

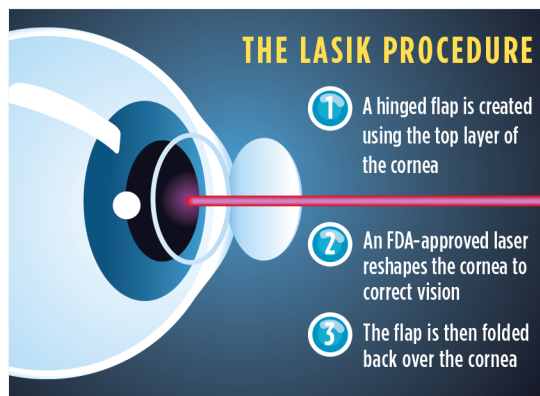
INSIGHTS

Laser-focused on LASIK

So, what is LASIK (LAY-sik)? By now you've likely heard of the term and may even know someone who has had it, but you might not know exactly what it is. LASIK is the acronym for laser-assisted in-situ keratomileusis. Lasik is a laser procedure which is a kind of eye surgery known as refractive surgery used to correct common vision problems such as nearsightedness, farsightedness, astigmatism and presbyopia. In LASIK, the surgeon creates and lifts an ultra-thin flap from the surface of the eye and uses a laser to reshape the cornea. The flap is then replaced, serving as a natural bandage.

LASIK is highly popular in the U.S., but there are other kinds of refractive surgery including different laser and intraocular lens procedures. LASIK can help reduce your need for prescription eyeglasses and/or contact lenses. While the majority of people who get LASIK eye surgery can have 20/25 vision or better, as they age, a large number will likely need glasses for driving at night or reading.

LASIK surgery has been proven relatively safe and complications leading to a loss of vision are rare. Side effects may include dry eyes and temporary visual disturbances such as halos, haze, and glare. These side effects are usually short-term, lasting only a few weeks or months. Long-term or permanent problems seldom occur. Although most people who have had LASIK report being happy with the results, every person's response will be different. It



is important to note that not everyone is a good candidate for LASIK. Several factors can reduce the chance of success.

Those with mild nearsightedness tend to have greater success with refractive surgery while people with a high degree of nearsightedness or farsightedness along with astigmatism may have less favorable results. The risk for certain complications depends on a patient's general health including their eye health. Having a disease such as diabetes that can interfere with the body's normal healing process can increase a person's risk of LASIK-related complications. If you are considering getting LASIK, you should tell your eye doctor about your general health before surgery.

Surgeon skill and supporting technology keep improving. As with any procedure, having a highly skilled and experienced surgeon perform it is key to a successful outcome and a reduction in LASIK-related complications. Remember, LASIK is not appropriate for everyone. Ask your eye doctor if LASIK is right for you.

EYE CANDY

Sandman Cometh at Night



The Sandman is the subject of the popular American song titled "Mister Sandman" released in 1954. Perhaps, you recall the opening chorus:

*"Mr. Sandman bring me a dream,
Make him the cutest that I've ever seen
Give him two lips like roses and clover
Then tell him that his lonesome nights
are over..."*

The tale originated in Europe in the 1700s and may date further back to ancient Greece. In Germany, the Sandman was considered a demonic figure that would visit children at night and bewitch them. Those who fell asleep right away were deemed to be good and obedient, but children who resisted his magic dust risked terrible punishment from mutilation to eternal death. At the time, children worked to help support their families. Parents would read this twisted tale to coax their offspring to sleep so they'd be fully rested for the next work day.

Danish author, Hans Christian Andersen, turned the Sandman into a gentle creature that lulls children to sleep by sprinkling them with magic dust and bestowing them with sweet dreams. This version made it to the New World and the rest is fabled history.


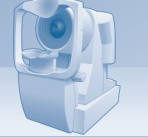



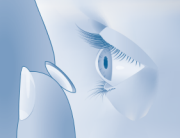






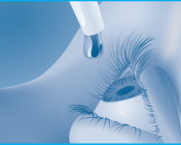


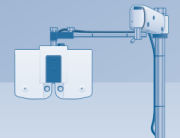


EYE-Q

Q: Does the cornea contain blood?
See answer on back.

