

## EYE DISEASES IN MEDICINE

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### ABSTRACT

*This professional article provides an extensive examination of various eye diseases within the realm of medicine. From common refractive errors to complex conditions affecting different structures of the eye, the article delves into their causes, symptoms, diagnostic methods, and available treatment options. Emphasizing the significance of ophthalmic health, it addresses both prevalent conditions and rare disorders, providing valuable insights for medical professionals, researchers, and those seeking a deeper understanding of ocular health.*

**Introduction.** The eyes, often regarded as windows to the soul, are intricate organs susceptible to a myriad of medical conditions. This article embarks on a comprehensive exploration of eye diseases within the realm of medicine, shedding light on their diverse nature and impact on visual health.

**Refractive Errors: Unveiling the Blurry Vision Dilemma**

Refractive errors, including myopia, hyperopia, and astigmatism, are commonplace issues affecting visual clarity. This section elucidates the causes behind these conditions and discusses corrective measures such as glasses, contact lenses, or refractive surgery.

**Cataracts: The Opaque Veil Over Vision**

Cataracts, characterized by the clouding of the eye's lens, present a significant concern for visual impairment, especially in aging populations. The article navigates through the causes, symptoms, and surgical interventions involved in managing cataract-related vision loss.

**Glaucoma: Silent Thief of Sight**

A group of conditions leading to optic nerve damage, glaucoma often progresses silently, emphasizing the importance of regular eye examinations. This segment explores the mechanisms, risk factors, and treatment modalities for managing intraocular pressure and preserving optic nerve health.



## Age-Related Macular Degeneration: A Visionary Challenge

Age-related macular degeneration (AMD) poses a substantial threat to central vision, particularly in the elderly. This article delves into the progressive deterioration of the macula, exploring both dry and wet forms of AMD, along with emerging treatments.

## Diabetic Retinopathy: Navigating the Impact of Diabetes on Vision

Diabetes can have profound effects on ocular health, leading to diabetic retinopathy. This section elucidates the mechanisms behind retinal damage, emphasizing the importance of diabetic management in preventing vision loss.

## Retinal Detachment, Conjunctivitis, and Beyond: A Panorama of Ocular Ailments

From emergent conditions like retinal detachment to common occurrences like conjunctivitis, the article provides insights into a diverse spectrum of eye diseases. Each condition is scrutinized, addressing causes, symptoms, and appropriate interventions.

## How common are eye diseases and conditions?

According to the Centers for Disease Control and Prevention, over 3.4 million Americans aged 40 and above have corrected vision (visual acuity of 20/40 or less) or meet the criteria for "legal blindness," which is defined as having visual acuity of 20/200 or less in the better-seeing eye or visual field of 20 degrees or less. In the United States, approximately 7% of children under the age of 18 have an eye disease or condition. Roughly three percent of children under the age of 18 have vision impairments or are blind. One of the most popular disabilities in children and one of the top 10 causes of disability among adults over the age of 18 in the United States is vision loss.

The good news is that you are able to start thinking about your eye health at any time. Early diagnosis is possible with routine eye exams and eye health visits. This is crucial for treating or delaying the majority of eye disorders. If your visual issue gets worse or continues to exist for longer than a few days, you should always consult an eye care specialist.

## What are some of the most common eye diseases?

The four most common eye conditions leading to loss of vision or blindness are:

- Cataracts.
- Diabetes-related retinopathy.
- Glaucoma.
- Age-related macular degeneration.

However, there are hundreds of different eye diseases and disorders.

## What is macular degeneration?

Macular degeneration (also called age-related macular degeneration or AMD) is an eye disease that affects your central vision. It damages the macula, which is the center area of your retina that allows you to see fine details. It's the leading cause of vision loss in people over the age of 60.

Macular degeneration can either be wet or dry. Wet AMD happens when abnormal blood vessels grow under the macula and leak blood and fluid. This damages the macula and leads to loss of central vision. Dry AMD results in the thinning of the macula, which blurs your central vision over time. Dry AMD is more common than the wet form, accounting for 70% to 90% of cases.

