Lesson Objectives
To understand the process of aging and normal physical changes
To engage in activities that assist in understanding sensory loss
To understand what impact sensory losses have on day-to-day living
To identify ways of adapting to sensory loss as we age

The Sensory Process
Sensation refers to the reception of information by the ears, skin, tongue, nostrils, eyes and other specialized sense organs. Key sensing processes include vision, hearing, touch, taste and smell.

What is Sensory Loss?
Sensory loss is defined as a decreased ability to respond to stimuli that affect our senses (hearing, touch, etc.).

Change in Sensory Processes
Studies have shown changes accelerating at these approximate age ranges:
- Vision — mid-50s
- Hearing — mid-40s
- Touch — mid-50s
- Taste — mid-60s
Vision and Aging

Types of vision loss

**Glaucoma** - If left undetected and untreated, glaucoma can lead to tunnel vision and eventual blindness; therefore, it could affect safe movement and driving.

**Cataracts** – They cause blurring of vision and increased sensitivity to sunlight and glare.

**Macular degeneration** – It is a loss of central vision related to aging in older people. This causes difficulty reading and recognizing faces. It also is called "age-related macular degeneration (or maculopathy)."

**Diabetes** – A condition called diabetic "retinopathy" causes blurring and patchiness in vision.

Glaucoma and Vision

Glaucoma is a disease of the optic nerve.

The optic nerve is like a cable that carries all the information from your eye to your brain; without the optic nerve, the brain cannot process what the eye sees.

In glaucoma, the optic nerve is damaged, resulting in the loss of some or most of the fibers that make up this nerve.

(Glaucoma, continued)

Advanced age is an important risk factor since glaucoma usually develops in those above age 50, especially above age 65. It affects one in 10 people over 80, and worldwide is the second leading cause of blindness.

If you are above age 60, you should have your eyes examined by an ophthalmologist every year, even if you are not having any trouble seeing. Regular eye checkups are critical to early diagnosis and treatment of glaucoma.

Normal Vision

(Cataracts, continued)

The most common symptoms of a cataract are:

- Cloudy or blurry vision
- Colors seem faded
- Glare — headlights, lamps or sunlight may appear too bright or a halo may appear around lights
- Poor night vision
- Double vision or multiple images in one eye (this symptom may clear as the cataract gets larger)
- Frequent prescription changes in your eyeglasses or contact lenses

These symptoms also can be a sign of other eye problems. If you have any of these symptoms, check with your eye-care professional.

Cataracts and Vision

A cataract is a clouding of the lens in the eye that affects vision.

Most cataracts are related to aging. Cataracts are very common in older people.

By age 80, more than half of all Americans either have a cataract or have had cataract surgery.

A cataract can occur in either or both eyes. It cannot spread from one eye to the other.
Normal Versus Cataract Vision

Macular Degeneration

Macular degeneration is the leading cause of vision loss among older people.

It is a result of the changes to the macula, the most sensitive part of the retina.

The macula is used to see the fine detail when reading, writing, watching television and recognizing faces.

Normal Versus Macular Degeneration Vision

Diabetic Retinopathy and Vision

Diabetes interferes with the ability of the body to use and store sugar.

Through time, diabetes may cause changes in the small blood vessels that nourish the retina.

In the early stages of diabetic retinopathy, blurring of both central and peripheral vision may occur.

In advanced stages, scar tissue forms, causing an additional distortion and blurring of vision.

Risk Factors for Diabetic Retinopathy

People with diabetes — both type 1 and type 2 — are at risk for retinopathy. That’s why everyone with diabetes should get a comprehensive dilated eye exam at least once a year.

The longer someone has diabetes, the more likely he or she will get diabetic retinopathy.

40 percent to 45 percent of Americans diagnosed with diabetes have some stage of diabetic retinopathy.
Let’s Do the Vision Activity!
Simple Ways to Protect Your Vision

Eat Well for Good Vision-

- Protecting your eyes starts with the food on your plate.
- Nutrients such as omega-3 fatty acids, zinc, and vitamins C and E can help ward off age-related vision problems.
- Regularly eating these foods can help lead to good eye health:
  - Green, leafy vegetables such as spinach, kale, and collards
  - Salmon, tuna, and other oily fish
  - Eggs, nuts, beans
  - Oranges and other citrus fruits
- Eating a well-balanced diet also helps you maintain a healthy weight, which makes you less likely to get obesity-related diseases such as type 2 diabetes.

Quit Smoking

Smokers are more likely to get cataracts, have optic nerve damage, and macular degeneration.

Wear Sunglasses

- The right kind of sunglasses will help protect your eyes from the sun's ultraviolet (UV) rays.
- Choose sunglasses that block 99% to 100% of both UVA and UVB rays. Wraparound lenses help protect your eyes from the side.
- If you wear contact lenses, some offer UV protection but it's still a good idea to wear sunglasses for more protection.