The Nuts and Bolts of a Comprehensive Eye Exam

As part of your annual exam, your doctor may perform some or all of the tests below, depending upon your individual visual needs:

PRESERVING A LIFETIME OF VISION: TESTS FOR EVALUATING YOUR EYE HEALTH

Visual Acuity Test  <p>One of the first tests that are done to help measure the sharpness of your vision. A standard printed or digital eye chart is used. The test evaluates how well your current glasses or contact lenses are working, and if you will need an updated prescription.</p>	Corneal Topography Test  <p>Creates an actual "map" of the surface curvature of the cornea, similar to making a contour map of land. Using computerized imaging technology, the three-dimensional map produced by the corneal topographer aids in the diagnosis, monitoring, and treatment of various visual conditions, including astigmatism.</p>
Cover Test  <p>A simple, routine test. A paddle is used to cover one eye at a time to help evaluate eye muscles. Can catch tendency toward crossed eyes in children. Evaluates for any indications of eye strain, which could be the result of strabismus or amblyopia (also known as "lazy eye").</p>	Refraction Test  <p>Fine tunes your eyeglass prescription along with other tests. The doctor places a phoropter (rotating lenses) in front of your eyes, which allows you to look through a series of lenses to determine which is clearest. The refraction determines your level of hyperopia (farsightedness), myopia (nearsightedness), astigmatism, and presbyopia.</p>
Color Vision Test  <p>This screening test evaluates color deficiencies in the eyes (red/green or blue/yellow) by asking you to pick out numbers from colored, mosaic-like illustrations. In addition to detecting your hereditary color vision deficiencies, the results may also alert your doctor to possible eye health problems that could affect your color vision.</p>	Contact Lens Evaluation  <p>Evaluates multiple elements including the shape of your eye, your vision correction needs, and how often you will use the contact lenses. If you've never worn contact lenses, your eye-care professional will show you how to use your lenses and how to clean, and store them.</p>
Visual Fields Test  <p>Checks for the presence of blind spots in your peripheral or "side" vision. These types of blind spots can originate from eye diseases such as glaucoma. Analysis of these blind spots also may help your doctor identify specific areas of brain damage caused by a stroke or tumor.</p>	Autorefractor Test  <p>A machine that automatically and more accurately determines your final eyeglasses or contact lens prescription. It is especially useful for those who may not be responsive to a manual refraction, such as children and the elderly.</p>
Slit Lamp Test  <p>Allows your eye doctor a highly magnified view of your eye to thoroughly evaluate the front structures of your eye (lids, cornea, iris, etc.), followed by an examination of the inside of your eye (retina, optic nerve, macula, and more). This test aids the doctor in the diagnosis of cataracts, dry eyes, corneal irritation, glaucoma, and age-related macular degeneration.</p>	Pachymetry Test  <p>Measures the thickness of the cornea. Conventional pachymeters use ultrasonic transducers that lightly touch the cornea. Newer generations work by way of sound waves that capture an ultra-high definition echogram of the cornea. Corneal pachymetry is an important test in the early detection of glaucoma.</p>
Tonometry Test  <p>Intraocular pressure is the fluid pressure inside of your eye. A computer measures the pressure inside of the eye to determine one of the risks for developing glaucoma. If the pressure is too high, an additional test may be used.</p>	Digital Retinal Fundus Photography  <p>Photographs the retina and the optic nerve (located in the back of the eye) to document the health of your eye. These images are used for the diagnosis of glaucoma, age-related macular degeneration, diabetic eye disease, high blood pressure-related disease, and other retinal diseases.</p>
Extended Ophthalmoscopy  <p>Offers your doctor a wider view of the eye's internal structures, including examination of the central and peripheral retina (thinning, holes, tears, diabetes-related side effects) by using a type of eye drop to help enlarge your pupils.</p>	Optical Coherence Tomography (OCT)  <p>Takes cross-sectional pictures of the retina via a scanning laser. This technology is used to diagnose and follow treatment in certain eye conditions and diseases such as age-related macular degeneration, glaucoma, and diabetic retinopathy.</p>
Stereopsis Test  <p>Assesses depth perception and determines if your eyes are working together. It is especially useful for identifying "lazy eyes" in children, which can be treated if identified when they are young. Special 3-D glasses will be worn.</p>	CLARIFYESM Digital Eye Exam  <p>The latest comprehensive digital equipment used to map the unique "fingerprint" of your eye. Its digital precision means less guessing between, "Which is better, 1 or 2?" No other eye exam is more precise, and it's only available to the doctors of optometry at LensCrafters[®].</p>
Macular Pigment Density Test (MPOD)  <p>Checks how much protective pigment is in the macula. A low amount of macular pigment increases the risk of age-related macular degeneration. Nutritional supplements can help reduce this risk by restoring depleted levels of the carotenoids lutein, zeaxanthin, and meso-zeaxanthin in your macula.</p>	Optomap Ultra-Widefield Retinal Imaging  <p>Creates a digital image that captures more than 80% of your retina in one digital panoramic image. Helps detect early signs of retinal disease including age-related macular degeneration, glaucoma, and diabetic retinopathy.</p>