Symptoms of AMD, which usually aren't noticed until the disease has progressed, include:

- Blurred central vision.
- Black or dark spots in the center part of your field of vision.
- Wavy or curved appearance to straight lines.

Although there is no cure, treatment can slow the progress of disease or prevent severe vision loss. Recent advances have been made in the treatment of wet AMD using intraocular injections of anti-VEGF medications.

What is a cataract?

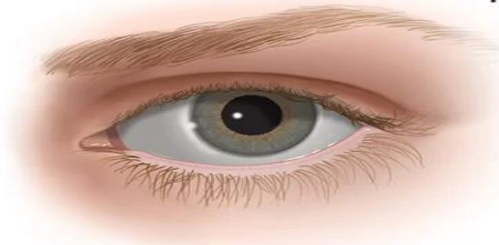
A cataract is a clouding of your eye's lens. This cloudy lens can develop in one or both eyes. Cataracts are the world's leading cause of blindness. In the U.S., cataracts is the leading cause of reversible vision loss. Cataracts can occur at any age and even be present at birth, but are more common in people over the age of 50.

Symptoms of a cataract include:

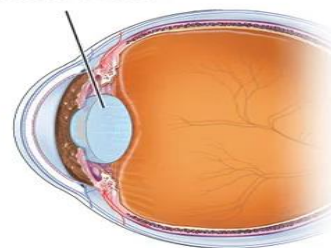
- Cloudy/blurry vision.
- Glare around lights at night.
- Trouble seeing at night.
- Sensitivity to bright light.
- Need for bright light to read.
- Changes to the way you see color.

## Cataracts (age-related)

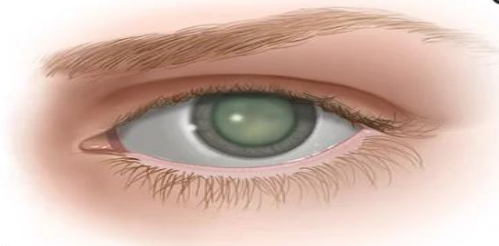
Normal eye



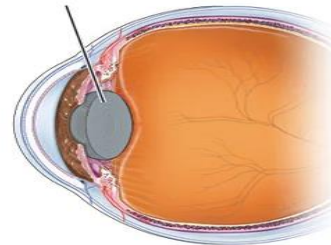
Normal lens



Eye with cataract



Cloudy lens



Frequent changes to your eyeglass prescription.

Surgery to remove and replace the cloudy lens with an artificial lens is highly successful with more than 90% of people seeing better after cataract removal.

What is diabetes-related retinopathy?



Diabetes-related retinopathy is a common complication of diabetes. It's one of the leading causes of blindness in adults in the U.S.

Diabetes-related retinopathy is a disease in which there's ongoing damage to blood vessels in the retina due to long-term unmanaged high sugar (glucose) levels in your blood. Your retina is the light-sensitive tissue in your eye that is needed for clear vision. Most people with diabetes-related retinopathy show no vision changes until the disease is severe. In others, symptoms come and go.

Symptoms include:

- Blurred or distorted vision.
- New color blindness or seeing colors as faded.
- Poor night vision.
- Small dark spots or streaks in your vision.
- Trouble reading or seeing faraway objects.

Treatments include injections of a specific type of medication and surgery that addresses repairing or shrinking blood vessels in the retina.

What is glaucoma?

Glaucoma is an eye disease that results from higher-than-normal fluid pressure in the eye. The pressure damages your optic nerve, which affects how visual information is transmitted to your brain. Undetected and untreated glaucoma can lead to vision loss and blindness in one or both eyes. Glaucoma often runs in families.

There are two main types of glaucoma. Open-angle glaucoma develops slowly over time and you may not notice vision change until the disease is far along. Closed-angle glaucoma can happen suddenly. It's painful and causes loss of vision very quickly.

Symptoms include:

- Eye pain or pressure.
- Headaches.
- Red eyes.
- Rainbow-colored halos around lights.
- Low vision, blurred vision, tunnel vision, blind spots.
- Nausea and vomiting.

Treatments focus on reducing eye pressure and include prescription eye drops, laser therapy and surgery.

What is retinal detachment?

