AMERICAN OPTOMETRIC ASSOCIATION

PRESENTS

Healthy Eyes



FEATURING Janette Márquez

Opera Singer *living with glaucoma*

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Healthy Eyes: A Guide to Lifelong Vision Care video (English only,14 minutes) will present the stories of three patients, with expert commentary



from Hilary L. Hawthorne, O.D.

> Janette Márquez an accomplished opera singer who is legally blind will share her experience living with congenital glaucoma.

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A colorful sunset. A familiar face. The beauty of ordinary objects all around us. These are the gifts of sight.

Our ability to see the world depends on healthy vision. Our eyes are amazingly complex. When everything works as it should, you simply open your eyes and look around. But sometimes our eyesight gets worse.

Millions of Americans have problems with their vision. Often the problem appears as blurry vision, dark spots, or odd changes in what you see. But some eye diseases don't produce any symptoms until they become serious. Some of these problems can cause permanent vision loss, even blindness.

That's why regular, in-person eye exams are so important. Many sight-threatening diseases can be cured or slowed if caught early enough. And many common vision problems can be easily corrected, once they are discovered.

In this booklet and video, you'll learn more about your eyes, vision health, and what to do if you think you may have a problem. You'll learn:

- How your eyes work
- Tips for eye health
- · Common eye problems and how they can be treated

A colorful sunset. A familiar face. The beauty of ordinary objects all around us. These are the gifts of sight.



Cross Section of the Eye





In a normal, healthy eye, light passes through the clear front surface, called the *cornea*, and is focused on the back of the eye, the *retina*. The clear *lens* behind the colored *iris* helps focus images on the retina.

The retina contains light-sensitive cells. These cells change images into electrical signals that travel to the brain. Those signals let us see the patterns, colors, motion, and other visual qualities of the world around us.

> The *macula* is the central part of the retina. This area allows us to see details, and is where most of our color vision comes from. The *fovea* is a small spot in the center of the macula that gives us our sharpest, most detailed vision.

> > The eye is filled with a clear jelly-like substance called the *vitreous*. The vitreous is important because as it thins and shrinks with age, it can interfere with light passing through the eye.



TYPES OF EYE CARE PROFESSIONALS

Optometrists are doctors of optometry (O.D.). They are the primary eye health care providers with extensive training to examine, diagnose, treat, and manage eye diseases and injuries. They can also treat eye problems caused by diseases like diabetes, high blood pressure, and multiple sclerosis. They provide primary eye health and vision care in the U.S.

Ophthalmologists are physicians (M.D.) who specialize in diagnosing and treating eye diseases with medicines or surgery.

Opticians make and adjust eyeglasses, based on prescriptions given to them by other eye professionals.



The First Step in Eye Health: The Comprehensive Eye Exam

It is not enough to have your eyes checked (screened) by your regular doctor. Vision screenings can uncover some problems, but they can miss many others. Instead, you should see an eye doctor for a more complete kind of testing called a *comprehensive eye exam.*

You should have this kind of exam even if you think your vision is fine, and your eyes seem healthy. Many common eye diseases such as glaucoma, retina problems from diabetes, and macular degeneration often have **no** warning signs.



During an in-person, comprehensive eye exam, your eye doctor will place drops in your eyes to widen, or *dilate*, the pupil. This lets the eye doctor more easily see the inner parts of the eye. Photos of the inside of the eye may be taken so future changes can be more easily noticed.

The pressure inside each eye (*intraocular pressure*) will be measured. High pressure in the eyes can lead to blindness. It has to be measured, because it can't be seen or felt.





It's important to understand that by examining your eyes, eye doctors can detect many kinds of diseases—such as diabetes, high blood pressure, multiple sclerosis, and some kinds of cancer—**before** they produce symptoms. That's another reason to see your eye doctor regularly!

You should see an eye doctor for a comprehensive eye exam.

The eye doctor will also measure the sharpness of your vision (*acuity*). Visual acuity measurements evaluate how clearly each eye is seeing. Printed or electronic reading charts are often used. You will be asked to read letters at a distance and close up.

The results of acuity testing are written as a fraction, such as 20/20. Having 20/20 vision means you can see at 20 feet what the average person with healthy eyes can see at 20 feet. If the bottom number is larger, that means your eyesight is worse than normal. Having 20/40 vision, for example, means that you have to stand 20 feet away from something to see it as clearly as the average person could see it standing 40 feet away.

