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Special Issue on Cataracts - Part 1 of 2



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A Message From Our President, Anne Yeadon

Greetings VisionAWARE readers and welcome to our Special Issue on Cataracts. We are delighted to welcome **Tina D. Turner, M.D.** as the contributing author of this issue. Dr. Turner received a BA in chemistry from the University of Tennessee and her MD from Baylor College of Medicine in Houston. She completed her ophthalmology residency at the University of Michigan's Kellogg Eye Center and is currently a staff comprehensive ophthalmologist at [Henry Ford Health System's](#) Grosse Pointe Ophthalmology.



Anne Yeadon, President

In fact, we are so pleased with Dr. Turner's contributions that we are publishing this Special Issue newsletter in **two installments**:

- In this first installment, Dr. Turner explains what cataracts are, how they form, the symptoms of cataracts, and how they are diagnosed.
- In the second installment, to be published next week, Dr. Turner will provide an in-depth discussion of artificial lenses, preparation for cataract surgery, the surgery itself, and the post-surgery recovery process.

We hope you enjoy our Special Issue on Cataracts and find the information useful. If, after reading the newsletter, you would like to share your experiences with us, or if you have additional questions, please don't hesitate to contact us. And don't forget to share this newsletter with those who want to learn more about cataracts and cataract surgery. Again, many thanks to Dr. Turner for sharing her wealth of experience and expertise.

All good wishes, Anne Yeadon, President, AWARE anne.yeadon@visionaware.org

News From VisionAWARE.org

New Award and Publication

- AWARE is honored to receive a **2008 Healthy Vision Community Award** from **The National Eye Institute** to produce a self-help manual entitled “**Safety in the Home for Adults with Vision Loss.**” The manual will include a compilation of safety hints and descriptions/illustrations of adaptive equipment for each area of the home, including bathrooms, stairs, level changes, kitchens, and external entrances.
- This new award is a continuation of AWARE's **2007 Healthy Vision Community Award** that funded the development of our highly successful 16-hour online course entitled “**First Steps in Vision-Related Rehabilitation for Consumers, Families, and Community Workers,**” from January 7 to February 1, 2008. See “Reader Feedback” below for comments from several of our 56 online course participants.
- Keep checking www.VisionAWARE.org for announcements about future online course offerings.

A New Forum: Safety Tips for the Home

- Keep watching for our new online discussion forum on “Safety Tips for the Home.” Our registered users will be able to submit their own hints and techniques, post information, and answer questions from other forum users. Be sure to register so that you can participate!

A New Feature: Starting a Career: The School to Work Transition

- VisionAWARE's new Question & Answer section on Employment and Career Advice for Young Adults who are Blind or Have Low Vision includes answers to a wide range of questions about finding and landing a first job; sources of financial support for higher education; job interview tips and advice; and career and employment resources.

A New Interview in “My Story ...”, the VisionAWARE Interview Series

- Our third interview features Tom McCarville, a photographer, lighting engineer, and business owner who discovered he had glaucoma when his doctor told him he had permanently lost 20% of his peripheral vision. You can read more about Tom's journey at [Tom McCarville's Story](#).

The VisionAWARE Craft Book

- [NEW INDEPENDENCE! Craft Adaptations for Adults With Vision Impairments \(Revised\)](#) by Stephanie Stephens Van is now available in a **print (hard copy) version for \$30.00** plus postage and handling. **To order, please send an e-mail to anne.yeadon@visionaware.org.**
- A [downloadable version](#) of the craft book is available online for \$25.00.

Newsletter News

- Our next **Are You AWARE?** Special Issue Newsletter will be published in June. Guest author [Dona Sauerburger](#), M.A., COMS will address the use of the white cane and related mobility tips, techniques, and resources. If you have suggestions for resources or personal stories, write to Maureen Duffy, AWARE's Editorial Director, at maureen.duffy@visionaware.org.

Reader Feedback

“We have received the prescription glasses [the doctor] ordered. Between those and increased use of eye drops for her dry eyes, the problem has been fixed. Although [my wife] has to hold whatever material she is reading closer, she sees the letters without any strain. My thanks for alerting us to low vision specialists. It has been super, thanks to you.” ~Scott Adler, Maryland

And here are comments from our recent online course participants:

“The course covered a wide range of issues that opened the door for deeper investigation. This is a class I would recommend to ALL friends and family members of the visually impaired. I would also highly recommend it to those who have been diagnosed with low vision/ blindness. It seems too many people have NO idea what is ‘out there’ for the visually impaired.” ~C. C., North Carolina

“Although I’m not in the profession and took the course for personal reasons, it was VERY easy to follow and understand. VERY informative, love the reference pages to resources as well. In my situation, I’m not always sure where to look for the resources I need. I wasn’t aware that many of them existed.” ~J. G., Idaho

“All the concepts were very clearly explained also for non-professionals and through the Forums it has been possible to perceive far more about problems coming with vision loss and aging. Also I found extremely important and helpful the many links and contacts of Low Vision Rehabilitation centers and associations.” ~D. S., Italy

An Introduction to Cataracts by Dr. Tina D. Turner

Contributing Editor, Dr. Tina D. Turner received a B.A. in chemistry from the University of Tennessee and her M.D. from Baylor College of Medicine in Houston. She completed her ophthalmology residency at the University of Michigan's Kellogg Eye Center. She is currently a staff comprehensive ophthalmologist at [Henry Ford Health System's Grosse Pointe Ophthalmology](#).