How Different Species See the World

The way that humans see the world compared to animals has to do with our eyes.

Human retinas have a small depression in the center called a fovea: the area of our eyes' sharpest vision and color perception. However, instead of a fovea, many animals have a straight line or visual streak across the back of their retina to help them scan the horizon. A vast number of animals see more intense contrasts of light and dark because their night vision is superior to ours. Clear night vision involves seeing contrasts, but not necessarily color.

Photoreceptor cells in the human retina convert light rays into electrical signals that are sent to the brain and translated into the images we see. Rods and cones are 2 types of photoreceptors. Rods provide peripheral and night vision and detect brightness and shades of gray. Cones provide day vision and color perception. Human beings have sharp, long-distance vision and good depth perception; however, our peripheral vision is generally not as good.

Animals, like cats and dogs, have a high concentration of rod receptors and a low concentration of cone receptors. Humans, on the other hand, have more cone receptors and fewer rods receptors. This is why we cannot see as well at night, but can better detect color.

Humans can see a greater range of tones and colors. Other than birds and primates, most animals see just 2 colors

(blue and green). Bees, however, have a much broader range of color vision than humans. They are trichromatic like us, which means that they have three photoreceptors and base their color combinations on three colors—ultraviolet light, blue, and green, while we base our color combinations on red, blue and green.

While our eyes have only one lens, cockroach eyes each have more than 2,000 lenses. The Madagascar hissing cockroach has up to 2,500 hexagonal lenses per eye. Because they have such a large number of lenses, cockroaches have excellent vision and are able to see more than one thing at a time. However, human vision involves seeing only one large image simultaneously.

Bees have two different types of eyes, each with its own set of functions. The three smaller eyes in the center-top of a bee's head are called ocelli ("little eye" in Latin). They have single lenses and help the bee maintain stability, navigate, judge light intensity, and see ultraviolet light. Bees also have two large compound eyes made up of thousands of tiny lenses called facets; each facet takes in one small part of the insect's vision.

Many small animals see in slow motion. While human eyes are able to capture up to 60 images a second, the dragon fly can see about 200 images in just one second. Their brain works so fast it sees movements as if in slow motion.



Stay Currant on Eye Health!

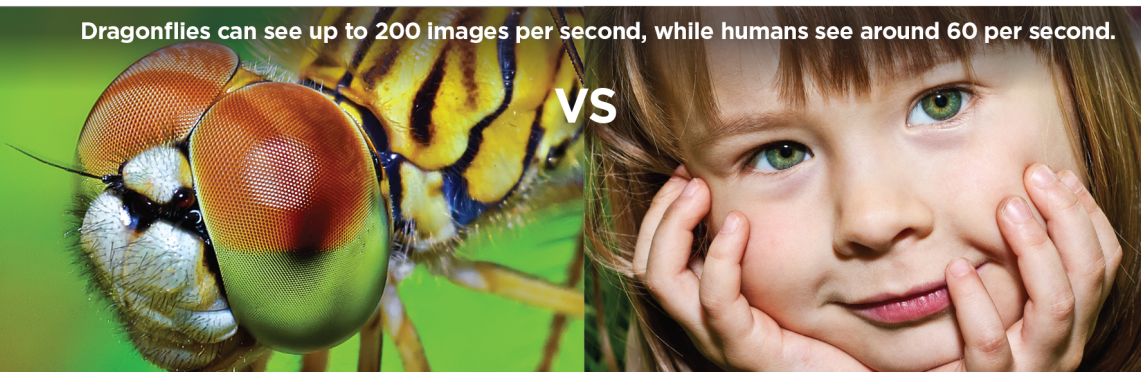
Black currant berries are dark purple in color and aromatic. They are native to northern Europe and northern and central Asia. Black currants are known as the "King of Berries" because they are powerful antioxidants containing several times the concentration of many vitamins such as vitamin C and minerals compared to other fruits. Black currant has been used as an herbal medicine and is found in many nutraceuticals and functional foods.