If your eye doctor sees anything of concern, other kinds of tests may be done.





When to See Your Eye Doctor

How often you should have an eye exam depends on your age. Adults age 18 to 60 should have their eyes examined every two years (unless they have a high risk of eye problems). Adults age 61 and older should have a comprehensive eye exam every year. Children's eyes change more rapidly than adults. Every child should have an eye exam at 6 months, at 3 years, before starting school, and every two years afterward until adulthood.

> See an eye doctor sooner if you experience any of the following:

- Blurry vision
 - Double vision
 - Pain in one or both eyes
 - Pressure in one or both eyes
 - Spots or floaters
 - Straight lines look crooked
 - You can't see things at the side of your vision as well as you used to

"Open communication is how I work with my doctor. You have to tell your doctor how you truly feel about a current situation. The more you communicate with your doctor, the better your doctor is able to inform or educate you." - Janette Márquez

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Eye and Vision Problems and How They Are Treated

Nearsightedness

Nearsightedness, or *myopia*, is when you can see close objects clearly, but objects farther away are blurry. Myopia occurs if the eyeball is too long or the cornea is too curved. As a result, the light entering the eye isn't focused correctly. Myopia affects nearly 1 of every 3 people in the U.S.



Light entering the eye

Nearsightedness or myopia



Light entering isn't focused correctly. Faraway objects are blurry.



Options for correcting myopia include:

• **Eyeglasses.** This is the most common way to correct myopia. Depending on the amount of myopia, you may only need to wear glasses for watching a movie or driving a car. If you are very nearsighted, you may need to wear them all the time.

• **Contact lenses.** For some people, contact lenses offer clearer vision and a wider field of view than eyeglasses. However, since contact lenses are worn directly on the eyes, you need to be careful about using them correctly.

• Ortho-k or CRT. Another option for treating myopia is *orthokeratology* (ortho-k), also known as corneal refractive therapy (CRT). In this procedure, you wear a series of special rigid contact lenses that gradually reshape the curvature of your cornea. You wear the contact lenses for limited periods, such as overnight, then remove them.

• Laser therapies. Laser therapies (such as LASIK) may also treat myopia in adults. A laser reshapes the cornea by removing a small amount of eye tissue. The amount of myopia a laser can correct is limited by the amount of corneal tissue that can be safely removed.

• Vision therapy. This is an option for children and adults whose blurred distance and/or near vision is caused by stress or problems in the tiny muscles that control focusing. Various eye exercises can improve poor eye focusing and help the eyes work together, so you regain clear distance vision.





Farsightedness, or hyperopia, is when distant objects can be seen clearly, but close ones are blurry. Farsightedness occurs if your eyeball is too short or the cornea has too little curvature. In these cases, your eye can't correctly focus the light that enters it or has to focus an excessive amount at all times.

> Common vision screenings, like the ones done in schools, often don't detect farsightedness. That's why having a comprehensive eye exam is so important, especially for children.

In mild cases of farsightedness, your eyes may be able to compensate without corrective lenses. In other cases, eyeglasses or contact lenses can be used to allow you to see close objects clearly and relax the eyes, avoiding strain.

Normal vision



Light entering the eye

Farsightedness or hyperopia



Light entering isn't focused correctly, or it is excessively focused. Close objects are blurry.

Presbyopia (meaning "older eyes") is when the lenses in your eyes stiffen with age, making it hard to focus on close objects. Presbyopia is a natural part of aging. It is not a disease, and it cannot be prevented.

People usually notice symptoms of presbyopia in the early to mid-40s. Some symptoms of presbyopia include needing to hold reading materials at arm's length, blurred vision at normal reading distance, and eye fatigue along with headaches when doing close work.

Presbyopia can complicate other common vision conditions like nearsightedness, farsightedness, and astigmatism.

To help you see more clearly, your eye doctor can prescribe reading glasses, multifocal glasses (e.g., bifocals) or contact lenses. You may only need to wear your glasses for close work like reading, but you may find that wearing them all the time is more convenient and helpful.

Presbyopia generally gets worse with time. You may need to change the strength of your glasses or contact lenses in order to continue seeing close objects clearly.

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Astigmatism is a common vision condition that causes blurry vision at any distance. It occurs when the cornea is shaped more like a football instead of round like a basketball.

Most people have some degree of astigmatism. Slight astigmatism usually doesn't affect vision or require treatment.

