Sunglasses

Sunglasses are popular for comfort and fashion, but now there is medical evidence supporting the use of sunglasses to protect the long-term health of the eyes by limiting their exposure to ultraviolet (UV) light.

More than a dozen studies have shown that spending hours in the sun without proper eye protection can increase the chances of developing age-related eye diseases like cataracts and macular degeneration. Ophthalmologists (Eye M.D.s) now recommend wearing UV-absorbent sunglasses and wide-brimmed hats when in the sun long enough to get a suntan or sunburn.

People mistakenly confuse the ability of sunglasses to block UV light with the color and darkness of the lenses. In truth, UV protection comes from a chemical coating applied to the surface of the lens. Shop for sunglasses that absorb 99% to 100% of all UV light. Some lens manufacturers' labels say "UV absorption up to 400 nm." This is the same thing as 100% UV absorption.

In addition to UV light, sunlight also has low levels of infrared light rays. Infrared wavelengths are invisible and produce heat. The eye seems to tolerate infrared well. Research has not shown a connection between eye disease and infrared light ray exposure.

Polarized lenses cut reflected glare, such as sunlight bouncing off water, pavement, or snow. Sunglasses with polarized lenses are popular and useful for fishing, driving, and skiing. Polarization has nothing to do with UV light absorption, but many polarized lenses are now made with a UV-blocking substance.

Wraparound sunglasses are shaped to keep light from shining around the frames and into the eyes. Studies have shown that enough UV rays enter around ordinary frames to reduce the benefits of protective lenses. Large-framed, close-fitting wraparound sunglasses protect the eyes from all angles. Wraparound sunglasses should be considered by commercial fishermen, mountain climbers, skiers, or anyone who spends time at high altitudes or on the water.

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Eyeglasses

Sixty percent of the 161 million Americans who wear prescription eyewear choose eyeglasses. Wearing eyeglasses is one of the simplest ways to correct vision problems.

To see images clearly, light rays must focus directly on the retina, the light-sensitive nerve layer that lines the back of the eye. There are different kinds of focusing problems, called **refractive errors**, which may require corrective lenses. In the case of **myopia** or nearsightedness, the eye is too long. Light rays focus before reaching the retina and images appear blurry. In **hyperopia** or farsightedness, the eye is too short, so light rays have not yet focused when they reach the retina. **Astigmatism** describes an eye with a cornea that is oval shaped instead of round, causing light rays to hit the retina in more than one place.

Eyeglass lenses compensate for an eye that is too long or too short by adding or subtracting focusing power. The lenses create just the right amount of focusing power so light rays focus directly on the retina.

A plus (+) in front of the first number of the eyeglass prescription means the lens corrects farsightedness. A minus (-) in front of the first number means the lens corrects nearsightedness. If a second and third number are present in the prescription, they indicate astigmatism. The higher the first number in the prescription, the greater the correction in the lens.

Lenses are available in glass, regular and high index plastic, and polycarbonate. Although they scratch less easily, glass lenses tend to be heavier and often slide down the nose. Plastic and polycarbonate lenses are lighter and safer than glass but scratch easily. Scratches cannot be removed but they can be avoided or minimized with appropriate care. Scratch resistant coatings can be applied to plastic and polycarbonate lenses but some of these coatings crack if exposed to extreme heat or cold.

Frames come in many shapes and sizes, so it is important to pick a frame that is best for you. Factors to take into consideration when selecting a frame include facial features, age, activities, and the prescription itself. Often a strong prescription requires thicker lenses, which can affect your choice of frames. Ask about the quality and expected lifetime of the frame and if there is a frame guarantee.

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Legal Blindness

Normal vision, or 20/20 vision, means that a person can read the smallest letters or see the pictures on an eye chart when standing 20 feet away from the chart. Some people cannot see normally even with eyeglasses or contacts because a medical condition affects their vision. These people are called visually impaired or visually disabled.

If a visual impairment limits vision to 20/200, or one-tenth of normal vision, a person is considered **legally blind.** Being legally blind, however, does not mean a person is totally unable to see. People with 20/20 vision but less than 20 degrees of side (peripheral) vision can also qualify as legally blind. People who see well with only one eye are not considered legally blind, nor are people who wear glasses to see better than 20/200.

Most legally blind people function quite well, especially if they have been visually impaired since childhood. Older children and adults with visual impairments may need magnifying lenses for reading and telescopes for distance viewing. People with very poor vision may need to learn Braille and walk with a seeing-eye dog or a cane.

