



# Understanding the Effects of Aging on the Sensory System

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Most older people cannot see, hear, feel, taste, or smell as well today as they did ten, twenty, or thirty years ago. Why? The normal aging process causes gradual losses to the sensory system. Generally, these changes begin around the age of 50 years. Families and caregivers notice that changes have occurred when older family and friends start using bifocals, turn up the sound on the television, or add more seasoning to make food taste good. All of these symptoms just go along with growing older, and there is no reason to be alarmed. However, if a change occurs suddenly to vision, hearing, taste, smell, or touch it should be a red flag that something may be wrong. It is critical that a doctor checks the problem immediately.

Fortunately, once limitations are recognized and accepted, adjustments or adaptations to the person's environment can help make up for the losses. An older person may find it easier to change their ways of performing daily tasks when he/she understands how the aging process affects their sensory system. Then, one can begin to make appropriate adaptations and accept those sensory losses that cannot be completely overcome.

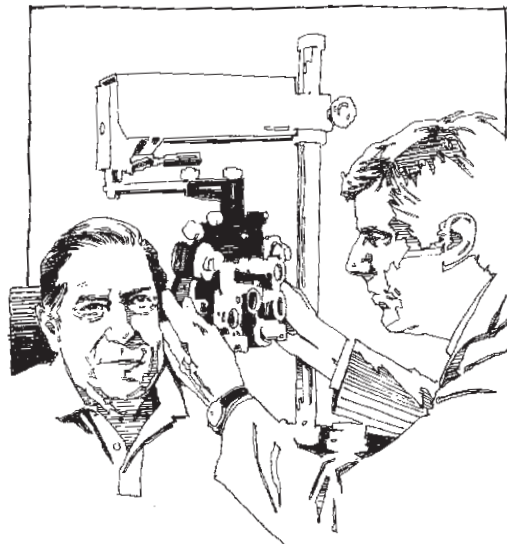
## Vision

While all of the senses are important to good health and well being, vision is one of the most important. Significant losses to eyesight can reduce quality of life and threaten ability to live independently at home and in the community. Thus, it is important for persons giving care to older adults to understand how age affects the eye, recognize the most common eye problems, and learn ways to deal with poor eyesight. Following are some of the ways that age affects eyesight.

### How does aging affect vision?

- **Vision slows.** Generally, beginning around the age of 50, the lens of the eye becomes

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less elastic, causing slowed vision. It will take longer for the eye to focus on close objects, and blurring may be bothersome. Older adults need more time to recognize objects or to focus on objects at different distances.

- **Visual scanning becomes difficult.** Because it takes longer for the older eyes to focus, many older adults find it hard to scan an area and find a particular object. For example, at the grocery store older people will have trouble picking out specific items on a shelf. Likewise, moving objects are harder to see so it may be impossible to read the credits at the end of a movie.
- **The pupil gets smaller.** When the pupil gets smaller, the lens gets thicker and less transparent, resulting in less light reaching the retina. Many older adults have trouble seeing at dusk, making out objects in low-lighted areas, or telling one dark color from another. Thus, an older person needs more light to see well. In fact, a person aged 65 or older needs twice as much light as does a 20-year-old.

- **The near-vision declines.** The majority of older people need glasses for reading. Many use bifocal lenses where the lower portion is for reading and the upper area for seeing at a distance. Distance vision is generally slower to change.

### What eye diseases cause poor vision?

Cataracts are very common in older people. A person has a cataract when the center of the lens gets hard and cloudy. Cataracts cause blurred vision in the center of the eye. A person with a cataract might say that they feel like they are looking through water on glass or trying to see through a car windshield in the rain when the windshield wipers are not turned on. A person with cataracts will be sensitive to glare, say that colors look dull, and have a hard time driving at night. When a cataract is in its early stages, bright lights make it hard to see. Sunglasses may improve vision. With today's technology, cataracts can be removed surgically on an outpatient basis and with little discomfort.

- Floaters are common in the aging eye. Floaters are small irregular opaque objects drifting in the visual field. They are usually harmless, but occasionally may be mistaken for a detached retina. A detached retina is a serious condition that could mean permanent loss of sight unless treated **immediately**. Thus, when an older person first notices a floater he/she should visit an eye doctor **immediately**.
- Glaucoma is another common eye problem. It is sometimes called "the sneak thief of sight" because it comes on slowly without warning. Glaucoma occurs when pressure builds up in the eyeball from an excess of fluid. The excess fluid may be from either faulty drainage or an overproduction of fluid. A person with glaucoma may notice colored rings around lights and only be able to see objects straight ahead. If not treated in the early stages, glaucoma will cause blindness. It is important that all older people visit their eye doctor annually to have eye pressure checked.
- Macular degeneration is a deterioration of nerve cells of the macula, which is a small area in the retina. Macular degeneration is the most common cause of blindness in older people. This condition can occur quickly and affects center or straight-ahead vision. Objects may appear blurred, distorted, or completely gone.