Retinal detachment is a separation or detachment of the retina from its underlying tissues that hold it in place within your eye. This is a serious eye condition that can lead to blindness if not treated.

You may or may not have symptoms, depending on the severity of the detachment. Symptoms include:

- Seeing flashes of light.
- Seeing dark spots or squiggly lines drifting across your vision.
- Darkening/covering of part of your vision or your side vision.



- Treatments include laser therapy or different surgical approaches to seal or close the retinal tear and reattach the retina.

What are the most common eye conditions in children?

Eye conditions commonly seen in children include:

**Amblyopia:** Amblyopia (also called “lazy eye”) happens when your child’s brain and one eye aren’t working together properly and the brain favors the other better-seeing eye. They’ll have reduced vision in the non-favored eye. This is the most common cause of vision impairment in children.

**Strabismus:** Strabismus is a lack of coordination between your child’s eyes, which causes the eyes to cross or turn out. Your child’s eyes don’t focus together on a single image at the same time. This can cause reduced 3D vision and/or the brain may favor one eye over the other, which can cause loss of vision in the non-favored eye (amblyopia, see above).

**Conjunctivitis:** Conjunctivitis, also known as pink eye, is an inflammation of the clear tissue that lines the inside surface of your eyelid and the outer coating of your eye. This tissue is called conjunctiva. It helps keep your eyelid and eyeball moist. Pink eye can be highly contagious, especially among children. Although it doesn’t damage vision, it causes itchy, red, blurry, tearing and discharge.

What are refractive eye conditions?

Refractive eye problems cause you to have issues with focus. Light is improperly bent as it passes through your cornea and lens. These refractive errors are the most common eye problems in the U.S. Refractive errors include nearsightedness (myopia), farsightedness (hyperopia) and distorted vision at all distances (astigmatism). These eye conditions can be helped with eyeglasses, contacts or surgery.

What is presbyopia?

Presbyopia is the inability to focus over a range of vision. It’s often confused with farsightedness, but they are not the same conditions. Presbyopia is a natural loss of flexibility of the lens that comes with age. Farsightedness is an abnormal short eye shape that causes light to bend incorrectly after it enters the eye. Presbyopia is treated with corrective lenses (“cheater” eyeglasses).

What are eye floaters?

Eye floaters are clumps or deposits that float in your eye’s vitreous fluid (the clear, jelly-like substance in the middle of your eye). Floaters appear as spots or specks that float by in your field of vision. They are usually harmless, but if they appear suddenly and are joined by other symptoms, such as flashes of light or partial loss of side vision, they can be a sign of a more serious eye condition, such as retinal detachment.

What is dry eye?

Dry eye happens when your tear glands can’t make enough tears or produce low quality tears and can’t adequately lubricate the surface of your eyes. Treatments include artificial tears or tear duct plugs to prevent tear drainage.

What is eye tearing?

Eye tearing happens when your eyes produce more tears than can be drained. This can be from sensitivity to climate elements like wind, sun and temperature changes or to an eye infection or a blocked tear duct.



Can eye diseases be inherited?

Yes, genetic factors can play a role in many kinds of eye disease, some of which are leading causes of blindness in infants, children and adults. More than 60% of cases of blindness among infants are caused by inherited eye diseases, including:

- Congenital cataracts.
- Congenital glaucoma.
- Retinal degeneration.
- Optic atrophy.

Eye malformations. There is also strong evidence that strabismus (ocular misalignment) has a genetic link. A family history is seen in about one-third of cases. In adults, glaucoma and age-related macular degeneration appear to be inherited in a large portion of cases. Researchers have made significant progress in identifying the genes that cause retinitis pigmentosa, a degenerative disease of the retina that causes night blindness and gradual vision loss. More recently, gene therapy has been used to treat a form of retinitis pigmentosa of early childhood onset.

What common vision problems are inherited?

Researchers now have evidence that some of the most common vision problems among children and adults are genetically determined. These eye problems include:

- Strabismus (cross-eyes).
- Refractive errors such as nearsightedness, farsightedness and astigmatism.
- Retinal degeneration.
- Glaucoma.

What can I do to keep my eyes as healthy as possible?