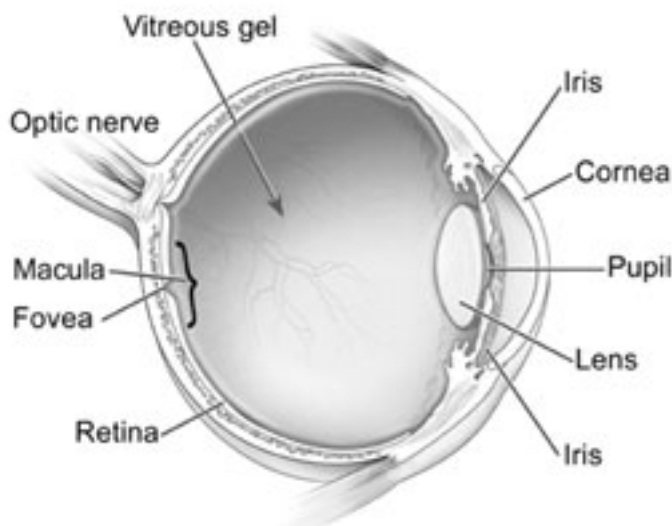


*Tina D. Turner, M.D.
Ophthalmologist*

What Is A Cataract?

A cataract is a progressive cloudiness (also called [opacity](#) or [opacification](#)), hardening, and yellowing of the normally transparent **lens** of the eye. According to the [National Eye Institute](#), approximately 50% of all Americans will either have a cataract or will have had cataract surgery by age 80.

To talk about cataracts, it's helpful to understand the parts of the eye, including the location and function of the lens, as shown in this diagram of the eye:



The **lens** is composed of transparent, flexible tissue and is located directly behind the iris and the pupil. Like the lens in a camera, the lens in the eye helps to focus light and images on the retina, which is the light-sensitive membrane that lines the inside surface of the eye. Nerve cells in the retina convert incoming light into electrical impulses. These electrical impulses are carried by the optic nerve (which is

like a television cable) to the brain, which finally interprets them as visual images.

At birth, the natural lens is clear, colorless, and very flexible. Because it is flexible, it is able to change shape, without the help of bifocals or reading glasses, to focus on objects and people that are either nearby or at a distance.

The lens becomes more rounded to focus on near objects (see Fig 1) and more elongated (or stretched) to focus on objects that are far away (see Fig 2).

Over time, however, two primary changes begin to occur in the lens, usually after age 40:

- **The lens becomes less flexible**, begins to harden, and loses its ability to become more curved. As a result, it becomes difficult to focus on near images (especially print) without the help of bifocals or reading glasses.

- **The lens gradually changes color**, becoming yellowish or brownish, and is no longer transparent. As a result, vision acquires a "brownish" tint, making it difficult to tell the difference between certain colors, such as navy blue, brown, and black, or blue, green and purple.

This hardening and yellowing of the lens over time also causes the most common type of cataract, called a [nuclear sclerotic cataract](#). "Nuclear" refers to the gradual clouding of the central portion of the lens, called the **nucleus**; "sclerotic" refers to the hardening, or **sclerosis**, of the lens nucleus.

