

## Conjunctivitis

“Pink eye,” the common name for conjunctivitis, is an inflammation or infection of the conjunctiva. The conjunctiva is the outer, normally clear covering of the sclera (the white part of the eye). The eye appears pink when you have conjunctivitis because the blood vessels of the conjunctiva are dilated. Pink eye is often accompanied by a discharge, but vision is usually normal and discomfort is mild.

Either a bacterial or a viral infection may cause conjunctivitis. **Viral conjunctivitis** is much more common. It may last several weeks and is frequently accompanied by a respiratory infection (or cold). Antibiotic drops or ointments usually do not help, but symptomatic treatment such as cool compresses or over-the-counter decongestant eyedrops can be used while the infection runs its course. Unlike viral conjunctivitis, **bacterial conjunctivitis** can be treated with a variety of antibiotic eyedrops or ointments, which usually cure the infection in a day or two.

Conjunctivitis can be very contagious. People who have it should not share towels or pillowcases and should wash their hands frequently. They may need to stay home from school or work, and they should stay out of swimming pools.

Not all cases of conjunctivitis are caused by an infection. Allergies can cause conjunctivitis, too. Typically, people with allergic conjunctivitis have itchy eyes, especially in spring and fall. Eyedrops to control itching are used to treat allergic conjunctivitis. It is important not to use medications that contain steroids (names of steroids usually end in “-one” or “-dex”) unless prescribed by an ophthalmologist (Eye M.D.).

Finally, not all cases of pink eye are caused by conjunctivitis. Sometimes more serious conditions, such as infections, damage to the cornea, very severe glaucoma, or inflammation inside the eye will cause the conjunctiva to become inflamed and pink. Vision is usually normal when pink eye is caused by conjunctivitis. If your vision is affected or you experience eye pain, it is recommended that you see an ophthalmologist.

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## Tanning Beds

Tanning beds produce high levels of ultraviolet (UV) light, which can tan the skin but can also burn the cornea, the clear covering of the eye. You do not feel the burn until 6 to 12 hours after exposure, so you can suffer a severe corneal burn without realizing it while tanning or immediately after. UV light can also cause cataracts and can be a factor in the development of macular degeneration.

As they say, an ounce of protection is worth a pound of cure, so always wear special protective eyewear while using a tanning bed. Closing your eyes, wearing regular sunglasses, and placing cotton pads on your eyelids *do not* protect your corneas from the intense UV radiation produced by tanning devices.

Tanning facilities are required by the U.S. Food and Drug Administration (FDA) to provide safety goggles, but it is best to obtain your own pair so you will always be prepared. Make sure your goggles fit snugly, cover your eyes properly, and are completely opaque . If you use the salon's goggles, be sure that the salon personnel sterilize them after each use to prevent infection and that the goggles are approved for this particular use.

Since the skin does not usually get burned from tanning devices, most people do not realize the potential damage to their eyes. If you experience any eye pain after UV exposure, contact your ophthalmologist (Eye M.D.).

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## Erectile Dysfunction Drugs

Ophthalmologists are cautioning patients about visual side effects caused by medications for erectile dysfunction (impotence).

These drugs relax the smooth muscles in the blood vessels of the penis by interfering with the action of a special enzyme. A nearly identical enzyme in the retina (the layer of light-sensitive cells lining the back of the eye) might also be affected by these drugs, causing a mild disturbance of color vision in approximately 3% of people taking a higher than recommended dose.

Because of this unusual side effect, ophthalmologists recommend that people with **retinitis pigmentosa** (an inherited disease affecting the retina) use erectile dysfunction drugs with caution. Patients with other retinal problems should discuss their condition with their ophthalmologist before taking these medications.

In addition, there have been some reports of permanent vision loss related to the use of these medications, but more study is needed to draw any definitive conclusions. If in doubt, speak with your ophthalmologist before taking medications for erectile dysfunction.

Until we have more available data, physicians strongly recommend that men take the lowest dose possible that will still give the desired effect.

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## Refractive Errors

Refractive errors occur when light does not focus properly on the retina because of the shape of the eye. The resulting image is blurred. Common refractive errors are myopia (nearsightedness), hyperopia (farsightedness), astigmatism (distorted vision), and presbyopia (aging eyes).

### **Myopia**

A myopic eye is longer than a normal eye or has a cornea that is too steep, causing light rays to focus in front of the retina instead of on it. With myopia, close objects appear clear, but distant ones appear blurred.

### **Hyperopia**

A hyperopic eye is shorter than normal or has a cornea that is too flat. The light rays focus beyond the retina instead of on it. Distant objects appear clear, but close ones appear blurred.