There's a lot you can do to protect your vision. Recommendations include:

See your eye care professional at regularly scheduled intervals, even if you don't have any noticeable changes in your vision. Some eye diseases don't have early warning signs. Ask your eye care professional how often you should be seen.

Know your risk factors for eye diseases. Some include age, family history of eye diseases, your ethnic background or having other health conditions such as high blood pressure or diabetes.

Make healthy lifestyle choices. Keeping your body as healthy as possible will lower your risk for eye diseases or vision problems. Maintain a healthy weight, eat healthy foods, exercise for at least 30 minutes a day on most days of the week and stop smoking are some examples of healthy choices.

Protect your eyes. Wear sunglasses even on cloudy days to protect your eyes from UVA and UVB light. Wear proper protective eyewear when playing sports or when working on home or industrial projects. Follow instructions for wearing and cleaning contacts. Avoid prolonged computer and phone eye strain. Rest your eyes and focus on distant objects for a minute every 20 minutes.

A note from Cleveland Clinic.

Having good vision helps you interact with the world around you. Some vision problems can be easily corrected. Some can't be cured. However, if detected early and treated, many eye diseases can be corrected or the disease process slowed so your vision loss can be reduced. If



you notice any changes in your vision, see your eye care professional. Even if you don't have noticeable changes in your vision, it's important to have regularly scheduled eye exams. Some vision problems have no early warning signs. Your eye care professional can perform the needed tests and prescribe eyewear, medications or perform surgery to slow or reduce vision loss and help you see your best.

Most people have eye problems at one time or another. Some are minor and will go away on their own, or are easy to treat at home. Others need a specialist's care.

Whether your vision isn't what it used to be, or never was that great, there are things you can do to get your eye health back on track.

See if any of these common problems sound familiar. And always check with a doctor if your symptoms are really bad or don't clear up within a few days.

**Eyestrain.** Anyone who reads for hours, works at a computer, or drives long distances knows about this one. It happens when you overuse your eyes. They get tired and need to rest, just like any other part of your body.

If your eyes feel strained, give them some time off. If they're still weary after a few days, check with your doctor to make sure it isn't another problem.

**Colorblindness.** When you can't see certain colors, or can't tell the difference between them (usually reds and greens), you may be colorblind. It happens when the color cells in your eye (the doctor will call them cone cells) are absent or don't work.

When it's most severe, you can only see in shades of gray, but this is rare. Most people who have it are born with it, but you can get it later in life from certain drugs and diseases. Your doctor can tell you what's to blame. Men are much more likely to be born with it than women.

Your eye doctor can diagnose it with a simple test. There's no treatment if you're born with it, but special contacts and glasses can help some people tell the difference between certain colors.

**Uveitis.** This is the name for a group of diseases that cause inflammation of the uvea. That's the middle layer of the eye that contains most of the blood vessels.

These diseases can destroy eye tissue, and even cause eye loss. People of all ages can have it. Symptoms may go away quickly or last for a long time.

People with immune system conditions like AIDS, rheumatoid arthritis, or ulcerative colitis may be more likely to have uveitis. Symptoms may include:

- Blurred vision
- Eye pain
- Eye redness
- Light sensitivity

See your doctor if you have these symptoms and they don't go away within a few days. There are different kinds of treatment for uveitis, depending on the type you have.

**Presbyopia.** This happens when you lose the ability, despite good distance vision, to clearly see close objects and small print.

After age 40 or so, you may have to hold a book or other reading material farther away from your eyes to make it easier to read. Sort of like your arms are too short.

**Conclusion.** The article concludes by highlighting the significance of ophthalmic health beyond disease management. It advocates for a holistic approach to eye care, emphasizing



preventive measures, regular eye examinations, and the importance of maintaining overall health to preserve vision.

This comprehensive exploration serves as a valuable resource for medical professionals, researchers, and individuals keen on understanding the intricacies of eye diseases and their impact on visual health.

There are hundreds of different eye diseases and vision problems. Some have no cure, but many others are treatable. You can assist in your own eye health by following a healthy lifestyle and seeing your eye care professional on a regular basis and any time your vision changes.

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