help of convex (plus) glasses.

Rules for prescribing glasses in hypermetropia:

* **Cycloplegia:** Total hypermetropia is determined by performing refraction (checking power of glasses) under complete cycloplegia.
* **Small total manifest hypermetropia:** For small total manifest hypermetropia e.g. 1 D or less, correction may be required only if the patient is symptomatic.
* **Spherical power:** Spherical power is prescribed to the extent that it is suitably acceptable to the patient.
* **Astigmatism:** Astigmatism should be fully corrected.
* **Children younger than 4 years:** Children younger than 4 years requiring hypermetropic correction may usually accept full cycloplegic correction. It may be reduced in older children.
* **Older children:** Older children may not accept full cycloplegic correction because of the blur for distance. It may be increased gradually till the child accepts for the manifest hypermetropia.
* **Exophoria:** Hypermetropia should be under-corrected by about 1- 2 D if there is associated exophoria.
* **Accommodative convergent squint:** Full cycloplegic correction should be given if there is accommodative convergent squint.
* **Amblyopia (lazy eye):** In the presence of associated amblyopia (Functionally reduced vision not correctable with glasses and is not due to any eye disease) in one eye, full correction with occlusion therapy should be given.
* **Growth of child:** Hypermetropia decreases with growth of the child. Periodic refraction should be conducted and the correction should be reduced accordingly.

**Surgical therapy:**

* **Non- contact Holmium:YAG laser thermokeratoplasty:** Non- contact Holmium:YAG laser thermokeratoplasty is suitable for hypermetropia of about + 1 D to + 2.5 D. With this, multiple radially distributed spots are produced in the para-central cornea, which leads to shrinkage of the collagen in the mid- peripheral stroma and consequent steepening of the central cornea.
* **Hypermetropic photorefractive keratectomy (H- PRK):** The principle of this procedure is to steepen the anterior corneal curvature. The cornea is sculpted in to a steeper convex lens by creating a furrow- like ring zone in the corneal periphery.
* **Conductive keratoplasty:** Conductive keratoplasty is a non-invasive procedure in which radiofrequency is used to correct low hypermetropia with or without astigmatism. It may also be used to correct residual refractive error after cataract surgery or laser assisted in- situ keratomileusis.
* **Hypermetropic laser assisted in- situ keratomileusis (LASIK):** It is used to correct mild- to- moderate hypermetropia varying from + 1 D to + 4 D.
* **Phakic intraocular lens (IOL) implants:** Phakic intraocular lens (IOL) implants are used to correct higher degrees of hypermetropia, varying from about + 4 D to + 10 D. Phakic IOLs are especially designed, foldable, convex, thin lenses implanted in the posterior chamber behind the iris and in front of the normal crystalline lens.
* **Refractive lens exchange:** Extraction of clear lens with implantation of an IOL, preferably foldable IOL or a piggyback IOL. In piggyback IOL, two IOLs are placed in the eye one on top of the other. This is done if the biometry is + 40 D or so, and one does not have a lens of high power to implant. Moreover, there is high level of spherical aberration with thick lenses.

**Prognosis:**

Asymptomatic children up to about 10 years with low to moderate hypermetropia usually do not require any glasses. Visual acuity decreases as the child grows due to loss of accommodation.

Hypermetropia decreases quality of life. Poor vision may also decrease in the ability to learn and develop. Hypermetropia that is not fully compensated with accommodation may produce complications.

### Complications

Uncorrected hypermetropia may produce **complications**such as:

* **Accommodative convergent squint:** Excessive use of accommodation may produce accommodative convergent squint, usually by the age of about 2- 3 years.
* **Amblyopia:**Amblyopia may develop as

–       Anisometropic amblyopia as in cases with unequal or unilateral hypermetropia.

–       Strabismic amblyopia as in children who develop accommodative squint.

–       Ametropic amblyopia as seen in children with uncorrected bilateral high hypermetropia.

* **Lid diseases:** Repeated rubbing of eyes in hypermetropic blurred vision may produce blepharitis, stye or chalazion.
* **Primary narrow angle glaucoma:** The eye in hypermetropia is proportionately small. The size of the lens keeps on increasing with age. This predisposes the already small eye to the primary narrow angle glaucoma.