> Astigmatism can be corrected with eyeglasses or contact lenses. Other options for treating astigmatism are ortho-k or laser therapies (described on page 13).

Normal vision



Light entering the eye

Astigmatism



The cornea is shaped more like a football instead of round like a basketball, causing blurry vision at any distance.

Dry eye is when you don't have enough tears to keep your eyes moist and healthy, when the quality of tears is poor, or both. Dry eye is a common and often long-term problem, especially for older adults.

Each time you blink, your eyelids spread a thin film of tears across the front of the eye. The tears keep the surface moist, smooth, and clear; reduce the risk of eye infection; and wash away particles in the eye.

The symptoms of dry eye may include: irritated, gritty, scratchy, or burning eyes; a feeling of something being caught in the eyes; excess watering; and blurred vision. In severe cases, the front surface of the eye is damaged and vision is blurred.



Dry eyes can develop for many reasons, including:

• **Normal aging.** Most people over age 65 have some symptoms of dry eyes.

• **Gender.** Women are more likely to develop dry eyes, due

to hormone changes or the use of birth control pills.

• **Medicines.** Many kinds of medicines, such as those used to treat allergies, colds, high blood pressure, or depression, can reduce tear production.





Possible reasons for dry eyes (continued)

• **Medical conditions.** People with arthritis, diabetes, and thyroid problems are more likely to have symptoms of dry eyes. Also, problems with irritation and reddening of the eyelids (*blepharitis*) can cause dry eyes.

- **Air conditions.** Smoke, wind, and dry climates can worsen dry eye symptoms.
 - Not blinking enough. Staring at a computer screen for long times can lead to not blinking enough, which can contribute to drying of the eyes.
 - Other factors. Long-term use of contact lenses can make dry eyes more likely, and some kinds of laser surgeries can decrease tear production.

Dry eyes can be treated various ways:

• Adding tears. Mild cases of dry eyes can often be managed using over-the-counter artificial tear solutions. These can be used as often as needed.

• **Conserving tears.** Keeping natural tears in the eyes longer can reduce the symptoms of dry eyes. This can be done by blocking the tear ducts through which the tears normally drain. The tear ducts can be blocked with tiny silicone or gel-like plugs that can be removed, if needed. Or the ducts can be closed permanently. In either case, the goal is to keep the available tears in the eye longer to reduce problems related to dry eyes.

• **Increasing tear production.** Your eye doctor can prescribe eye drops that increase tear production. Taking an omega-3 fatty acid nutritional supplement may also help.

• **Treating the underlying problem.** Your eye doctor might recommend prescription eye drops or ointments, warm compresses and lid massage, or eyelid cleaners to help increase tear production and reduce swelling around the surface of the eyes.

Dry eye is a common and often long-term problem, especially for older adults.







Pink eye, or *conjunctivitis*, is an inflammation and reddening of the conjunctiva, which covers the white part of the eye. Pink eye is common, especially in children. It may affect one or both

eyes. Pink eye is usually a minor eye condition, but sometimes it can develop into a more serious problem.



Pink eye may cause the following symptoms:

- A gritty feeling in one or both eyes
- Itching or burning in one or both eyes
- Excessive tearing
- Discharge from one or both eyes
- Swollen eyelids
- Pink discoloration to the whites of one or both eyes
- Increased sensitivity to light

Pink eye can result from infections with bacteria or viruses, because of allergies, or from exposure to chemical fumes, air pollution, or chlorine in swimming pools.

Treatment for pink eye depends on its cause.

Pink eye caused by allergies may be eased with cool compresses and artificial tears. In more severe cases, eye drops containing medicines to reduce swelling and itching may be prescribed.

If the cause of pink eye is a bacterial infection, antibiotic eye drops or ointments can be used. (Be sure to take the entire course of antibiotic to keep the pink eye from returning!)



Pink eye caused by a virus must simply run its course antibiotics do not work against viruses.

Pink eye due to chemicals may need to be treated by flushing the eyes with a sterile solution or using eye drops to reduce swelling. (If a chemical spills in your eye, flush the eye for several minutes with a lot of water before seeing a health care professional.)

"Always ask questions! There's no wrong question or stupid question. All questions are valid, especially regarding your health." - Janette Márquez

Macular Degeneration

The macula is the small area of the retina that gives us our sharpest vision. Macular degeneration is when this area is damaged (if the damage is due to aging, it is called Age-Related Macular Degeneration, or **AMD**).