Anyone with a macular degeneration has trouble recognizing faces, reading, watching television, or doing close work. The peripheral vision is unaffected. Thus, it is extremely important for an older person to see their eye doctor immediately if he/she notices that straight-ahead objects are blurred or distorted.

- Diabetic Retinopathy is a common complication of diabetes. Poor blood circulation causes the eye to produce small, weak-walled blood vessels. These vessels can easily hemorrhage causing blurred vision or severe loss of eyesight in the affected eye. Also, the retina may become detached from the back of the eye. If untreated, this condition can cause blindness.

### How can you tell if someone cannot see well?

You can generally tell if an older person is having trouble seeing by just watching their actions and facial expressions. Observations to look for include the following:

- Poor coordination (i.e. difficulties buttoning).
- Tunnel vision (can only see objects straight ahead).
- Squinting.
- Poor depth perception (tendency to spill food and drink when setting it down, by either dropping it or setting it down very hard).
- A tendency to select bright colors over dull colors.

### How should you talk with someone that cannot see well?

Here are some tips to try, if you are face-to-face with someone that doesn't see well.

- Sit or stand where the person can best see you.
- Make sure there is good light.
- Control glare.
- Stand still to give the person time to focus on you.

Following are some suggestions to try if you are talking with a group:

- Make sure the room has good light without shadows or glare.

- If you darken the room to show slides, videos, transparencies, etc., allow a minute or two for the audience to adjust to less light in the room.
- Hold meetings during the daytime rather than at night.
- Keep walkways free of cords, chairs, or other objects.

If you plan to use visuals, make sure they are easy to read.

- Use large high quality print.
- Do not use all capital letters.
- Use short lines and few words per visual.
- Use matte finish paper, not shiny paper.
- Use black print on white or yellow paper.
- Use straight left margin.

### What action may help improve vision?

Good vision depends on a healthy body. Maintaining peak function depends on eating a balanced diet. Vitamins and minerals that are particularly important to vision include the following:

- Vitamin A is necessary for good vision in dimly lighted areas. Vitamin A is found in yellow, dark green vegetables, milk, eggs, seafood, meat, wheat bran, and whole grains.
- Vitamin C supports healthy lenses and is found in fruits and vegetables.
- According to some studies, Vitamin E is a powerful antioxidant with potential to protect the eye from aging.

### Hearing

The ability to hear clearly declines with age. Hearing loss often begins at a young age and progresses slowly during the 20s, 30s, and 40s. Most people do not notice hearing loss until they are in their 50s or 60s, when they begin to have a hard time hearing high frequency sounds. For example, the consonants s, z, t, f, and g are high frequency sounds and hard to hear. The low pitched vowels a, e, i, o, and u are easier to hear. It may be hard to distinguish between words that sound alike. For example, dead may sound like “bed” or names like “Park” may sound like Clark. About 50 percent of those 75 or older will have trouble carrying on a conversation. Often times, older adults are able to

hear speech but cannot understand the message because the words become garbled.

### Are there different kinds of hearing loss?

Basically there are two kinds of hearing loss. One is conductive. Conductive hearing loss occurs when something blocks the sound waves from the outer and middle ear. Early childhood infections, current infections, a simple build up of wax, or a foreign object in the ear often causes this type of hearing loss. Fortunately, this kind of hearing loss can usually be cured by surgery, removing wax, or taking antibiotics.

The other is central nerve loss, sometimes called “nerve deafness”. Nerve loss is a permanent hearing loss. The cause can be allergies, auditory nerve tumors, noise, or the natural aging process. Nerve deafness cannot be cured.

### What causes hearing loss?

Many things can harm the ears and cause temporary or permanent hearing loss.

- **Noise.** Exposure to constant or a sudden very loud noise can cause permanent hearing loss. Persons who work around noisy equipment should wear ear plugs to protect their ears.
- **Injuries.** Any blow to the head or ear can cause a permanent hearing loss.
- **Medications.** Some common medications such as aspirin or prescription antibiotics can cause temporary hearing loss.
- **Diseases.** Common diseases such as heart disease, kidney disease, diabetes, stroke, or tumor can interfere with hearing.
- **Ear Infections.** Hearing loss from ear infections is common, but usually temporary, if treated. However, failure to treat or a delay in treatment can cause permanent hearing loss.
- **Heredity.** Certain types of hearing loss are inherited.
- **Aging.** A lifetime accumulation of repeated exposures to damaging factors leads to hearing loss in later life.