Use Safety Eyewear

- If you work with hazardous or airborne materials on the job or at home, wear safety glasses or protective goggles every time.
- Wear eye protection (such as helmets with protective face masks or goggles with polycarbonate lenses) to shield your eyes.
Look Away From the Computer Screen

Staring at a computer screen for too long can cause:

• Eyestrain
• Blurry vision
• Trouble focusing at a distance
• Dry eyes
• Headaches
• Neck, back, and shoulder pain

Visit Your Eye Doctor Regularly

• Make sure your glasses or contact lens prescription is up-to-date.

Making a Difference:

• Donate your old eyeglasses and sunglasses to help people with eyesight difficulties worldwide. (Sunglasses can be non-prescription. They are needed in countries near the equator to help protect people’s eyes from sun damage.)
• The Lions Club has drop boxes in many convenient locations.
• Items also can be sent in padded envelopes or boxes to:
  • New Eyes for the Needy
  549 Millburn Avenue
  P.O. Box 332
  Short Hills, NJ 07078

Making a Difference:

• E-mail ten friends who wear glasses to see if they have old pairs that could be recycled for people with eyesight problems. Collect them for donation.
• Check with lost and found departments in hotels, health clubs, stores, police stations, and mortuaries for unclaimed glasses that could be donated.
• Also, consider sponsoring an eyeglasses collection drive at your workplace or house of worship.

Hearing and Aging

Loss of hearing is very gradual, starting at middle age.
The loss appears to be caused by a decrease in the elasticity of the eardrum.
Impaired hearing affects more older adults than any other chronic condition.

Hearing Loss Due to Age

Hearing loss due to age often develops slowly and quietly due to deterioration in the inner ear function.
Sensitivity to high-pitched sounds fades first.
Some speech sounds, such as “s,” “f” and “l,” may be harder to hear than others.
Dealing with Hearing Concerns

Problem
Many background noises from radio, television, appliances, traffic or busy public gatherings all detract from hearing normal conversation.

Solution
Turn off the television or radio during conversations. Ask for quiet sections in restaurants, and try to sit away from the door at theaters.

At present exposure limits, one in four people will develop a permanent hearing loss as a result of their occupational exposure to noise hazards.

Data courtesy of the National Institute of Occupational Health and Safety

Two Hearing Aids Vs. One Hearing Aid
- Better hearing in a noisy environment
- Head Shadow Effect
- Improved localization of sound
- Deterioration of unaided ear
- Improved understanding of speech
- Save battery power
- Less tiring
- Better balance of sound
- Help mask tinnitus

Hearing Health
Begin now to make hearing health a part of your lifestyle.
Stay away from loud or prolonged noises when you can.
When you must be around noise, either at work or play, use something to protect your hearing (ear plugs, etc.).

Caring for Your Hearing
- Treat ear problems promptly
Visit your audiologist if you develop ringing in your ears or other hearing deficits.
• Avoid Prolonged Loud Noise Levels

Protect your hearing by wearing ear plugs.
Always wear industrial-strength earmuffs when using noisy equipment.

• Don’t clean your ears with cotton-buds

This may cause infection and push wax onto the eardrum, which will dull sound.

To clean the ears, wash the external ear with a cloth, but do not insert anything into the ear canal. Most cases of ear wax blockage respond to home treatments used to soften wax.

Patients can try placing a few drops of mineral oil, baby oil, glycerin, or commercial drops in the ear.

American Academy of Otolaryngology - 2015

• Avoid air travel when suffering from a cold

Changes in air pressure during flight may severely compromise the eardrums.

Sensory Activity 2 –
The Unfair Hearing Test

Let’s Do the Hearing Activity!

Reputable Online Hearing Test:
American Speech-Language-Hearing Association


Hearing Loss? ...Consider the following questions:

• Do you sometimes have difficulty understanding speech on the telephone or TV?
• Do you sometimes feel that people are mumbling or not speaking very clearly?
• Do you find yourself asking people to speak up or repeat themselves?
• Do you experience difficulty understanding soft speech?
• Do you find it difficult to follow a conversation in a noisy restaurant or crowded room?
• Do you hear better through one ear than the other when you are on the telephone?
Promising Technology:
National Center for Accessible Media (NCAM) — provides a list of theaters equipped with captioning technology that is accessible to audiences with hearing disabilities during regular show times.
- Captioning enables moviegoers to enjoy a film via reflected captions that appear on a plexiglass panel at the seat. Patrons sitting in the surrounding seats cannot see the captions.
- Some theaters also provide headphones so that patrons can better hear the movie at their own hearing level.
- There is no additional charge to use the systems.
National Center on Accessible Media — dedicated to providing television programs for people with hearing loss as well as people who are blind.

Available Resources:
National Council on Aging— National Council on Aging a nonprofit service and advocacy organization headquartered in Washington, DC. A national voice for older Americans and the community organizations that serve them. They bring together nonprofit organizations, businesses, and government to develop creative solutions that improve the lives of all older adults.
http://www.ncoa.org/

Better Hearing Institute –
http://www.betterhearing.org/hearing-loss-adults/what-about-hearing-aids

Taste, Smell and Aging
To taste food, you must have a sense of smell.
Changes in the senses of taste and smell can make eating less enjoyable for older people.
If food seems to have very little flavor, it will be less appealing to an older person.

