

INSIGHTS

Blind Spot: Age-Related Macular Degeneration Affecting More Older Americans Than Ever

For some people over the age of 55, reading this article is a difficult task. That's because the middle of their eyes have blind spots that make it hard to see clearly. This is the result of age-related macular degeneration (AMD), a gradual deterioration of the macula, the middle of the retina in the back of the eye that's responsible for clear central vision. The macula is crucial for our ability not only to read, but to recognize faces, use computers and drive, among other important daily activities.

AMD is the leading cause of vision loss among older Americans, and its prevalence is increasing. According to the National Eye Institute, the estimated number of people with AMD is expected to more than double to 5.44 million by 2050. What's more, there is increasing evidence that exposure to damaging blue light from computer and smartphone screens, flat-screen TVs and energy-saving light bulbs may increase the risk of developing AMD.

There are two types of AMD: dry, or non-neovascular, and wet, or neovascular. Nearly 90 percent of AMD patients are diagnosed with dry AMD, an early stage of the disease that's caused by the thinning of the macula, a buildup of yellow or

white fatty deposits called drusen, or both. Wet AMD is a more serious form of the disease that's caused by the growth of abnormal blood vessels. It can lead to bleeding and more severe vision loss.

You can help protect your eyes from developing AMD by eating a healthy diet that's rich in carotenoids, such as lutein and zeaxanthin, which are found in leafy green vegetables and eggs, and wearing sunglasses that block harmful UV rays and high-energy visible (HEV) radiation. You may also consider wearing eyeglasses made with blue light-blocking materials. Smoking, high blood pressure, and abnormal levels of cholesterol increase the risk for developing AMD, so it's important to take steps to lead a healthy lifestyle.

AMD can lead to central vision loss making it difficult to read a newspaper or drive an automobile.

Normal Vision

Macular Degeneration



EYE CANDY

The Why of Eye Color



What makes your eyes brown—or gray, or green, or blue? That depends on three things: the amounts of melanin (or pigment), collagen, which is a structural protein, and light in the room you are in.

Melanin in the stroma, or upper layer of the iris, which surrounds the pupil, affects how much brown is in the eye. Collagen adds gray to the iris, while light adds blue.

Brown eyes have the highest concentration of melanin, causing them to absorb most of the light that enters the eye. Green eyes have smaller amounts of melanin and no collagen deposits, causing some of the light that enters the eye to scatter. This creates a bluish color that mixes with brown melanin to make green. Similarly, hazel eyes reflect light, causing brown and blue hues to mix.

Gray eyes lack melanin but have collagen deposits that prevent light from scattering, blocking blue hues. Blue eyes have no melanin or collagen deposits. Their color is caused by structural coloration, in which the eye causes all light to scatter, creating a bluish hue.

EYE-Q

Q: How common are blue eyes?

See answer on back.



Health Problems From Out of the Blue

Though light helps us to see, some light wavelengths can cause damage to our eyes and to our health if we don't take precautions. Blue light, a high energy light that reaches the back of the eye and scatters, can cause health problems. Though the sun emits blue light, it has now been brought indoors by our computer and smartphone screens, flat-screen TVs and energy-saving light bulbs, exposing our eyes to more blue light than ever.

"Blue light is a triple threat," explains Greg Naes, president of BluTech® Lenses, which makes lenses designed to filter damaging blue light. He says that blue light can cause eye strain and fatigue and affect sleep cycles, and may contribute to damage of the macula, which is responsible for sharp, central vision.

He cites the daily use of electronic screens that are backlit with blue light as a growing problem that can affect sleep, contributing to sleep disorders, which now affect up to 70 million Americans. In fact, Adam Berger, M.D., author and blue light expert warns that sleep problems will likely worsen over the next decade, when we'll see more studies confirming the relationship between blue light exposure and the disruption of the sleep-wake cycle.

How can you protect your eyes from blue light? Naes says that glasses that filter blue light are like sunscreen for the eyes. Designed for anyone who uses a digital device more than three hours a day, they are especially helpful

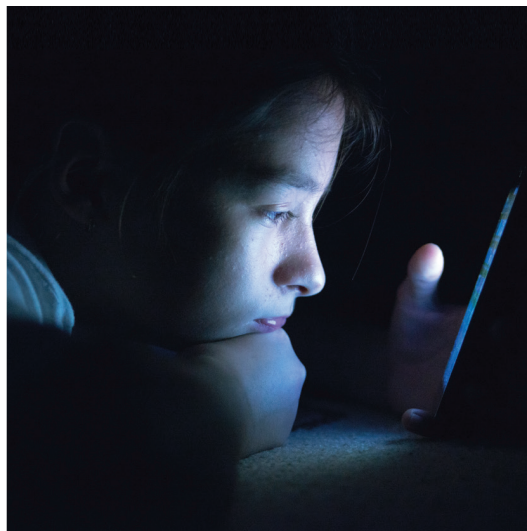
for children, who may lack protective pigments that develop with age. What's more, children tend to hold devices closer to their eyes, and their larger pupils let in more blue light. Studies show that blue light can increase the risk for developing sleep disorders, behavioral problems, such as ADHD, obesity and vision loss.