Macular degeneration is the leading cause of severe vision loss in adults over age 50. In the U.S., about 1.8 million people have AMD and another 7.3 million are at substantial risk for vision loss from AMD.

> Macular degeneration is the leading cause of severe vision loss in adults over age 50.



AMD occurs in two forms: "**dry**" (atrophic) and "**wet**" (exudative). Most people with macular degeneration have the dry form, which is treated by lifestyle changes such as:

- Quitting smoking
- Exercising
- Including dark green leafy vegetables in the diet
- Multi-vitamins and minerals

The less common "wet" form of AMD may respond to laser treatments and/or the injection of medicines into the eye, if diagnosed and treated early.

Symptoms of AMD may include:

- Gradual loss of ability to see objects clearly
- Difficulty adjusting to darkness
- Shape of objects appears distorted
- Straight lines look wavy or crooked
- Loss of clear color vision
- A dark or empty area in the center of vision

If you have any of the above signs or symptoms, contact your eye doctor immediately for a comprehensive eye exam. Central vision that is lost to AMD cannot be restored. However, magnifying lenses and other devices can extend your ability to read and see things around you and perform your normal daily activities.





Glaucoma (high pressure in the eyes)

Glaucoma is a group of eye disorders that involve damage to the main nerve of the eye (the optic nerve). The optic nerve is a bundle of about 1 million individual nerve fibers that sends visual signals from the eye to the brain. Glaucoma is when the fluid pressure inside the eye increases, pressing on the optic nerve to cause vision loss or blindness. Glaucoma is the second-leading cause of blindness in the U.S.

Glaucoma

Blocked drainage canal causes too much fluid to stav in the eye, increasing pressure

High pressure damages optic nerve



The most common form of glaucoma develops slowly and usually without any symptoms. Many people are not aware they have the condition until they have significant vision loss. Initially, glaucoma affects the sides of the field of view, but it can advance to central vision loss.

A less common type of glaucoma usually occurs suddenly from a rapid increase of pressure in the eye. Its symptoms may include severe eye pain, nausea, redness in the eye, seeing halos or colored rings around lights and blurred vision. This is an emergency condition in which severe vision loss can occur quickly.

Treatment for glaucoma seeks to lower the pressure in the eye. Regular use of prescription eye drops is the most common treatment. Some

patients may require medicines taken by mouth, laser treatment, or other surgery to drain fluid from the eye.

While there is not yet a cure for glaucoma, early diagnosis and continuing treatment can help preserve your eyesight.

"It's important to let vour doctor know what



vour schedule isand what your lifestyle is—so that together you can make the decision as to what medications are



Cloudy area in

lens



A cataract is a cloudy area in the normally clear lens of the eye. Most cataracts develop in people over age 55, and they usually develop in both eyes (but one may be worse than the other).

Cataracts usually form slowly. Symptoms include:

- Blurry or hazy vision
- Reduced intensity of colors
- Increased sensitivity to glare from lights, particularly when driving at night
- Difficulty seeing at night

Most cataracts result from normal aging, but the risk for cataracts is higher in those who:

- Have diabetes
- Smoke
- Drink higher amounts of alcohol
- Have been exposed to a lot of ultraviolet radiation
- Have used certain medicines such as corticosteroids or anti-psychotics

HEALTHY EYES

If a cataract only mildly affects vision, no treatment may be needed. In some cases, changing the eyeglass prescription may provide temporary vision improvement. In addition, anti-glare coatings on eyeglass lenses can help reduce glare for night driving, and increasing the amount of light used when reading may help.

When a cataract affects a person's ability to do normal everyday tasks, surgery may be needed. While cataract surgery is one of the safest and most effective types of surgery performed today, you should talk to your eye doctor about any risks before having the procedure.

About 9 of every 10 cataract surgery patients report better vision following the surgery. Cataract surgery involves removing the lens of the eye and replacing it with an artificial lens. The artificial lens requires no care and can significantly improve vision.



Cataracts





Diabetes-related Eye Problems

Diabetes causes high sugar levels in the blood. This can lead to many problems, including damage to the light-sensitive retina. When the retina is harmed from diabetes, it is called *diabetic retinopathy*.

Diabetic retinopathy

Blood vessels leak blood and other fluids damaging the retina, resulting in cloudy or blurred vision

Diabetic retinopathy occurs when the tiny blood vessels in the retina leak blood and other fluids. This causes the retinal tissue to swell, resulting in cloudy or blurred vision. The condition usually affects both eyes.