Dietary antioxidants have been shown to maintain eye health and vision. It is thought that black currants may help improve immune function and eyesight, reduce inflammation, and possibly prevent cataract, a common degenerative eye disease. One study in humans found that blackcurrant juice containing anthocyanins (flavonoids) helped the volunteers' eyes better adjust to darkness.

Black currants contain gamma-linolenic acid (GLA) belonging to the omega-6 fatty acids family. Fatty acids are linked to decreased inflammation of the eye's surface and dry eye, a chronic and inflammatory eye condition that blocks the production of quality tears needed to moisten and nourish the eyes. Foods like black currant seed oil, blue-green algae (spirulina), borage oil, and hemp seeds are rich sources of GLA.

Lutein, zeaxanthin and meso-zeaxanthin (carotenoids) also promote eye health. These antioxidants are found in the eye. Research suggests that lutein helps support visual function and helps protect eye health as we age.

Dragonflies can see up to 200 images per second, while humans see around 60 per second.



Focus on Astigmatism

The cornea, the transparent dome on the front surface of your eye, and the lens inside of the eye are supposed to be symmetrically round, like a basketball. But in some people, the cornea or the lens can be shaped more like a football. This abnormal, yet common curvature is called astigmatism, and it prevents the eye from focusing light evenly onto the retina, the light-sensitive tissue in the back of the eye. Like nearsightedness (myopia) or farsightedness (hyperopia), astigmatism is a refractive error, meaning that the shape of the eye prevents it from bending light correctly.

Astigmatism can cause distorted and blurred vision—both close and far. It can feel like you're looking at a fun house mirror. Other common symptoms and signs include eyestrain, headaches, and squinting, and it can make driving at night more difficult. Uncorrected astigmatism can impact your daily life and affect a child's ability to perform in school and during sports. People with astigmatism often have other vision problems, such as myopia or hyperopia—or both—at the same time.

Though the cause of astigmatism is unknown, it can be hereditary and it's usually present at birth. In fact, most people have some degree of astigmatism, though they might not notice any symptoms. It can, however, worsen with age. Sometimes, astigmatism develops after an eye injury, disease, or surgery.

Your doctor can diagnose astigmatism through a comprehensive eye exam, which tests your visual acuity—how well you can see both close and far—evaluates the curvature of the cornea and measures how your eyes focus light. Astigmatism is measured in diopters, and most people have at least a slight astigmatism of between .5 and .75 diopters. People whose eyes measure 1.5 diopters or more typically require contact lenses or eyeglasses to see clearly. People with keratoconus, a rare condition in which the cornea thins and becomes cone-shaped, can have a measurement of 20 diopters or more, possibly requiring a corneal transplant.

Corrective lenses, such as eyeglasses and contact lenses, help people with astigmatism to see clearly. Toric lenses are soft contact lenses specially made for people with astigmatism. Made of hydrogel material or silicone, they have different powers in different locations, called meridians, to correct varying amounts of myopia or hyperopia. While regular contacts have the same power in all meridians, toric lenses vary, so they are designed not to rotate when you blink. It may take trials of several brands of toric lenses before you find the one that best fits your unique eyes.

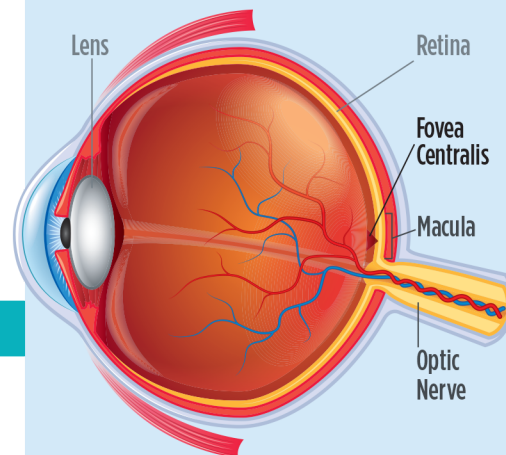
If you have astigmatism, don't worry. There is new lens technology out there to help correct the refractive error. Ask your doctor what's best for you.