1. PRESBYOPIA

Presbyopia is an eye condition in which your eye slowly loses the ability to focus quickly on objects that are close. It’s a disorder that affects everyone during the natural aging process.

When light enters your eye, it passes through your cornea. Then, it passes through your pupil. Your iris is the coloured ring in your eye that opens and closes your pupil to adjust the amount of light passing through it. After passing through your pupil, the light passes through your lens. In its healthiest state, your lens changes shape so it can bend the light rays further and focus them on your retina at the back of your eye. However, your lens becomes less flexible with age. Then, it can’t change shape as easily. As a result, it’s unable to bend the light properly to focus it on your retina.

## Symptoms of Presbyopia

The most common symptoms of presbyopia occur around age 40 for most people. The symptoms of presbyopia typically involve a gradual deterioration in your ability to read or do work up close.

Common symptoms of presbyopia are:

* having eyestrain or headaches after reading or doing close work
* having difficulty reading small print
* having fatigue from doing close work
* needing brighter lighting when reading or doing close work
* needing to hold reading material at an arm’s distance to focus properly on it
* overall problems seeing and focusing on objects that are close to you
* squinting

Hyperopia, or farsightedness, is a condition that has symptoms similar to presbyopia. However, they’re two different disorders. In both conditions, distant objects are clear but closer objects appear blurred.

Hyperopia occurs when your eye is shorter than normal or your cornea is too flat. With these malformations, the light rays focus behind your retina, as in presbyopia. However, hyperopia is a refractive error that’s present at birth. It’s possible to have hyperopia and then develop presbyopia with age.

## Causes of Presbyopia

When you’re young, the lens in your eye is flexible and relatively elastic. It can change its length or shape with the help of a ring of tiny muscles that surround it. The muscles that surround your eye can easily reshape and adjust your lens to accommodate both close and distant images.

With age, your lens and the muscle fibres surrounding your lens slowly lose flexibility and stiffen. As a result, your lens becomes unable to change shape and constricts to focus on close images. With this hardening of your lens, your eye gradually loses its ability to focus light directly onto your retina.

## Risk Factors for Presbyopia

The most significant risk factor for presbyopia is age. Most people lose some ability to focus on close objects by age 40. It affects everyone, but some people notice it more than others.

Certain diseases or drugs can cause presbyopia in people younger than age 40. When the symptoms of presbyopia occur earlier than usual, it’s called premature presbyopia. If you notice the symptoms of presbyopia at an age earlier than normal onset, it may be a sign of an underlying medical condition.

You’re at a higher risk of premature presbyopia if you have:

* anemia, which is a lack of enough normal blood cells
* cardiovascular disease
* diabetes, or difficulties metabolizing blood sugar
* hyperopia, or farsightedness, which means you have a greater difficulty seeing objects nearby than objects that are far away
* multiple sclerosis, which is an autoimmune disease that affects your spine and brain
* myasthenia gravis, which is a neuromuscular disorder that affects your nerves and muscles
* eye trauma or disease
* vascular insufficiency, or poor blood flow

Some prescription and over-the-counter drugs can reduce your eye’s ability to focus on close images. Taking the following drugs can put you at a higher risk of premature presbyopia:

* alcohol
* antianxiety drugs
* antidepressants
* antihistamines
* antipsychotics
* antispasmodics
* diuretics

Other factors that may put you at a higher risk of premature presbyopia are:

* being female
* having intraocular surgery, or surgery done on the inside of the eye
* eating an unhealthy diet
* having decompression sickness, or “the bends,” which results from rapid decompression and typically occurs in scuba divers that surface too quickly

## Diagnosis of Presbyopia

Contact your doctor or eye specialist if you have any of the symptoms of presbyopia. Even if you’re not experiencing symptoms, you should have an eye examination by age 40.

Adults who don’t have any symptoms or risk factors associated with eye disease should have a baseline examination at age 40. An eye screening can identify early signs of disease and vision changes that can begin, sometimes without any symptoms, around this age.

Presbyopia can be diagnosed as part of a comprehensive eye examination. A typical exam will include tests to evaluate your eyes for the presence of diseases and vision disorders. Your pupils will probably be dilated with special eye drops to allow your doctor to examine the inside of your eye.