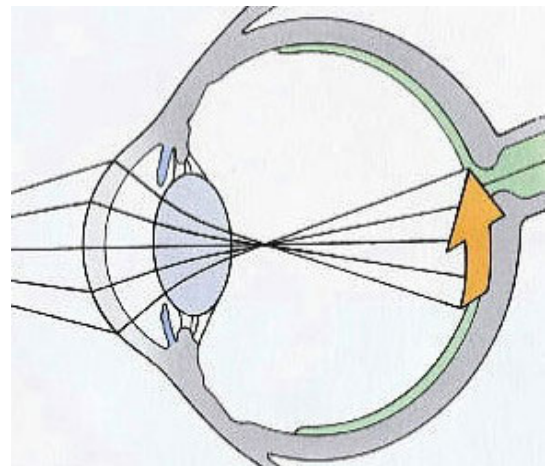


Fig 1: Lens is more rounded to focus on near objects

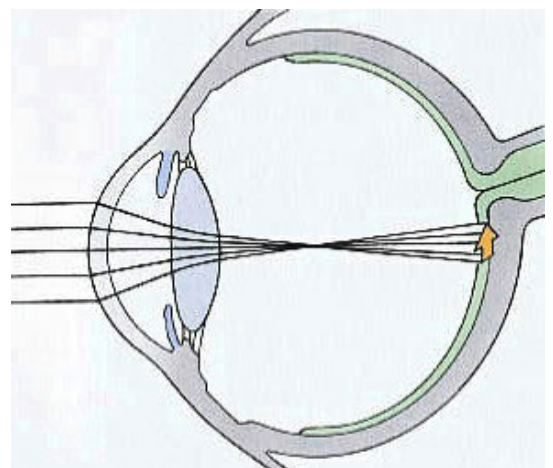


Fig 2: Lens is more elongated to focus on near objects

What Functional Vision Changes Are Related to Cataracts?

The hardening and yellowing of the lens caused by a cataract can result in vision changes that affect your daily functioning:

- **Reduced ability to perceive contrast:** Seeing an object clearly against a background of the same color – a white coffee mug on a light tablecloth, or a brown chair against a dark rug, for example – becomes more difficult and requires an increase in background contrast to make it "stand out."
- **Problems with depth perception:** Judging distances accurately – the height of a step or curb, or the depth of a bathtub, for example – requires closer attention. In addition, shadows and shadow patterns can be incorrectly interpreted as drop-offs, level changes, steps, or obstructions.
- **Need for more light:** As we get older, we generally need three to four times more light to perform everyday activities. Seeing clearly enough to read, write, sew, knit, or do home repairs usually requires a brighter, more focused light along with reading glasses or bifocals. This need for increased light occurs gradually, and most people aren't aware that their lighting requirements have changed over time.
- **Increased sensitivity to glare:** Although we need more light as we get older, too much light can also cause problems. Bright outdoor sunlight or reflected light from a hallway with highly polished floors can make it difficult to see clearly because too much light can also produce **glare**, which can interfere with seeing our surroundings clearly.
- **Overall blurring:** People, objects, and colors look hazy, cloudy, and "washed out." This lack of detail makes it difficult to tell time, read, watch television, see food on a plate, and walk safely indoors and outdoors, since depth perception may also be affected.

Some individuals with cataracts describe the effect as being similar to looking through a window that is hazy and streaked with dirt.

What Causes Cataracts?

The most common cause of cataracts is advancing age and the passage of time. While the origin and development of age-related cataracts is not yet completely understood, statistics suggest that the longer we live, the more likely it is that the lens will become less clear and flexible. According to data from the [Beaver Dam Eye Study](#), 38.8% of men and 45.9% of women older than 74 have visually significant cataracts.

In addition to the aging process, cataracts can also be caused by any of the following:

- **Medication:** Corticosteroids to reduce inflammation (such as prednisone)
- **Physical injury or trauma:** A blow to the eye, a cut or puncture, chemical burns, or electric shock
- **Radiation:** Long-term exposure to ultraviolet radiation from the sun (both UVA and UVB)
- **Poor nutrition:** Diets that are deficient in antioxidants, such as beta-carotene (vitamin A), selenium, and vitamins C and E
- **Smoking and second-hand smoke:** Individuals who smoke 20 or more cigarettes a day have twice the risk of nonsmokers for developing cataracts.
- **Systemic diseases**, such as [diabetes and diabetic retinopathy](#);
- **Eye diseases**, such as [uveitis](#), which is an inflammatory process that affects the interior of the eye;
- Cataracts can also be inherited or congenital (from birth)

Are There Different Types of Cataracts?

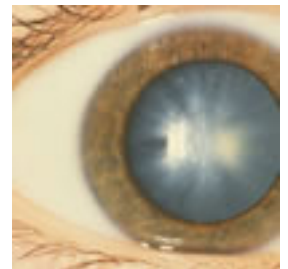
Yes. There are three primary types of age-related cataracts: Nuclear Sclerotic, Cortical, and Posterior Subcapsular. As a person ages, any one type, or a combination of any of these three types, can develop over time:

Nuclear sclerotic

This is the most common type of age-related cataract, caused primarily by the hardening and yellowing of the lens over time. "Nuclear" refers to the gradual clouding of the central portion of the lens, called the **nucleus**; "sclerotic" refers to the hardening, or **sclerosis**, of the lens nucleus. As this type of cataract progresses, it changes the eye's ability to focus, and reading (or close) vision may temporarily improve. This symptom is referred to as "second sight," but the vision improvement it produces is not permanent. A nuclear sclerotic cataract progresses slowly and may require many years of gradual development before it begins to affect vision.