What is the Fovea?

To understand what the fovea is we need to know about the retina, light-sensitive tissue that lines the back of the eye sending information to the brain through the optic nerve. The retina contains photosensitive cells called rods and cones that function the same way that film in a camera does. Unlike camera film that simply records light, the retina adapts to the intensity of light it receives. This is why you can simultaneously see things in brightly lit places and in shadows. Rods help us see at night and are responsible for our peripheral vision. Cones enable us to see color.

The fovea is a tiny pit or dimple that lies near the middle of the macula, which is an important part of the retina. It has the greatest number of cones that is responsible for our central vision. When we look at an object directly, we automatically move our eye so that light focuses on the fovea as it is the area of our eyes' sharpest and most brilliantly colored vision. It also protects us from bright light, especially ultra-violet light. Wearing sun glasses and hats helps protect our eyes, including the delicate cones of the fovea.



Don't compromise just because you have astigmatism.

Ask your eye doctor for
ACUVUE OASYS® 1-Day for ASTIGMATISM.



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Important information for contact lens wearers: ACUVUE® Brand Contact Lenses are available by prescription only for vision correction. An eye care professional will determine whether contact lenses are right for you. Although rare, serious eye problems can develop while wearing contact lenses. To help avoid these problems, follow the wear and replacement schedule and the lens care instructions provided by your eye doctor. Do not wear contact lenses if you have an eye infection, or experience eye discomfort, excessive tearing, vision changes, redness or other eye problems. If one of these conditions occurs, remove the lens and contact your eye doctor immediately. For more information on proper wear, care and safety, talk to your eye care professional and ask for a Patient Instruction Guide, call 1.800.843.2020 or visit Acuvue.com. ACUVUE®, ACUVUE OASYS® BLINK STABILIZED® and HydraLuxe™ are trademarks of Johnson & Johnson Vision Care Companies. © Johnson & Johnson Vision Care Companies 2017



Looking for Contacts? Contact your Optometrist

There is a wide variety of contact lenses available to treat vision problems and meet different patient needs. Standard contacts come in daily wear, extended wear models, soft lenses, hard lenses, or rigid gas permeable (RGP) lenses. They can be worn anywhere from one day, to two weeks, monthly, or more.

If you've never worn contact lenses, you may not be aware that they require some maintenance to ensure your eye health, including regular follow-up visits and careful lens care. Schedule a contact lens exam so that your eye doctor can help you choose the kind that is right for you. Here is an overview of some common types of contact lenses.

Hard contact lenses are made of a stiff material that does not mold to the eye's shape and decreases the amount of oxygen that reaches the cornea. Although they are durable and less expensive, they are the least comfortable type of contact lenses to wear.

RGP lenses allow more oxygen to reach the cornea because they are made of gas-permeable materials. They are slightly less durable and more expensive than hard lenses, but more comfortable to wear. While the extended wear version can be worn overnight, it is not advised. RGP lenses should be replaced after two to three years of use.

Soft contact lenses are usually made of a thinner and more flexible plastic. They are available as either non-disposables or monthly, weekly, or daily disposables. Disposable soft contacts are worn for a short time and require little cleaning and disinfection.

Extended wear contact lenses can be worn for 24 hours including overnight. However, overnight use may pose certain eye health risks, such as corneal trauma

or infectious keratitis. Be sure to follow your doctor's instructions on caring for your extended wear contacts.

Daily wear contacts may be worn for about 18 hours and are either reusable or disposable. Reusable daily contact lenses need to be carefully cleaned and disinfected every night.

Daily disposable contact lenses (1-days) have been clinically proven to be the most comfortable and safest to wear. They pose less risk of infection since they are designed to be worn for one day and discarded after each use.

Toric soft contact lenses are specially made to correct the warp in the cornea that causes astigmatism.

Bifocal and multifocal contact lenses are available in soft and RGP lenses. Bifocal contacts have two prescriptions in the same lens. Multifocal contact lenses have a range of powers (similar to progressive spectacle lenses) in each lens.

Orthokeratology (Ortho-K) contacts are a nonsurgical treatment using specially designed gas-permeable contact lenses to temporarily reshape the cornea to correct for low to mild myopia (nearsightedness). Newer models can correct for farsightedness as well as presbyopia. They are comfortable to wear and should be worn overnight.



