

# EYE OPENERS

## **How do you see?**

Vision depends on light. Light reflects off of objects and enters your eye through a clear covering, called the cornea. Behind the cornea is the lens, which does most of the focusing and enables the eye to see at different distances. The light is focused into an image on the rear of the eye known as the retina. The retina changes the picture into small electric impulses that are sent by way of the optic nerve to the brain and then the brain turns the electrical impulses into images, which we then see.

Central vision is what you see when you look straight at an object. Peripheral (side) vision is what you see of the area surrounding the object that you are looking at.

## WHEN TO SEEK EYE CARE

Symptoms that are danger signals for an urgent eye examination by an eye care specialist are:

- Crossed eyes
- A curtain or veil blocking vision
- Different sized pupils
- Sporadic dimming vision
- Double vision
- Discharge from eyelids
- Flashes of light
- Floating spots in front of eye
- Halos around lights
- Pain in the eye
- Protrusion of one/both eyes
- Redness of the eye
- Sudden loss of vision
- Swelling of the eyes

Other warning signs of vision loss include: change in the color of the iris; difficulty reading a newspaper or watch or in telling colors apart; difficulty recognizing friends on the street; brushing against the wall while walking; pouring liquid over the top of your cup; or a tendency to trip or stumble on stairs or curbs.

The leading causes of blindness for all ages in the United States are glaucoma and diabetic retinopathy; while vision loss among older Americans is Age-related Macular Degeneration.

## **Legal Blindness**

There are two definitions of legal blindness. The first type involves the clarity (how well you see) of vision with the best correction possible in the better eye, with glasses or contact lenses is no better than 20/200. The second definition involves the quantity of vision or how much you can see in a given area, which is called peripheral vision, is no greater than 20 degrees diameter (10 degrees radius) in your better eye.

You are not considered to be legally blind if you are blind only in one eye. Legal blindness does not necessarily mean total loss of vision. Among people 40 years of age and older, more than 900,000 people are legally blind in the United States.

## **Glaucoma**

Two to three million Americans have glaucoma. It is called “the sneak or thief of sight” because it destroys eyesight without any pain. Only by regular eye exams and through dilated pupils can glaucoma be detected. You should be checked at least every one to two years.

Glaucoma damages the optic nerve at the back of the eye by causing an increase in the eye pressure. The pressure is increased when the fluid in the front of the eye known as the aqueous humor does not drain as quickly as it should. When this happens, the fluid backs up and puts pressure on the delicate optic nerve, which becomes damaged. At first, the fluid destroys the nerve cells and the peripheral vision is lost. In final stages, the nerve fibers are destroyed and all sight is lost.

If you are African American; have diabetes; are over the age of 35; have blood vessel disease; have a family history of glaucoma; have a history of eye injury or inflammation; are extremely nearsighted; have

high blood pressure; or use steroids for a long period of time, then your risk of having glaucoma will be higher.

Over half of the people with glaucoma are unaware of it. Symptoms include: loss of side vision, inability to adjust the eyes to darkened rooms, difficulty in focusing on close work, rainbow colored rings around lights, blurred or foggy vision, and frequent changes of prescription glasses.

### **There are four types of glaucoma:**

- 1) **Chronic** -The most common type. The process happens slowly and without pain. As a result, people with chronic glaucoma often postpone visiting an eye doctor. African-Americans are at a much higher risk for this type.
- 2) **Acute** - Not very common. This process happens suddenly and is very painful. Caucasians and Asians are at greater risk.
- 3) **Secondary** – This type of glaucoma occurs due to an eye injury or as a complication of eye surgery.
- 4) **Congenital** - A rare condition, which is present at birth.

Treatment of glaucoma includes eye drops, laser surgery, glaucoma filtration surgery (or both), or medications.

## **Cataracts**

Cataracts are one of the leading causes of treatable blindness for adults in the United States. Treatment is surgery, which restores vision in 95% of the cases. A cataract causes opacity or clouding of the eye's lens, which blocks the passage of light needed for vision.

Cataract formation is associated with chemical changes in the lens, most often related to normal aging of a person and their eye.

Surgery is the only accepted treatment for cataracts and the surgery is one of the most successful surgical procedures in medicine. Following surgery, the lens of the eye must be replaced in one of three ways; spectacle glasses in front of the eye, a contact lens on the eye, or a permanent plastic lens inserted inside the eye, usually at the time of surgery.

Cataracts can be related to hereditary factors; medications; diseases such as diabetes; injury; or steroid therapy. Risk factors include: advancing age; ultraviolet light exposure; smoking; alcohol consumption; and nutritional factors. Symptoms include; blurred or double vision, ghost images, the impression of a film over the eye, vision impairment with too much or too little light, sensitivity to glare, and the need for frequent changes of eyeglass prescriptions, none of which help.

## **Diabetic Retinopathy**

Diabetic retinopathy is the leading cause of blindness among working age adults in the United States.

Retinopathy is a condition, which affects the blood vessels in the retina (the back layer of the eye) of people who have diabetes. The small blood vessels in the eye become weak and break down or become blocked thus causing the formation of new fragile blood vessels. The eyes light-sensitive nerves are normally supplied with oxygen and other nutrients by blood vessels. In diabetic retinopathy, these blood vessels may begin to: bulge (aneurysm); leak fluids; bleed; grow abnormally; or close completely.

Severity of retinopathy depends on the kind of diabetic retinopathy you have and is affected by factors such as age of onset, length of

the time you had diabetes, and how well the blood sugar levels have been controlled.