Smell in Human Beings
Humans can recognize as many as 10,000 different scents.
A diminished sense of smell poses safety problems for older adults.

Importance of Smell
Sense of smell is essential for detecting signs of danger:
- smoke
- gas leaks
- spoiled food

Take extra safety precautions.
Smoke detectors are a necessity in all areas of the home, especially in the kitchen and near fireplaces. Also, dispose of food that has not been stored properly, is near the expiration date or has been refrigerated more than 4-5 days.

Protecting our Sense of Smell
Our sense of smell is one of the first things to be eroded when we are impacted by a head injury or stroke
Our sense of smell can be dulled by smoking and continuous nasal congestion.
Maintaining your Sense of Smell

Eating foods which are high in zinc is crucial to maintaining your sense of smell. Zinc is an important mineral that can be found in oysters and other seafood, lamb and yogurt.

Arousing your Sense of Smell

When you eat foods like curries, horseradish, cinnamon and spearmint, you arouse or stimulate the nerve which affects smell.

(Taste, continued)

At age 30, a person has 245 taste buds on each of the tiny elevations (called papilla) on the tongue.

By age 70, the number of taste buds decreases to approximately 88.

The sense of taste changes slowly.

Maintaining your Sense of Smell

Avoid or Protect Against Chemical Exposure

Taste and Aging

The sense of taste is limited to four basic categories:

- Sweet
- Salty
- Sour
- Bitter

Taste and Smell

Taste and smell are inextricably linked. Our olfactory system works in tandem with our sense of taste to provide us with the flavors of foods and beverages.

If people lose their sense of smell, they often feel that they have also lost some of their ability to taste, even though their taste buds are still responding normally.
Maintaining Your Sense of Taste

Dental health is significant when considering your sense of taste. Teeth and taste work together to feed vital information to the brain. For healthy teeth:
- Brush at least twice a day and treat gum problems
- Visit your dentist every 6-12 months
- Limit acidic and sugary foods, and
- Use salty rinses instead of mouthwashes.

Maintaining Your Sense of Taste

Be mindful of very hot foods and fluids. A burnt tongue can damage your taste buds.

Sensory Activity 3 – Smell of Chocolate

Let’s Do the Taste and Smell Activity!

Touch and Aging

As we age, the sense of touch decreases. The skin becomes less taut and has a loss of elasticity. Tissue loss occurs immediately below the skin.

(Touch and Aging, continued)

Loss in the sense of touch makes detecting extremes more difficult in:
- temperature
- vibration
- pressure
- pain

Decreased Touch Sensitivity

May affect a person’s ability to distinguish different stimuli or reduce their reaction time. Makes differentiating coins or buttons difficult. May cause difficulties with fine dexterity, such as catching or picking up small objects.
Touch and Health Concerns

Because the skin loses sensitivity, an older adult may not experience pain until the skin has been damaged.

The reduced fat can cause the body, particularly the extremities, to bruise or even tear for no apparent reason.

Reduced nerve endings can result in a person not noticing a cut, blister or other injury that can lead to infection.

Safeguard Your Sense of Touch

Protect the sensitive nerve endings and touch receptors located in your skin; particularly in your hands, lips, face, neck, feet and tongue.

There are about 100 touch receptors in your fingertips, so take care to avoid accidents.

Simple measures include using a chopping knife carefully, wearing thermal gloves when handling hot food, placing safety guards on saws and closing heavy car doors with care.

Sensory Activity 4 – Touch and Dexterity

Let’s Do the Touch and Dexterity Activity!

Impacts of Sensory Loss

Sensory loss in any of the senses can be emotionally distressing and may affect everyday tasks, such as reading, moving about safely, doing housework and sharing conversation.

While everyone is different, people with sensory loss may experience:

- Frustration
- Confusion
- Fear of becoming a burden
- Isolation
- Withdrawal
- Anxiety
- Fear of losing independence
- Depression

Coping with Sensory Loss

Changing your lifestyle can help reduce potential for sensory losses that are common to aging.

Increase activity and good nutrition and delight in a longer, healthier lifespan.

Being optimistic, coping with a sensory loss and maintaining social contact with others can contribute to an improved quality of life.

Take Care of Your Senses...

Well-functioning senses not only enable you to have a better quality of life, they promote longevity by allowing you to remain more active and independent. Your brain controls your senses, so by looking after them you’ll be helping your brain to stay healthy too.
Resources for Coping with Sensory Loss

National Association of Geriatric Education Centers – [www.nagec.org](http://www.nagec.org)
The American Geriatrics Society – [www.americangeriatrics.org](http://www.americangeriatrics.org)
North Dakota Adult and Aging Services – [www.nd.gov/dhs/services/adultaging](http://www.nd.gov/dhs/services/adultaging)
American Society on Aging – [www.asaging.org](http://www.asaging.org)
North Dakota Interagency Program for Assistive Technology – [www.ndipat.org](http://www.ndipat.org)

[www.beyondhearingaids.com](http://www.beyondhearingaids.com): evaluation of consumer's environment

American Speech-Language-Hearing Association