A Case for Clean Contact Lenses



Less than 1% of contact lens wearers exercise proper contact lens care. To protect your eyesight, you will need to practice good hygiene and visit your eye doctor on a regular basis.

Contacts should be stored in a sterile solution-filled plastic container when not in use. If the lens solution isn't changed, but rather topped off, bacteria will grow in the case. This can lead to eye irritations, allergic reactions, and infections. You could also unknowingly transfer germs and dirt from your hands to your eyes.

Below are steps you can take to help maintain good eye health. Ask your doctor about appropriate care.

How to care for your contacts

- Thoroughly wash and dry your hands before putting in, removing, and storing contacts
- Regularly clean and disinfect your contacts with your optometrist's recommended cleaning solution
- Rub the lenses with your fingers and rinse them completely before storing them
- Store your contacts in a specified contact lens case filled with fresh, sterile cleaning solution; ensure that they are fully soaked
- Keep your case clean by:
 - Discarding used fluid
 - Washing it as directed by your eye doctor
 - Air drying it after each use before refilling it with new solution
- Replace your case every three months or sooner



Q: After years of wearing glasses, I'm ready to switch to contact lenses and am considering buying them online. Is it safe to do so?

A: Unfortunately today, it seems that a number of contact lens wearers are basing their choice of where to buy lenses on price. As a knowledgeable optometrist with a successful practice, I can tell you that a reputable practice is built on experience, patient trust, and confidence. Price means nothing in the face of value.

Within reason, patients shouldn't base their buying decisions only on price. People who purchase their lenses on the Internet often have no recourse of any kind, whereas a patient who buys contacts from a trusted eye doctor is able to return them if there is an issue. They also receive an in-depth, comprehensive eye exam to ensure that the prescribed lenses are suitable and fit properly and they are usually monitored to address any potential problems.

Online sellers are all about pricing, sales, and profit margins. They don't examine buyers to assess their visual acuity, nor are they concerned with their overall eye health, comfort, or the appropriateness of the lenses purchased. It's important to know that ill-fitting contact lenses could deprive the eye of oxygen and cause serious vision problems. To make matters worse, lenses sold online may even be expired. The same applies to contact lens solutions. Generic and out-of-date solutions are being sold in some retail stores and sometimes, old solutions are even rebottled!

Contact lenses are classified by the U.S. Food and Drug Administration (FDA) as either Class II or Class III medical devices. Extended wear contacts that can be worn overnight or longer are deemed to be Class III, because they pose a higher health risk when worn without any proper medical supervision. Unlike accredited eye doctors, Internet lens sellers are not governed by a state medical or government board. Since they don't have to comply with FDA standards, this puts contact wearers at risk for eye injuries and other visual problems. For example, some suppliers don't require a valid prescription to purchase contacts, as required by law. Several manufacturers of lenses sold online are not well known and are based outside of the U.S.

There are concrete benefits to buying from recognized brand name manufacturers. They continually educate doctors and their staff about the latest lens technology, materials, and lens use. Optometrists are generally reluctant to prescribe or fit contact lenses made by manufacturers that they're not familiar with. They prefer, instead, to prescribe lenses produced by established companies with whom they share a professional working relationship.

I highly recommend that contact lens wearers develop a long-term relationship with an eye doctor they trust and get annual eye exams. No wearer should risk their precious eye health and eyesight in return for cheaply priced lenses.



Is 20/20 Vision Enough?

About 80% of what children learn is learned visually.¹ Children rely on their vision to perform various school tasks including reading, writing, whiteboard and computer work. Kids who have uncorrected vision problems may struggle academically; approximately one in four have vision problems that may result in learning and/or behavioral challenges.¹

Just because a child passes a school screening does not mean they don't have a vision problem. Many school vision screenings only test for distance visual acuity. A child who can see 20/20 may still have a vision issue. Parents may not be aware of changes in their child's vision that could be affecting school performance.

Your child should have an annual comprehensive eye exam to detect and treat vision problems early on. The exam should evaluate their ability to see and focus clearly, the need for glasses or contacts, their eye health, as well as other visual skills. They may be prescribed different treatments including eyeglasses, contact lenses or vision therapy.

Reference: 1. Data on file.

Answer to Eye-Q (from page 1)

A: No. Unlike most of the tissues in the human body, corneal tissue does not contain blood vessels. It nourishes itself from tears and aqueous humor.

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