The longer a person has diabetes, the more likely they will develop diabetic retinopathy. It's very important for people with diabetes to monitor their blood sugar levels, and keep them in control. If left untreated, diabetic retinopathy can cause blindness.



Early detection and treatment can limit the potential for significant vision loss from diabetic retinopathy.

Symptoms of diabetic retinopathy include:

- Seeing spots or floaters
- Blurred vision
- Having a dark or empty spot in the center of your vision
- Difficulty seeing well at night

Often the early stages of diabetic retinopathy produce no symptoms. That's another reason to get a comprehensive eye exam on a regular basis. Early detection and treatment can limit the potential for significant vision loss from diabetic retinopathy.

People with diabetic retinopathy may need laser surgery to seal leaking blood vessels or to reduce the risk of other blood vessels leaking. Your eye doctor might need to refer you to a specialist, who may need to inject medications into the eye to decrease swelling or stop the formation of new blood vessels. Your eye doctor may also need to talk with other members of your health care team to help you better control your blood sugar.

People with advanced cases of diabetic retinopathy might need a surgical procedure to remove and replace the gel-like vitreous. Surgery may also be needed if the retina detaches from the back of the eye.





Tips for Keeping Your Eyes Healthy

> Know your family's eye health history. It's important to know if anyone in your biological family has had any eye diseases, because some are passed on from parents to children. > Eat fish high
in omega-3 fatty
acids such as
salmon, tuna,
and halibut.

> If you smoke, you should quit! Smoking is as bad for your eyes as it is for the rest of your body. Smoking puts you at higher risk for macular degeneration, cataracts, and other eye problems. > Use lubricating eye drops (keeping them in the refrigerator may make them more soothing).

> Eat a diet rich in fruits and vegetables, particularly dark leafy greens such as spinach, kale, and collard greens. > Wear sunglasses that block both kinds of ultraviolet light (UV-A, and UV-B).

> Wear other protective eyewear (safety glasses, goggles, eye guards) when playing sports, or doing anything that could produce flying dust or other particles. > Give your eyes a rest when working at a computer. For example, try to follow the 20/20/20 rule: about every 20 minutes, get up from the computer and look 20 feet in the distance, for at least 20 seconds. > Always wash your hands before putting in your contact lenses. Follow your eye doctor's instructions for proper contact lens care and safety.



It's easy to take the gift of clear sight for granted. But the ability to see the world around us can be impaired many ways. In this booklet and video, you've learned that many kinds of eye diseases produce no pain or other symptoms in their early stages. One key take-away, therefore, is that **everyone should have regular comprehensive eye exams by an eye doctor**—not just screenings at school or during a regular doctor's visit. That may miss important eye and vision health issues.

Regular, life-long eye care is an essential part of your overall health. Early detection and treatment of eye problems can greatly lower your risk of impaired vision or blindness, and can help preserve your quality of vision. There are effective treatments for many common eye conditions, but prevention is even better than treatment!

You've seen how you can take steps now to reduce your risk of eye problems, and increase the chance that you can enjoy clear vision throughout your lifetime.





All About Vision www.allaboutvision.com

American Diabetes Association www.diabetes.org

American Foundation for the Blind www.afb.org

American Glaucoma Society www.americanglaucomasociety.net

American Optometric Association www.aoa.org

Eye Care America www.eyecareamerica.org

National Eye Institute www.nei.nih.gov

Think About Your Eyes www.thinkaboutyoureyes.com





American Optometric Association

The American Optometric Association, a federation of state, student and armed forces optometric associations, was founded in 1898. Today, the AOA is proud to represent the profession of optometry, America's family eye doctors, who take a leading role in an individual's overall eye and vision care, health and well-being. Doctors of optometry (O.D.) are independent primary health care professionals for the eye and have extensive, ongoing training to examine, diagnose, treat and manage disorders, diseases and injuries that affect the eye and visual system, providing about half of primary eye care in the U.S. For information on a variety of eye health and vision topics, and to find an eye doctor near you, visit www.aoa.org.

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JANETTE MÁRQUEZ

Opera Singer Legally blind from congenital glaucoma

...and the people who share their personal eye health stories.

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With the exception of photos of Janette Márquez, other people depicted in this booklet are models.

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EALTHY EYES

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You'll learn:

- How your eyes work Tips for eye health
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FEATURING Janette Márquez

Opera Singer living with glaucoma







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