### Why is it important to understand how hearing loss affects quality of life?

Family caregiver service providers and health care professionals often feel frustrated when try-

ing to communicate with an older person who cannot hear well. Poor hearing can lead to many misunderstandings, hurt feelings, blame, and guilt. Perhaps if care providers better understand how old age affects hearing, and ways to compensate for hearing loss, families could enjoy better relationships and a higher quality of life.

Following are some common ways that an older person with hearing loss may react.

- **Relationships/Isolation.** Hearing is a “social sense”. Significant loss of hearing can cause older adults to feel cut off from friends and family. Carrying on a conversation may be so difficult that they prefer to withdraw and be isolated.
- **Mental Health.** Persons with hearing loss often become isolated and depressed.
- **Safety.** A person may not hear warning sounds or alarms.
- **Misunderstood Conversation.** Poor hearing can lead to suspiciousness, paranoia, alienation, and frequent disagreements with others.
- **Labeled as Confused or Demented.** When older persons fail to answer when spoken to or if they give inappropriate answers to questions, they are sometimes considered confused or demented.
- **Paranoid Behavior.** Inappropriate actions based upon missed information can lead to a feeling of paranoia. For example, when everyone is laughing at a joke that was not heard by an older person with poor hearing, the older person may mistakenly feel that he/she is being laughed at by members of the group.
- **Fatigue.** Listening and following a conversation is tiring for someone with poor hearing.

### How can I recognize if someone cannot hear well?

They may exhibit the following actions:

- Talk loudly.
- Turn their head so that the best ear is toward a sound.
- Eyes focus on a speaker's lips (lip reading).
- Ask people to repeat what was said.
- A blank look.
- Withdrawal from social events.
- Increased impatience in conversation.

- Respond inappropriately during a conversation.
- Not reacting to a loud noise.

### What can be done to help a person with poor hearing?

When speaking one-on-one:

- Get the person's attention before speaking to them.
- Use a normal tone of voice. Do not shout.
- Talk face-to-face so that the person can see your lips. Persons often support their hearing with lip reading.
- Speak clearly and distinctly.
- Cut out the background noise; turn off the radio and television.
- Reduce building noises such as a furnace, fans, appliances, etc.
- Move to a quieter or less distracting area
- Use gestures with hands, facial expressions, and visual aids.
- Allow adequate time for person to respond. It takes older people longer to process information and respond appropriately.
- Do not chew, smoke, or cover your mouth when speaking.
- Stay still so that the person can see you and your lips.
- Try rewording the message using simple words.
- Do not speak directly into the person's ear.
- Watch for an indication that the person understood your message.

When speaking to groups of older people

- Use a microphone. If you talk louder the voice pitch will be higher and older people will have difficulty understanding you.
- Do not write on a blackboard and talk while your back is to the audience.
- Remember that if you use slides or transparencies in a darkened room, the audience will not be able to lip-read.
- Stand still. Do not pace the room because the audience will have difficulty reading your lips. The older person may also have a slowed ability to keep re-focusing their vision to see you.

- Use visuals that reinforce your spoken word.
- Repeat questions from the audience before answering the question.

### **Why do older people resist using a hearing aid?**

Older people often resist using a hearing aid because they perceive hearing aids as a symbol of old age. They would rather miss out on hearing sounds rather than risk being considered old. Perhaps the use of a microphone amplifier to enhance hearing when radio or television sound is set at a normal level would be better accepted. Additionally, some people find hearing aids unacceptable because the device amplifies background noises making it difficult to hear spoken words. Keep in mind that some people may have hearing problems that a hearing aid cannot overcome.

### **Can what I eat affect my hearing?**

- B Vitamins can help the body to have a healthy nervous system. Sources of Vitamin B include leafy green vegetables, whole grains, eggs, and liver.
- Vitamin A helps support healthy hair cells within the inner ear which are important to good hearing. Good sources of Vitamin A are orange, yellow, and dark green vegetables, milk, and eggs.

### **The Sense of Touch**

The skin is the largest organ of the body and has millions of nerve endings. People thrive on stimulation through touch; without it, humans often feel a longing or aching. Touching doesn't have to involve hugging. Just a simple pat on the shoulder or arm can communicate that someone cares. Those caring for older adults can communicate love through the sense of touch by giving a gentle back rub, rubbing lotions to dry skin, or brushing the hair. Offering your arm to help someone who may be a bit unsteady walking helps to satisfy the need for touch. Even a pet that might sit on the lap or rub around the legs can fulfill the need for touch. The sense of touch may be the most important of the senses, yet the most neglected. We can survive without sight, hearing, taste, or smell, but without touch, we are at great risk of mental breakdown.