### **Astigmatism**

The cornea of an astigmatic eye is curved unevenly. Images focus in front of and beyond the retina, causing both close and distant objects to appear blurry.

### **Presbyopia**

Presbyopia refers to the hardening of the lens that occurs with age. After the age of 40, the lens becomes more rigid and cannot change shape as easily to accommodate near objects. This makes reading and other tasks performed at close range difficult. Presbyopia can occur in combination with any of the other three refractive errors.

Refractive errors are usually corrected with eyeglasses or contact lenses. Sometimes surgery is needed or desirable. Some common surgical procedures include the following:

### **LASIK**

This popular procedure uses an instrument called a microkeratome to create a flap in the cornea so that the underlying corneal tissue can be reshaped with a laser.

### **Epi-LASIK**

This procedure is similar to LASIK in that it also uses a laser to reshape the cornea, but it uses a different device to create the corneal flap.

### **Photorefractive Keratectomy**

Photorefractive keratectomy (PRK) sculpts the surface of the cornea using a laser. A “bandage” contact lens is then applied for about three days to allow it to heal.

### **Intrastromal Corneal Rings**

Intrastromal corneal rings are crescent-shaped plastic segments implanted in the cornea to flatten the

cornea and correct mild nearsightedness.

If you are considering any of these surgical procedures, it is important to discuss them with your ophthalmologist (Eye M.D.) so as to make an informed decision about whether refractive surgery is right for you. Sometimes the best option is to choose eyeglasses or contact lenses instead of surgery to correct a refractive error.

Side effects of any of these refractive surgery techniques include blurring, glare, poor night vision, corneal scarring, or permanent vision loss. No one method is known to be better than another. The most appropriate method depends on the specific condition and lifestyle of the patient.

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## How Are Ophthalmologists, Optometrists, and Opticians Different?

**Ophthalmologists** (Eye M.D.s) are different from optometrists and opticians in their training and in what they can diagnose and treat.

As a medical doctor, an ophthalmologist is licensed to practice medicine and surgery. He or she diagnoses and treats all eye diseases, performs eye surgery, and prescribes and fits glasses and contact lenses.

Ophthalmologists complete

- four years of college;
- four years of medical school;
- one year of internship; and
- at least three years of residency (hospital-based training) in the diagnosis and medical and surgical treatment of disorders of the eye.

While all ophthalmologists specialize in eye problems and can treat all conditions, some decide to concentrate in a specific area of medical or surgical eye care. These ophthalmologists are called subspecialists. They usually complete a fellowship, which requires one or two more years of training in the chosen area. Some subspecialists focus on the treatment of a disease, such as glaucoma. Others subspecialize in a particular part of the eye, such as the retina. Pediatric ophthalmologists subspecialize in treating eye disease in children.

An **optometrist** is a doctor of optometry, licensed to practice optometry. Optometrists determine the need for glasses and contact lenses, prescribe optical correction, and screen for abnormalities of the eye. They attend two to four years of college and four years of optometry school.

In some states, optometrists can prescribe certain kinds of drugs to help diagnose and treat some eye conditions. Optometrists generally do not perform surgery.

An **optician** is licensed by the state to make optical aids. He or she fits, adjusts, and dispenses eyeglasses, contact lenses, and other optical devices according to the prescription of a licensed ophthalmologist or optometrist. Training for opticians varies from a preceptorship to two years of opticianry school.

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## Giant Papillary Conjunctivitis

Giant papillary conjunctivitis (GPC) is an inflammation of the inner surface of the eyelids, most frequently associated with contact lens wear. It can develop in people who wear either soft or rigid gas permeable contact lenses and can occur at any time, even if an individual has successfully worn contacts for a number of years. Although not vision threatening, GPC can be inconvenient and may require one to stop wearing contacts temporarily or even permanently.

The typical symptoms of GPC include red, irritated eyes, often with itching and mucus discharge. Blurred vision and light sensitivity can also occur. GPC is not an infection, but a hypersensitivity of the membrane covering the inner lids and the whites of the eyes. The inner lining of the eyelid becomes roughened and inflamed by constant blinking over a contact lens or other foreign body such as an artificial eye. Hard, flat elevations in a cobblestone pattern develop on the undersurface of the upper eyelid. Eventually the entire eye becomes irritated.

In most cases, treatment of GPC involves discontinuing the use of contact lenses to allow the eye to rest. Eyedrops are frequently prescribed to control inflammation. Many people find their symptoms are relieved when contact lens wear is discontinued. Unfortunately, the symptoms can return when lens wear is resumed.