BluTech has designed lenses for LensCrafters called FeatherWates® Blue IQ that filter most blue light at no additional cost over the traditional FeatherWates®. As an added benefit, each pair of glasses includes a premium AR coating to absorb annoying glare and reflections. Naes says they're a great prescription or non-prescription solution for anyone concerned about the effect of blue light on the eyes.

Naes asks, "Do you want your lenses with protection or without?"

Am I Blue?

Now more than ever before, our eyes are exposed to dangerous blue light that can affect vision and increase the risk of health problems, including sleep disorders, ADHD and obesity.



History of Eye Shadow



Next time you apply eye shadow, consider this: ancient Egyptians did the same thing as long as 12,000 years ago. Instead of Covergirl®, they used kohl, a dark-colored powder made from burnt almonds, pigments like ochre, metals and elements, such as antimony, lead and oxidized copper, and colorful minerals, such as malachite.

In the early 20th century, eye shadow manufacturing shifted from the home to commercial production. Around the same time, chemists perfected methods for removing makeup. After World War I, dark eye shadow became very popular when actress Theda Bara wore it in the silent movie adaptation of *Cleopatra*.

Since then, trends in eye shadow colors have changed with the times, from the pinks and greens of the 1930s to the 60s' mod look in white to the browns of the 90s. Today, eye shadow comes in powders and creams with entire palettes of colors available.

If you wear eye makeup, put your contacts in before applying it, remove it before bed, and replace your cosmetics regularly to avoid bacterial buildup. Don't share cosmetics, and wait for an eye infection to heal before using fresh, new eye makeup.

Eye Am Puzzled

(See answers on back cover.)

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WORD SEARCH (CAN BE HORIZONTAL, VERTICAL, DIAGONAL AND BACKWARDS)

ACUITY	EYEBALL	OPTOMETRIST
ALLERGIES	EYEGLASSES	PERCEPTION
ANNUAL	EYESIGHT	PRESBYOPIA
ASTIGMATISM	FARSIGHTED	PUPIL
BIFOCALS	FLOATERS	READING GLASSES
BLUE LIGHT	FRAMES	REFRACTION
CHECKUP	GLARE	SIGHT
COLORBLINDNESS	INTRAOCULAR PRESSURE	SLIT LAMP
CONJUNCTIVITIS	IRIS	SMART CONTACTS
CONTACTS	KERATITIS	SNOWBLINDNESS
CORNEA	MACULA	SPECTACLES
DAILIES	MYOPIA	STYE
DISPOSABLE LENSES	OPHTHALMOSCOPE	VITAMIN B
DRY EYE	OPTICAL	
EXAMINE		
EYE DROPS		



What Are B Vitamins?

Can a vitamin protect your eyes from developing cataracts? A recent study says...maybe.

Data from more than 3,000 people between the ages of 55 and 80 who were followed for nearly a decade, found an association between certain B vitamins and protection against developing cataracts, which causes blurry vision and makes it difficult to see at night.

Vitamins B2 (riboflavin), B3 (niacin), B6 and B12 were associated with a decreased risk of mild and moderate cataracts.

Good sources of vitamin B6 include beans, cantaloupe, chicken, dark leafy greens, fish, fortified cereal, oranges and papayas. B12 is found in shellfish, chicken, eggs, dairy, and meat, while B2 is found in eggs, fortified cereal, grains, green vegetables, kidney, liver, and milk. B3 is found in many of the same foods, including eggs, chicken, fish and milk, but also peanuts and rice.

The National Institutes of Health recommends daily amounts for (non-pregnant) adults:

B2: 1.1-1.3 mg

B3: 14-16 mg

B6: 1.5-1.7 mg

B12: 2.4 mcg

Ask your optometrist what's right for you.

The Eyes Are Like a Camera, Or Are They?

Your human eye is one of the most complex organs in the body, and yet it works as simply as a camera.

Just like a camera, light enters through the front, or the cornea, where it is focused onto a thin layer of tissue, called the retina, in the back of the eye. The iris acts like the eye's shutter. Along with the pupil, it controls the amount of light that comes into the eye.