### **How can I tell if a person has a poor sense of touch?**

- Withdrawal or avoidance of activities usually enjoyed, such as sewing or playing with a pet.
- Extremes in feeling pain, either not feeling pain or overreacting to slight pain.
- Showing no response to pressure.
- Grasping objects tightly.

### **What causes the loss of the sense of touch?**

- Parkinson's Disease.
- Mini-strokes.
- Lack of blood flow to the hands because of swelling.
- Arthritis.
- Not using limbs or muscles (bedridden or continuous sitting).

### **How can a caregiver help someone overcome the loss of touch?**

- As a caregiver, explain what you are going to be doing before touching the older person.
- Increase the pressure when touching the person, taking care not to actually cause pain.

### **Taste and Smell**

It is natural for older people to lose some of their ability to taste. However, most can still identify sweet, sour, bitter, or salty foods, especially when these flavors are concentrated. For example, older persons may add large amounts of salt to enhance the flavor and make foods more palatable. Foods with stronger flavors may be more inviting. Note: Stronger flavors should not be confused with stronger spices, as quite often the elderly have conditions that may be bothered by certain spices.

Foods must taste good to older people if they are to get pleasure and satisfaction from eating. The ability to taste has a huge effect on health because lack of taste may lead older persons to select food choices that have insufficient nutrients for good health. Also, a reduced sense of taste may be a reason why some older people have a poor appetite or dislike foods prepared by someone with a stronger sense of taste.

Complaints that foods taste bad can be the result of non-sensory factors. Many things can

alter taste, such as smoking, nasal congestion, dentures, poor oral hygiene, diseases of the mouth, or a nutritional deficiency of Vitamin A, Niacin, or Zinc. Prescription drugs sometimes change taste or leave a bad taste in the mouth. Even ear surgery or a tooth extraction can injure or alter the ability to taste. Routine attention to cleaning and flossing the teeth may help to improve taste, particularly salty and sweet tastes.

#### **How does age change the sense of taste?**

- There is less saliva that is needed for taste.
- The number of taste buds decreases.
- There is less ability to determine sweet/sour tastes.
- Diseases of the mouth.

#### **How can loss of taste be recognized?**

- Increase or decrease of appetite.
- Weight loss or weight gain.
- Complaints that foods taste badly or have no taste.
- Complaints about food tasting bitter or sour.
- Unable to identify foods by taste.
- Excessive use of seasonings.

#### **How to make up for loss of taste.**

- Make foods look appealing.
- Separate foods on the plate.
- Vary the textures of foods.
- Take care of teeth and gums.
- Add extra flavor to food.
- Avoid bland foods.
- Plan tasting parties to increase the social enjoyment associated with food.

### **Smell**

The sense of smell is also thought to decline with age. However, poor health status or smoking may have a greater impact than aging on smell. Lack of smell can affect the pleasure and satisfaction that older people obtain from food. Anyone who cannot smell food will, likewise, not be able to taste food. Changes in the ability to smell, also have implications for safety, personal hygiene, and enjoyment of life. Loss of smell can put an older person at risk to the dangers associated with eating spoiled food or not responding to smoke or leaking gas. Some researchers have found that few people in their 70s, 80s, and 90s can detect odors, and even

fewer can correctly identify them. Some medical conditions such as Alzheimer's Disease or head trauma can cause loss of smell or the inability to understand or distinguish smells.

#### **How can you tell when someone cannot smell?**

- No reaction to unpleasant odors.
- Comments such as "I can't smell the flowers."
- Body odor or overuse of fragrances

#### **What actions will help compensate for loss of smell?**

- Label foods or items that look or smell similar.
- Encourage attention to personal hygiene.

Sensory declines seldom seriously affect an older adult's ability to function normally until after age 75. Prior to age 75, sensory declines that affect independence and quality of life are generally attributed to illnesses or injuries. As losses begin to interfere with an older person's quality of life, various adaptive measures can compensate for the losses. For example, an older adult can use lip reading to support poor hearing as long as eyesight is okay. If both vision and hearing are limited, the person may have difficulty with speech.

One must keep in mind, however, that the older one gets, the more likely it is that the person will have one or more chronic diseases, such as arthritis, hypertension, heart disease, etc. to deal with, in addition to the loss of the senses. It isn't surprising that many older people become depressed as the losses and limitations interfere with their quality of life. Caregivers must take into account all of an older person's limitations when considering making any adaptations to an older person's environment.

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