## Treatment of Presbyopia

No cure exists for presbyopia. However, there are several treatments available to correct your vision. Depending on your condition and lifestyle, you may be able to choose from corrective lenses, contact lenses, or surgery to correct your vision.

### Non-prescription Lenses

If you didn’t need eyeglasses before getting presbyopia, you might be able to use non-prescription reading glasses. These readers are typically available at retail stores, such as drug stores. They typically work best for reading or close work.

When selecting a pair of non-prescription reading glasses, try different degrees of magnification. Choose the lowest magnification that allows you to read a newspaper comfortably.

### Prescription Lenses

You’ll need prescription lenses for presbyopia if you can’t find an appropriate magnification from the non-prescription offerings. You’ll also need a prescription if you already have lenses to correct another eye problem. There are several variations of prescription lenses, such as the following:

* Prescription reading glasses can be prescribed if you have no eye problems other than presbyopia and prefer not to purchase your glasses off the shelf.
* Bifocals have two different types of focus, with a noticeable line between them. The upper portion is set for distance while the lower portion is set for reading or close work.
* Progressive lenses are similar to bifocal lenses. However, they don’t have a visible line, and they offer a more gradual transition between the distant and close portions of the prescription.
* Trifocals have three different points of focus. The portions are set for close work, mid-range, and distance vision, and they can be made with or without visible lines.
* Bifocal contact lenses provide the same option as bifocal glasses.
* Monovision contact lenses require you to wear a contact lens set for distance vision in one eye and a different contact lens set for close work in your other eye.
* Modified monovision contact lenses require you to wear a bifocal contact lens in one eye and a contact lens for distance in your other eye. Both eyes are used for distance, but only one eye is used for reading, and your brain adjusts as needed to process the image.

Your eyes will continue to gradually lose their ability to focus on close objects as you age. As a result, your prescription will have to be reviewed and changed according to the advice of your eye specialist.

### Surgery

There are several surgical options to treat presbyopia. For example:

* Conductive keratoplasty (CK) involves using radiofrequency energy to change the curvature of your cornea. While it’s effective, the correction may diminish over time for some people.
* Laser-assisted in-situ keratomileusis (LASIK) can be used to create monovision. This adjustment corrects one eye for near vision and the other eye for distance.
* Refractive lens exchange involves the removal of your natural lens. It’s replaced with a synthetic lens, called an intraocular lens implant, inside your eye.

## Complications of Presbyopia

If your presbyopia is undiagnosed or uncorrected, your vision will likely deteriorate gradually. It will increasingly affect your lifestyle over time. You may experience a significant visual disability if a correction isn’t made. You’ll develop problems maintaining your usual levels of activity and productivity at work and in everyday activities. When tasks such as reading small print become difficult and remain untreated, you’re at risk of headaches and eyestrain.

Since everyone develops presbyopia as they age, i’s possible to have presbyopia in addition to another type of eye problem. Presbyopia can combine with:

* astigmatism, which is an imperfection in the curvature of your cornea that causes blurred vision
* hyperopia, or farsightedness
* myopia, or nearsightedness

It’s also possible to have a different type of eye problem in each eye.

## Outlook for Presbyopia

In most cases, the vision you’ve lost to presbyopia can be corrected with eyeglasses, contact lenses, or surgery. The gradual decline of the elasticity required to focus your lens on near objects continues until about age 65, which is when most of the elasticity is gone. However, even at that point, correction to see close objects is possible.

## How to Prevent Presbyopia

There’s no proven technique for preventing presbyopia. The gradual decline of the ability to focus on near objects affects everyone. However, you can help protect your vision with these steps:

* Get regular eye examinations.
* Control chronic health conditions that could contribute to vision loss, such as diabetes or high blood pressure.
* Wear sunglasses.
* Wear protective eyeglasses when participating in activities that could result in eye injury.
* Eat a healthy diet with foods containing antioxidants, vitamin A, and beta carotene.
* Make sure you’re using the right strength of eyeglasses.
* Use good lighting when reading.

Talk to your doctor or eye specialist about any changes in your vision or eye health. Many eye diseases and conditions can benefit from early intervention and treatment.