Like a camera, the eye has a lens that lengthens or shortens to focus light, while the retina acts like film or a digital camera's sensor, capturing light and sending impulses to the brain through the optic nerve.

Both the eye and a camera are sensitive to light, shade and color, and they can register objects that are small or large, far or close. But which is more accurate? That may well be the camera, which, unlike the eye, doesn't "play tricks" on you.

A standard camera has light sensitive photoreceptors that are evenly distributed. But our eyes have different types of photoreceptors, called cones and rods, that are unevenly distributed, and lack receptors in the very center. This can make some objects, like faint stars, look like they have disappeared when we look right at them. And in low light, we start to see in monochrome.

Then again, a 17mm camera lens has a field-of-view of about 93 degrees, while the eye can see 180 degrees when facing forward. And the eye can see higher resolutions than the photos that even the highest quality digital camera can take. The more pixels, the

higher the resolution. The human eye has about 130 million pixels, whereas the camera on your iPhone has about 8 million, and fancy, \$6,000 cameras have about 20 million.

Unlike cameras, however, our eyes don't see alone. Our brains process what we see amazingly fast—as little as 13 milliseconds. But the brain also fills in the blanks with what we know from experience, translating reality rather than reporting it. That's why we can be tricked by optical illusions, thinking we see something that's not there, whereas a camera captures exactly what it sees.

Which Sees Better?

Though the eye operates much like a camera, it's better at some things and worse at others.



Smart Contacts

If you thought that Google's glasses were cool, wait until you see their new contact lenses, which the tech giant is developing with pharmaceutical company Novartis, to help patients manage diabetes.

The goal is to eliminate the need for daily blood sugar tests, which require patients to make pin pricks in their fingers to draw blood for testing. One in 12 Americans has diabetes, a chronic condition that has more than doubled in the past three decades.

Now just a prototype, Google's digital contact lenses are made with tiny wireless chips and glucose sensors that measure blood sugar levels in the tears once per second. These electronics are so tiny, they look like pieces of glitter, and the wireless antenna is reportedly thinner than a human hair. The lenses may someday feature tiny lights that signal dangerous blood sugar levels.

Though the lenses are still being tested, Google has run clinical research studies and the company is discussing approval for sale with the U.S. Food and Drug Administration.



Got a Shiner? Here's What to Do.

If you've ever had a "shiner"—a black eye—you know one thing for sure: it hurts. But how do you know when it's time to see a doctor?

After an injury to the eye, blood and fluid collect in the tissue around the eye, causing the skin, which is thin, to appear black and blue. Pain and swelling often accompany a black eye, but the eye itself is usually not injured.

Most black eyes are minor injuries that heal on their own, eventually turning green or yellow before fading away. You can treat the swelling by applying a cold compress—or even a bag of frozen peas—to the injured eye for 15 minutes every waking hour for the first 24 hours. (Do not use raw meat, which can increase the risk of infection.) For minor pain, taking acetaminophen can often help.

But if you experience more severe symptoms, you should seek medical care immediately. This includes dizziness, fainting, a loss of consciousness, blurry or double vision, vision loss, flashes or

floaters, vomiting, severe pain, persistent headache or fever. These can be signs of a concussion, a detached retina or a hyphema, which is bleeding in the front of the eye that may be visible. These conditions are truly medical emergencies, so if you experience any of these symptoms with a black eye, go to the emergency department of the nearest hospital.

A doctor will ask about symptoms and perform a complete eye examination, checking your vision, the structure of the eye, and the bones around the eye. If a bone fracture is suspected, an X-ray or CT scan may be performed. The treatment depends on the cause of the symptoms.

Black eyes can be caused by a blow to the eye or nose, surgery to the face, allergic reactions and dental infections. You can avoid getting a black eye by wearing proper eye gear during sports and yard work, preventing falls in your home, wearing seat belts in cars and helmets while riding bicycles and driving motorcycles.

A Black Eye for Basketball

According to the National Eye Institute, basketball is responsible for the most sports-related eye injuries in the United States, followed by watersports and pool activities, use of air guns, baseball, softball and football.



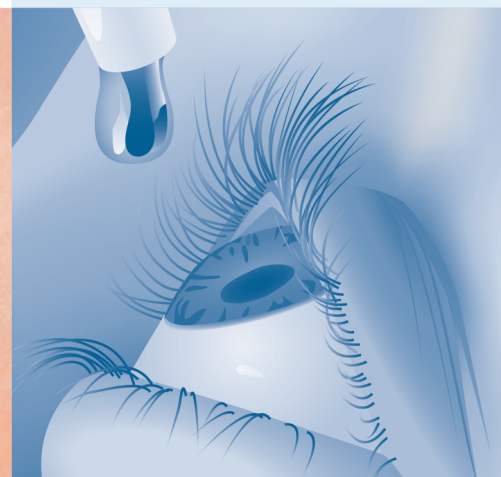
Why Should You Dilate the Eyes?