Once GPC is under control, it may be helpful to consider changing to new contacts or disposable contacts. Changing lens care systems and cleansing solutions can also be helpful. After an episode of GPC, limit the amount of time lenses are worn, and increase the time slowly.

Once it develops, GPC may be an ongoing problem. Prolonged GPC may be more difficult to treat.

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## Recycling Eyeglasses

The World Health Organization estimates that corrective lenses can improve the eyesight of one-fourth of the world's population. Unfortunately, for many people a pair of eyeglasses is both unaffordable and unobtainable. The donation of old but useful eyeglasses to the needy in the US and abroad can help solve this problem.

The Lions Clubs International and local Lions Clubs conduct eyeglass-recycling programs. Used glasses are cleaned, repaired, and classified by prescription, then distributed free to needy people in developing countries around the world.

Contact a local Lions Club or call Lions Club International at 630.571.5466 to find a local recycling center. Chapters collect the used prescription eyeglasses, reading glasses, and even sunglasses, and then package and ship them to the centers.

Community services for the visually impaired often have names of those needing glasses. Many ophthalmologists (Eye M.D.s) and optometrists accept donations. Donating your eyeglasses to any charitable organization will improve the eyesight of those in need.

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## How to Instill Eyedrops

Infections, inflammation, glaucoma, and many other eye disorders often are treated with medicated eyedrops.

It is important to remember that all medicines can have side effects. Surprisingly, even the small amount of medication in an eyedrop can create significant side effects in other parts of the body. There are ways to decrease the absorption rate of the eyedrop into the system and to increase the time the eyedrop is on the eye, making the medicine safer and more effective.

Instilling eyedrops may seem difficult at first but becomes easier with practice. To place an eyedrop in your eye, first tilt back your head. Then create a “pocket” in front of the eye by pulling down on the lower lid with an index finger or by gently pinching the lower lid outward with the thumb and index finger. Let the drop fall into the pocket without touching the dropper tip to your eye, eyelid, or fingers, so as to prevent contaminating the bottle.

Immediately after instilling the drop, press on the inside corner of the eyelids next to the bridge of your nose for two to three minutes with your thumb and forefinger. This prevents most of the drop from traveling down the tear duct to the back of the throat, where it then is absorbed by the rest of the body. Keep your eyes closed for three to five minutes after instilling eyedrops.

Before opening your eyes, dab unabsorbed drops and tears from the closed lids with a tissue.

If you are taking two different types of eyedrops, wait at least five minutes before instilling the second drop. Because the volume of a single drop exceeds the capacity of the surface of the eye, it serves no purpose to use two drops at the same time.

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## How to View a Solar Eclipse

Looking at a solar eclipse is as dangerous as staring at the unblocked sun and can cause damage to the retina, the light-sensitive nerve layer at the back of the eye. The damage affects the macula, the part of the retina responsible for fine central vision.

Many people think they can protect their eyes by looking through filtered binoculars, sunglasses, neutral density filters, or exposed photographic or radiographic film. However, a retinal burn can occur in spite of all these barriers. In a 1970 solar eclipse in the eastern United States, 145 retinal burns were reported. Forty percent of the injured patients were using protective filters.

Parents must caution children not to look directly at the sun. Not only are children more tempted to watch an eclipse, but the damage is usually more severe because the child's natural lens is so clear that it lets more ultraviolet (UV) rays reach the back of the eye.

There are safe ways to view an eclipse. Attend a display at a planetarium or university astronomy department, where optical instruments are used to project an image of the eclipse from a telescope to a screen for safe viewing. Alternatively, watch the eclipse on television or use the simple pinhole camera described below.

Take two sheets of plain white paper. Make a pinhole in the center of one of the pieces. Then stand with your back to the sun and hold the sheet with the pinhole in front, so that the sun shines through the pinhole and onto the other sheet of paper. An image of the eclipse will be projected onto this second sheet. It is amazing how well you can observe a solar eclipse with this simple device.

If you suspect that you or a family member might have suffered a solar injury to the eye, consult an ophthalmologist (Eye M.D.) as soon as possible.

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## Herpes Zoster

One's first encounter with the herpes zoster virus is usually childhood chicken pox. Later in life, the virus may reactivate, causing a characteristic rash of small blisters, frequently on the chest or forehead, which form crusts and may leave scars. This second encounter with the virus is commonly known as shingles.

Unlike chicken pox, shingles is usually quite painful. Although this disease often occurs in normal, healthy people, it occurs more frequently in elderly or immune-compromised individuals.