Treatment for diabetic retinopathy is pan retinal laser photocoagulation (PRP). PRP is the use of laser light to seal off leaking blood vessels in the eye. In addition, the laser treatment helps to control the growth of new abnormal blood vessels, which are fragile and leak.

The best defense against diabetic retinopathy is the control of blood sugars and hypertension and regular comprehensive eye exams with dilated eyes.

## **Age-related Macular Degeneration (AMD)**

The leading cause of blindness in adults over age 65 is macular degeneration (AMD). AMD is the deterioration of the macula, a very specialized part of the retina that enables you to read and see straight ahead (central vision). The cause of macular degeneration is unknown. Macular degeneration impairs the ability to see fine details so, peripheral vision is not affected and the person does not face total blindness.

There are two forms of macular degeneration. The first is the dry form, which is the most common. The second is the wet form, which is responsible for the vast majority of severe vision loss. Macular Degeneration is not seen frequently in people under the age of 55.

Currently, there is no effective treatment. However, people with macular degeneration make good use of low-vision aids such as optical and electronic magnifiers that enhance the remaining vision.

## **Low-Vision Aids**

Low-vision aids include:

- Magnifying glasses and stand magnifiers
- Telescopic lenses
- High-intensity reading lamps
- Large-print newspapers, magazines, and books
- Closed circuit T.V. that magnifies a printed page on a television like screen
- Computers, which speak or have enlarging software
- Field enhancers, which are prisms that aid as a training tool to help people to expand their peripheral vision.
- Computer-operated voice synthesizers
- Talking clocks, thermostats, watches and scales

Places where these devices can be sent for are provided in this guide under the section titled AIDS and DEVICES located on page 78. Please note there are different companies, which handle different items or types of items.

## **What are low vision-related rehabilitation services?**

- assessment and treatment of visual impairments.
- individual counseling to help you adjust to vision loss.
- Support groups that give you the opportunity to talk with others about similar problems and ways to cope.
- Home and personal management skills, such as: meal preparation, personal care techniques, managing money, and labeling medication.
- Communication skills - the use of tape recorders, Braille, computer screens with magnification, writing guides, and timepieces.
- Independent movement and travel skills - learning to orient yourself in familiar and unfamiliar environments and to move about using a cane or another device.

## Lifestyle Changes

Some helpful tips to assist if vision decreases include:

- Wear sunglasses if eyes are more sensitive to bright light.
- *Do not drive if you are legally blind! Your insurance will not cover damages if you get into an accident!*
- Add better lighting around the house.
- Use high contrast backgrounds when working.
- Use adaptive or alternative techniques (non sight dependant) to accomplish everyday tasks.
- Use adaptive aids such as talking watches etc.
- Use colorful or tactile markers for marking items such as washing machine dials, dryer dials, etc.
- Get help from local organizations or agencies.

To reduce your risk of sight loss:

- Quit smoking
- Eat a healthy diet
- Get regular exercise
- Control your blood pressure, diabetes, or other health problems.
- Wear safety eyewear to protect your eyes when working around the house.
- Have regular eye exams!

## Helpful Hints for Family and Friends of People Who are Visually Impaired

Some hints for family and friends of people who are visually impaired are:

- Always identify yourself to a blind or visually impaired person.
- Always let him/her know when you enter/leave a room.
- Never move items in a blind person's home without making him/her aware of it.
- Don't leave items, which people can trip on such as shoes or toys on the floor.
- Contrast colors. For example: a light cup on a dark surface.
- Identify steps and stairs. For example: a textured surface to indicate the top and bottom of stairs.
- Have Good lighting, but let the individual determine which is the appropriate light or combination of lights.
- Use different techniques/tactile items to identify similar objects such as cans or prescription bottles.
- Get a signature and check writing guide, which are available through specialty catalogs.
- Use a thick and dark marker when writing notes for people with low vision.
- Find out about rehabilitation services in the area, and explain them to your family member, encouraging them to participate.
- Get involved in the independent living skills training.

## Coping with Vision Loss

Many visually impaired individuals have written books with helpful hints for making the challenges of everyday life a little bit easier. Here are a few of the things, which the authors have suggested:

- The safest way to reach for something is to slide your hand lightly across the table or surface until it reaches the desired object, which can then be grasped.
- When using a magnifier to read, it requires a smooth surface, so if you put a clipboard behind your reading material as a support, then the paper will remain smooth.
- Black and white television is preferable for some people because it provides a higher contrast.
- Put things where they belong as soon as you have finished with them.
- When cooking on a stove, turn all handles on pots and utensils to the back to avoid burns and cuts.
- Close any bottle immediately after you have used it.
- Buy flip-top toothpaste bottles for neater usage and buy the colored toothpaste so that you can see how much you are putting on the brush.
- A narrow yellow or white strip painted on or pasted to the flat edge of every step so that a person going down the stairs can tell where the step ends.
- When unsure of steps, test for the edge of the stair using the toe of your foot.
- Get a checkbook with larger checks and bold black lines that can be felt by the fingers.
- Get a striking clock to regulate and simplify the day.
- Use either a Braille watch, high contrast large faced watch or a talking watch.

- A magnifying mirror will help you to see yourself better when you are trying to get ready.
- Have a friend tape record your favorite recipes for you.
- Move furniture out of the main traffic areas in your home, and keep desk and table chairs pushed in.
- Use railings when climbing stairs.