Cortical

"Cortical" refers to white [opacities](#), or cloudy areas, that develop in the lens **cortex**, which is the peripheral (outside) edge of the lens. Changes in the water content of the lens fibers create clefts, or fissures, that look like the spokes of a wheel pointing from the outside edge of the lens in toward the center. These fissures can cause light that enters the eye to scatter, creating problems with blurred vision, glare, contrast, and depth perception. See [What Other Kinds of Vision Changes Are Related to Cataracts?](#) People with diabetes are at risk for developing cortical cataracts.



A cortical cataract. Source: National Eye Institute

Posterior subcapsular

This type of cataract begins as a small [opaque](#) or cloudy area on the "posterior," or **back surface** of the lens. It is called "subcapsular"

because it forms **beneath** the **lens capsule**, which is a small "sac," or membrane, that encloses the lens and holds it in place. Subcapsular cataracts can interfere with reading and create "halo" effects and glare around lights. People who use steroids, or have [diabetes](#), extreme nearsightedness, or [retinitis pigmentosa](#) may develop this type of cataract. Subcapsular cataracts can develop rapidly and symptoms can become noticeable within months.

Visit [Visionweb](#) for illustrations of nuclear sclerotic, cortical, and posterior subcapsular cataracts.

Please note: A cataract is not a tumor, nor is it a "film" or tissue growth that develops over the cornea, or front surface of the eye. Although the majority of cataracts are not visible to the naked eye, there are some instances in which the pupil can appear white because the lens is completely clouded by a very dense cataract.

What Are the Symptoms of a Cataract?

Symptoms of cataracts can include any or all of the following:

- Blurred, hazy, or "milky" vision, as if looking through a dirty or cloudy piece of glass, or through glasses that always seem to need cleaning
- Difficulty reading regular print and/or street signs
- Needing a brighter, more focused light for reading and other close tasks, such as sewing and crafts
- Problems with glare, especially bright sunlight and room lights
- Sensitivity to oncoming headlights while driving at night
- Difficulty seeing at night
- Seeing "halos" around lights, especially at night
- Problems telling certain colors apart, such as navy blue, brown, and black, or blue, green and purple
- Problems with depth perception, such as judging the height of a step or curb, or the depth of a bathtub
- Frequent changes in prescription eyeglasses or contact lenses
- Development – or worsening – of nearsightedness
- Double vision (diplopia), or seeing a "ghost" image when using the affected eye

How Is A Cataract Diagnosed?

An ophthalmologist or optometrist diagnoses a cataract by doing a **complete medical eye examination**, which should include all of the following components:

A health and medication history:

- Your overall health and that of your immediate family
- The medications you are taking (prescription and over-the-counter)
- Questions about high blood pressure (hypertension), diabetes, smoking, and sun exposure.

A vision history:

- How well you can see at present, including any recent changes in your vision
- Eye diseases that you or your family members have had, including macular degeneration and glaucoma
- Previous eye treatments, surgeries, or injuries
- The date of your last eye examination

A refraction, or visual acuity testing:

- Distance and near vision [acuity tests](#) to determine the sharpness or clarity of your reading and distance vision
- Testing your vision with different lenses (sometimes contained in a machine called a [phoropter](#)) to determine if your vision can be improved or corrected with regular glasses or contact lenses

Visual field testing:

- To determine how much side (or peripheral) vision you have and how much surrounding area you can see.

- The most common type of visual field test in a regular eye exam is called a confrontation field test, in which the doctor briefly flashes several fingers in each of the four quadrants of your visual field while seated opposite you.

An eye health evaluation:

- An examination of the external parts of your eyes and your lens, using a special microscope called a [slit lamp](#). Your doctor will look for a yellowing of the lens, clefts/fissures, or white opacities that indicate the presence of cataracts.
- A [dilated eye \(or fundus\) examination](#), which includes the use of an [ophthalmoscope](#). Special eye drops, such as [tropicamide](#), will dilate, or open, your pupil, which allows the doctor to observe the internal parts of your eye, including the retina and optic nerve.
- A test of the fluid pressure (or aqueous humor) within your eyes.

Individuals who are over 40 should have a dilated eye examination from an ophthalmologist or optometrist at least every two years. African Americans and/or individuals with a family history of glaucoma who are over 35 should have a dilated eye examination from an ophthalmologist or optometrist every year.

Please note: While an ophthalmologist or optometrist can diagnose a cataract, only an ophthalmologist is qualified to perform cataract surgery. An ophthalmologist will have the initials M. D. after his or her name.

Thought For The Day

“He who can no longer pause to wonder and stand rapt in awe, is as good as dead; his eyes are closed.”

~ Albert Einstein

Donate to AWARE to Further Vision Health and Self-Help Awareness

Your [donation](#) can help us continue to provide self-help vision rehabilitation hints and disseminate information on services and independent living resources to individuals with vision loss, their family members, and those who work with them.

You can view or download previous newsletters at [Are You AWARE? Newsletter Archive](#).



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