It is important to see an ophthalmologist (Eye M.D.) when herpes zoster occurs on the face, because the virus can invade the eye. An ophthalmologist looks for elevated pressure in the eye, inflammation inside the eye, and herpes zoster lesions on the surface of the eye. All of these problems can be treated, but they are sometimes difficult to manage. Careful treatment and follow up are required. Today, new oral antiviral medications are providing shingles patients with a quicker, more complete recovery.

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## Living With Vision Loss in One Eye

People who lose vision in one eye because of an injury or a medical condition must adapt to a narrower field of vision and loss of depth perception. They may still see small objects as well as before, assuming the other eye is normal.

At first, adults who lose vision in one eye may have a few fender-benders, and they may have difficulty reaching out accurately to shake hands. This is due to the lack of depth perception as well as a narrower field of vision. The patient will soon learn to turn his or her head more when driving, reading, or doing other activities in order to compensate for the lack of depth perception and smaller field of view. With patience and time, they learn to use other clues to help them navigate the world around them and to function normally.

Assuming that the unaffected eye is normal, a person with vision loss in one eye is not considered legally blind. In addition, the patient is also eligible for a driver's license and is able to work in almost any occupation. There may be some jobs that a person with vision loss in one eye cannot safely perform, but they are few. Your ophthalmologist (Eye M.D.) and your job safety coordinator can provide advice and guidance.

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## Smoking and Eye Disease

Tobacco smoking is directly linked to many adverse health effects, including high blood pressure, heart disease, and cancer. Smoking is also linked to eye disease.

### How does smoking affect the eyes?

People who smoke cigarettes are at increased risk for developing **cataracts**, a clouding of the naturally clear lens of the eye. Cataracts cause a variety of vision problems, including blurry distance vision, sensitivity to glare, a loss of contrast sensitivity, and difficulty seeing colors. When eyeglasses or magnifiers are no longer helpful for someone with cataracts, or when cataracts develop in both eyes, surgery is the only option.

Tobacco smoking is also one of the preventable risk factors for **age-related macular degeneration (AMD)**. Studies have shown that current smokers and ex-smokers are more likely to develop AMD than people who have never smoked. AMD has two forms: dry (called atrophic) AMD and wet (called exudative) AMD. In dry AMD, your retina gradually thins. There is no proven cure for this type of degenerative disease. In wet AMD, new blood vessels grow in the retina, leaking blood or fluid and damaging the macula, the part of the retina responsible for your central vision. Permanent vision loss may occur with both types of AMD, so an attempt at prevention is of utmost importance.

Some studies suggest that in people with high blood sugar levels, smoking may be linked to **diabetic retinopathy**, or damage to the blood vessels in the retina. The optic nerve is also susceptible to damage from smoking. People with poor diets who smoke heavily and drink excessive amounts of alcohol run the risk of developing **optic nerve–related vision loss** (called tobacco–alcohol amblyopia). Certain optic nerve problems, like Leber’s hereditary optic neuropathy, can run in families. People with this condition who smoke have increased risk of vision loss. Some patients with thyroid disease (called Graves’ disease) may also have eye involvement; smoking may cause their eyes to become worse, and vision loss is also possible.

People who do not produce enough tears to keep their eyes comfortably lubricated have a condition called **dry eye**. For these people, smoking is a significant irritant, worsening the symptoms of scratchiness, stinging or burning of the eyes, and excess tearing from irritation.

### How does smoking affect fetal and infant eye health?

Studies have also shown a strong association between smoking during pregnancy and the risk of **invasive meningitis** during early childhood. The risk of **bacterial meningitis** is five times higher among children whose mothers smoked during pregnancy. In addition to other severe health problems, childhood meningitis can cause inflammation of the cornea and pink eye. Smoking during pregnancy is also associated **with low birth weight** and **premature birth**. Finally, oxygen therapy given to sustain the lives of premature infants can cause **retinopathy of prematurity**, causing permanent vision loss or blindness in the infant.

**There are resources to help you quit smoking.**

There are numerous community organizations committed to helping people quit smoking. The American Cancer Society (ACS) offers smoking cessation classes across the United States. Contact ACS at 800.ACS.2345 or online at [www.cancer.org](http://www.cancer.org) to find the chapter near you.

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## Dry Eye

Your eyes constantly produce tears at a slow and steady rate so that they stay moist and comfortable. Some people are not able to produce enough tears or the appropriate quality of tears to keep their eyes healthy or comfortable. This condition is known as dry eye.

Symptoms of dry eye include scratchiness, stinging, stringy mucus in or around the eyes, and blurry vision.

Sometimes people with dry eye will experience excess tearing. This is the eye's response to the discomfort from dry eye. When the eyes get irritated, the gland that makes tears releases a larger than usual volume of tears, which overwhelm the tear drainage system. These excess tears then overflow from your eyes.