Young children with visual disabilities should have help from a teacher of the visually impaired and should be evaluated for developmental problems by professionals experienced with visual impairments. Parents may need to be advocates for their children to obtain needed services through the school system.

Visually impaired people of all ages benefit from social service, occupational therapy, and orientation and mobility training. Many new devices are available to help them cope with vision loss, including books on audiotape, scanners that can turn print into Braille, watches that can be “read” with the fingers, and “talking” computers and calculators.

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Living With Low Vision

Low vision is loss of eyesight that makes everyday tasks like reading, writing, crossing the street, or watching television difficult. When vision cannot be improved with eyeglasses, medicine, or surgery, people with low vision need to know how to best maintain their existing vision and best utilize the vision they still have.

Low vision can affect central or peripheral vision, depth of perception, or visual processing.

Low vision may be caused by eye injuries or conditions such as age-related macular degeneration, glaucoma, diabetic retinopathy, or retinitis pigmentosa.

Vision rehabilitation can help people with low vision. You can learn new strategies to complete daily activities, regaining confidence in your ability to live independently despite vision loss.

There are many low vision aids available, such as magnifying spectacles, hand and video magnifiers, and telescopes, that can help you make the most of your remaining vision. Learning to adjust lighting appropriately can often improve your vision for reading, cooking, dressing, and walking up and down stairs.

What can you do to prevent vision loss?
Early examinations can help reduce the risk of vision loss. If you are experiencing difficulty seeing, it is very important to visit your ophthalmologist (Eye M.D.) immediately to get a comprehensive examination. Diagnosis and possible treatment of your eye condition may slow progression of the vision loss and in some cases can improve vision.

A low vision examination may also be helpful. Rehabilitation may be possible. A low vision examination differs from a normal eye exam in that it is typically longer and involves a number of tests that you may not be familiar with.

Typically, the ophthalmologist reviews your medical and ocular history and then asks you for detailed information about your vision problems and how they are affecting your everyday life.

After taking your history, your ophthalmologist will do a number of tests to assess your vision. These tests may include:

- refraction to assess your vision and determine if glasses may be of any use;
- dilated internal examination of the eye;
- visual field testing of your peripheral vision;
- ocular function testing for depth perception, color perception, and contrast sensitivity;
- ocular motility testing to determine how well your eyes move; and
- evaluation and trial of many different low vision devices, such as magnifiers, improved lighting,

closed-circuit TVs, and electronic devices.

Having frequent eye examinations helps to ensure that your eyes will remain as healthy as possible. If you are experiencing difficulty with your vision, it is important to see your ophthalmologist right away. A comprehensive eye examination can catch eye-related problems early and help reduce vision loss.

Resources

Remember, you are not alone, and you deserve access to the information and tools you need to make the most of your sight. For more information about low vision, vision rehabilitation, and low vision aids, use these resources:

American Academy of Ophthalmology Web site
www.aao.org/aao/patient_ed/smartsight.cfm

American Foundation for the Blind
11 Penn Plaza, Suite 300
New York, NY 10001
800.232.5463
www.afb.org

Lighthouse International
111 East 59 th Street
New York, NY 10022
800.829.0500
www.lighthouse.org

National Association for Visually Handicapped
22 West 21 st Street, 6 th Floor
New York, NY 10010
212.889.3141
www.navh.org

National Library Service for the Blind and Physically Handicapped
Library of Congress
1291 Taylor Street, NW
Washington, DC 20011
800.424.8567
www.loc.gov/nls

Vision Connection
800.829.0500

www.visionconnection.org

In the “Help Near You” section, search under both “low vision services” and “vision rehabilitation.”

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Contact Lenses

Contact lenses are thin, clear, disks of plastic that float on the tear film that coats the cornea, the clear front window of the eye. Contact lenses are used to correct the same conditions that eyeglasses correct:

- myopia (nearsightedness);
- hyperopia (farsightedness);
- astigmatism; and
- presbyopia.

Hard Contact Lenses

Most kinds of hard contact lenses are rarely used today. However, **rigid gas-permeable(RPG)** lenses, which hold their shape yet allow the free flow of oxygen through the lens to the cornea, are easier to adjust to and more comfortable to wear than the older kinds of hard lenses. These lenses may be the best choice in cases where the cornea has enough astigmatism (that is, shaped like an egg instead of an orange) that a soft lens will not provide sharp vision. They may also be preferable for people with allergies or who tend to form an excess of protein deposits on their lenses.