If you think you don't have time for a dilated eye exam, think again. Though it takes up to 20 minutes to dilate the eyes and several hours for the associated blurriness to subside, skipping this important part of your eye exam could prevent you from discovering health issues before they become serious.

When your doctor uses eye drops to dilate, or widen, your pupils, it makes it easier to see the back of the eyes during examination. This allows your optometrist to check for signs of glaucoma, a buildup of pressure in the eye that can often damage the optic nerve or cause a retinal detachment.

People with diabetes should have regular dilated eye exams, because this condition can lead to vision loss or even blindness. Dilation allows your doctor to see areas damaged by diabetes, such as blood vessels in the retina.

Because the risk of eye diseases increases with age, your optometrist may recommend an annual dilated eye exam.





Dr. Robert Goldberg
Guest Optometrist
New York City

Q: I've been experiencing dry eyes, especially when I wear my contacts or use my computer. What can I do to alleviate the dryness and make my lenses more comfortable to wear?

A: Problems with the outer, oily layer of the eye can cause tears to evaporate faster, while deficiencies in the inner, mucous layer, which keeps the eye comfortable, can cause a scratchy, uncomfortable feeling. Some people even have problems with both layers.

Contact lenses can often exacerbate symptoms of dry eye, in part because lenses can affect the surface of the eye's mucous layer. Also, contact lens wearers tend to blink less often, which can contribute to dryness in the eye, especially when they're staring at a computer screen.

Patients with dry eyes have several options for care. Sometimes, all it takes is a contact lens with a higher water content to make your eyes feel more comfortable. I often recommend DailiesTotal One® gradient contacts, which have more water where the lens touches the eye. No one lens is perfect for everyone, though, so work with your optometrist to find the contact lenses that feel most comfortable for you.

For anyone with dry eye, rewetting drops can be a good option. You can find over-the-counter eye drops at your local pharmacy or supermarket. Note that not all eye drops, particularly

those called "artificial tears," are suitable for use with contact lenses. Be sure to ask your optometrist which brand is best for you.

If over-the-counter eye drops don't alleviate dryness, your doctor may prescribe medications, such as Xiidra™ or Restasis®, which can help increase tear production. These drops must be used twice daily for weeks or months before you feel relief, so it's important to take them as directed by your doctor.

There are some things you can do on your own to help alleviate symptoms of dry eye. Make a conscious effort to blink more often, especially when you're using your computer or digital device. In fact, it's estimated that people who stare at computer screens, smart phones or tablets tend to blink about a third of the time they normally do, which can dry your eyes out. Also, talk to your doctor about switching your seasonal allergy medicine, because antihistamines can often be the cause of dry eyes.

The Dry Facts

Contact lens wearers tend to blink less often, which can contribute to dryness in the eye, especially when they're staring at a computer screen.



What is the Sclera?

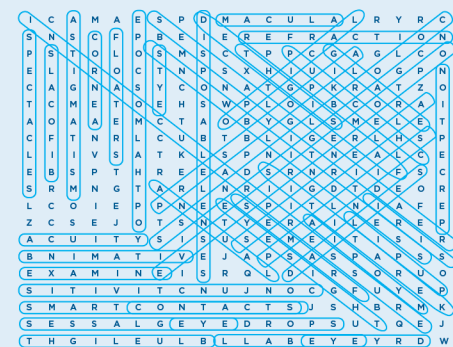
If you watched cartoons as a child, chances are you heard Elmer Fudd mention the "whites of the eyes" as he chased after Bugs Bunny. Called the sclera, the white outer layer of the eye is made of tough and fibrous tissue that protects the inner parts of the eye. In other mammals, the visible part of the sclera matches the color of the iris, but in humans, the "whites of the eyes" are easily seen. In fact, the human sclera covers about 90 percent of the eye's outer coating. In babies, however, the sclera is thin, revealing the eye's blood vessels, making the "whites" sometimes appear blue in color.



Answer to Eye-Q (from page 1)

A: In the U.S., about one in six babies is born with blue eyes, down from 50 percent one hundred years ago.

Answers to Puzzle (from page 3)



CONTACT

ALLDocs
Heather Kreidler
3509 Haworth Drive Suite 208
Raleigh, NC 27609
hkreidler@foxyeyecare.com
919.763.7522 919.263.2020

Eyedeaz LLC
kzierler@comcast.net
908.447.1562

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