Dry eye often increases with age as tear production slows. For women, this is especially true after menopause. Dry eye can be associated with other problems like **Sjögren's syndrome**, which can cause dry eyes along with dry mouth and arthritis.

Your ophthalmologist (Eye M.D.) can usually diagnose dry eye by examining your eyes. Sometimes tests that measure tear production are necessary. The **Schirmer tear test** measures tear production by placing filter-paper strips between your eyeball and your lower lid. Your ophthalmologist might also test you for dry eye using diagnostic drops to check for patterns of dryness on the eye's surface.

Treatments for dry eye include eyedrops called artificial tears to lubricate the eyes and help maintain moisture. Your ophthalmologist may conserve your tears by closing the channels through which your tears drain. You can also try to prevent tears from evaporating by avoiding wind and dry air from overheated rooms and hair dryers. Smoking irritates dry eyes and should be avoided.

In less developed countries, dry eye due to a lack of vitamin A in the diet is not uncommon. Ointments with vitamin A can help dry eye caused by unusual conditions like **Stevens-Johnson syndrome** or **pemphigoid**.

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## Eye Care Facts and Myths

**Myth:** Reading in dim light is harmful to your eyes.

**Fact:** Although reading in dim light can make your eyes feel tired, it is not harmful.

**Myth:** It is not harmful to watch a welder or look at the sun if you squint or look through narrowed eyelids.

**Fact:** Even if you squint, ultraviolet light still reaches your eyes, damaging the cornea, lens, and retina. Never watch welding without wearing the proper eye protection. Never look directly at a solar eclipse.

**Myth:** Using a computer screen is harmful to the eyes.

**Fact:** Although using a computer screen is associated with eyestrain or fatigue, it is not harmful to the eyes.

**Myth:** If you use your eyes too much, you will “wear them out.”

**Fact:** You can use your eyes as much as you want—you will not wear them out.

**Myth:** Wearing poorly fitting eyeglasses damages your eyes.

**Fact:** Although a good fit is required for good vision, a poor fit does not damage your eyes.

**Myth:** Wearing poorly fitting contact lenses does not harm your eyes.

**Fact:** Poorly fitting contact lenses can be harmful to your cornea, the clear front window of your eye. Make certain your ophthalmologist (Eye M.D.) checks your eyes regularly if you wear contact lenses.

**Myth:** You do not need to have your eyes checked until you are in your 40s or 50s.

**Fact:** Several asymptomatic yet treatable eye diseases (most notably glaucoma) can begin prior to your 40s.

**Myth:** Safety goggles are more trouble than they are worth.

**Fact:** Safety goggles prevent many potentially blinding injuries every year. Keep your goggles handy and use them!

**Myth:** It is okay to swim while wearing soft contact lenses.

**Fact:** Potentially blinding eye infections can result from swimming or using a hot tub while wearing contact lenses.

**Myth:** Children will outgrow “crossed” eyes.

**Fact:** Children do not outgrow truly crossed eyes. A child whose eyes are misaligned has strabismus and can develop poor vision in one eye (a condition known as amblyopia), because the brain “turns off” the misaligned or “lazy” eye. The sooner crossed or misaligned eyes are treated, the less likely the child will have permanently impaired vision.



**Myth:** A cataract must be “ripe” before it can be removed.

**Fact:** With modern cataract surgery, a cataract does not have to mature before it is removed. When a cataract interferes with your regular daily activities, you can talk with your ophthalmologist about having it removed.

**Myth:** Cataracts can be removed with lasers.

**Fact:** Cataracts cannot be removed with a laser. The cloudy lens must be removed through a surgical incision. However, after cataract surgery, a membrane within the eye may become cloudy. This membrane can be opened with laser surgery.

**Myth:** Eyes can be transplanted.

**Fact:** The eye cannot be transplanted. It is connected to the brain by the optic nerve, which cannot be reconnected once it has been severed. However, the cornea can be transplanted.

**Myth:** All eye-care providers are the same.

**Fact:** An **ophthalmologist** is a medical doctor (M.D.) or doctor of osteopathy (D.O.), uniquely trained to diagnose and treat all disorders of the eye. An ophthalmologist is qualified to perform surgery, prescribe and adjust eyeglasses and contact lenses, and prescribe medication.

An **optometrist** (O.D.) is not a medical doctor but is specially trained to diagnose eye abnormalities and prescribe, supply, and adjust eyeglasses and contact lenses. In most states, optometrists can use drugs to treat certain eye disorders.

An **optician** fits, supplies, and adjusts eyeglasses and contact lenses. An optician cannot examine the eyes or prescribe eyeglasses or medication.

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