Soft Contact Lenses

Soft contact lenses are the choice of most contact lens wearers for their comfort as well as for the many options available today. These options include:

- **Daily-wear lenses.** These lenses are the least expensive, are removed and cleaned nightly, and are replaced on an individualized schedule. They should not be used as an extended-wear lens.
- **Extended-wear lenses.** These lenses are worn overnight and are removed at least weekly for thorough cleaning and disinfection. They are being recommended less frequently, since there is a greater risk of corneal infection with any overnight wear of contact lenses. The decision to accept the risks and benefits of extended-wear lenses requires a process of evaluation between you and your ophthalmologist (Eye M.D.). Once you have been carefully fitted for your contact lenses, it is important to have follow-up examinations with your ophthalmologist to ensure continuing eye health. As with any contact lenses, extended-wear lenses should be removed at the first sign of redness or discomfort.
- **Disposable-wear lenses.** These lenses are more expensive but more convenient. They are removed nightly and replaced on a daily, weekly, or monthly basis. Disposable lenses are sometimes recommended for people with allergies and for those who tend to form protein deposits on their lenses. Colored and toric lenses can be disposable as well.
- **Colored contact lenses.** These lenses can change the appearance of your eye color to varying degrees. Just like other contact lenses, colored (or tinted) contact lenses are medical devices that require a prescription. The same precautions and care regimens apply to colored contact lenses as to other lenses.
- **Toric contact lenses.** These lenses can correct astigmatism, although sometimes not as well as RGP lenses. They usually cost more than other contact lenses.

Contacts for Presbyopia
As one ages, correction for near vision is often necessary because the lens of the eye cannot change shape as easily as it once did. This common condition, called presbyopia, can be corrected in one of three ways:

- Wear your distance correction in the contacts and wear reading glasses when needed.
- Wear one contact for distance vision and one for near vision. This option is called monovision; it works well for many people but not for everyone. You may need a trial period to decide if monovision is for you.
- Wear bifocal contacts, which are designed to allow both distance and near vision. These lenses are somewhat more expensive to fit and may not provide satisfactory vision for all people.

Caring for Contact Lenses
Lenses that are old or not properly fitted may scratch the eye or induce blood vessels to grow into the cornea, so their fit should be re-evaluated on a regular basis.

Any lens that is removed from the eye needs to be cleaned and disinfected before it is reinserted. Lenses that are not properly cleaned and disinfected increase the risk of eye infection. Your doctor will discuss the best type of cleansing system for you, depending on the type of lens you use, any allergies you might have, and whether or not your eye tends to form protein deposits. Care of contact lenses includes cleaning their case, since it is a potential source of infection. The case should be rinsed with water, wiped, and allowed to dry.

Eyedrops can interact with all types of contact lenses, so it is best to avoid their use while wearing lenses, except for wetting or lubricating drops recommended by your eye doctor.

Daily-wear lenses should not be worn while sleeping.

Homemade saline (salt-water) solutions have been linked to serious corneal infections and should not be used.

Cosmetics and Contact Lenses
Contact lens wearers who use cosmetics are at special risk for eye problems, including irritation, allergy, dryness, injury, and infections of the eye. They may contaminate their lenses with the oils, residues, and possible bacteria found in cosmetics. Some simple precautions can minimize the chance of contamination:

- Keep your makeup dry and avoid touching it with your fingers.
- Always wash your hands before touching your contact lenses, using gentle soaps that are free of cream, deodorant, antiseptics, and heavy fragrances.
- Insert your contacts before applying makeup, and take them out prior to removing makeup.
- Use cosmetics labeled “hypoallergenic,” “for contact lens wearers,” or “for sensitive eyes,”

which are designed to be free of irritants.

- Apply makeup lightly close to the eye. You should apply mascara only to the outer half of the lashes, and avoid applying eyeliner inside the lower eyelid.
- Buy fresh mascara, eyeliner, and eye shadow products every three months.
- Hairspray, deodorant, cologne, mousse, nail polish, and nail polish remover should be used only before inserting your lenses to prevent damage to your lenses. If you must use hairspray while wearing contacts, close your eyes tightly while spraying and then leave the area quickly.
- Never wear contacts when using hair dyes, permanent wave lotions, or medicated shampoos.

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