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PURPOSE

The purpose of this course is to educate and reinforce the knowledge of Guardians, Nurses; ARNP, RN, LPN and CNA /HHA who are working in the health care environment, as well as other students/ individuals regarding caring for the elderly. This course reviews standards for decision-making, professional ethics, the patient's right to decide, the physiological changes that occur with the aging process, factors to take into consideration when caring for the elderly, how aging affects the pulmonary system; lungs, nervous system, the senses, bones, muscles, joints, reproductive system, immune and other systems and how to treat or manage the complications that may be encountered. The course also reviews the types of Activities of daily living (ADLs), types of health care and community settings that are available to meet the needs of the elderly and resources that are available within the community to assist with the needs of the elderly, Infection control; guidelines / regulations that are designed for educating, monitoring, managing, isolating and reporting healthcare related and/or community acquired infections.

Objectives/ Goals:

After successful completion of this course the participants will be able to:

1. Describe standards for decision-making,

2. Discuss factors to take into consideration when caring for the elderly

3. Define professional ethics

4. Discuss the patient's right to decide

5. Discuss the physiological changes that occurs with the aging process, aging changes in the cells, tissues, and organs

6. Describe how aging affects the pulmonary system; lungs, nervous system, the senses, bones, muscles, joints, immune system and how to treat or manage the various complications that can arise.

7. Discuss the various types of assistance of daily living activities (ADLs)

8. Describe at least 4 types of health care and community settings that are available to meet the needs of the elderly.

9. Discuss various resources that are available within the community to assist with the needs of the elderly.

10. Describe infection control; guidelines / regulations that are designed for educating, monitoring, managing, isolating, and reporting healthcare related and/or community acquired infections.

INTRODUCTION

Gerontology is defined as the study of the social, cognitive, psychological, and biological aspects of aging.

Characteristics of the Elderly

Aging is not a disease, but a NORMAL progressive process. As the individuals get older they may experience multiple physiological changes, chronic illnesses, as well as memory problems, other limitations and often requires some assistance with different aspect of care, activities of daily living (ADLs), medication management, nutritional intake and other issues that can affect safety.

Working with the elderly individual requires much caring, patience, knowledge, and training.

ETHICS- RULES OF CONDUCT

Ethics is defined as rules of conduct; the branch of philosophy that deals with morality. Ethics is concerned with distinguishing between good and bad in the workplace, schools and overall, in the society / in the world. Ethics involves distinguishing between right and wrong human actions, and between virtuous and non-virtuous characteristics of individuals.

Ethics involves moral principles that govern an individual's behavior or a group's conduct or behavior. All professionals, Guardians, Nurses: License Practical Nurses, Registered Nurses, Advanced Registered Nurse Practitioners, and other the health care professionals, Occupational Therapists, Massage Therapists, Certified Nursing Assistants (CNA), and Home Health Aid (HHA) need to follow the ethical principles and code of ethics that are in place.

Ethics provides a guideline or a set of standards for behavior that assists the individuals to decide how he/ she behave or conduct themselves in various situations. Ethics involves making choices or decisions and provides reasons why individuals should make these choices.

PRINCIPLES OF ETHICS

The Principles of Ethics are model standards of exemplary, flawless, professional behavior /conduct that should be demonstrated by all professionals, representing the best.

PROFESSIONAL RELATIONSHIPS

In all professional relationships, work and /or services should be practiced with compassion, recognizing human dignity and value that is present in each client, co-worker/ each individual.

All professionals need to maintain the highest regard for the standards of one's profession/ position and

Avoid actions that are based on prejudice,

Avoid behavior/ actions that are threatening of others,

Avoid actions that brings harassment to others,

Provide fair treatment to others, and

Maintain relationships that are caring.

RESPECT FOR HUMAN DIGNITY

Respect for human dignity requires that the professional is aware of, acknowledge and understands that the clients/patients have specific rights.

HONESTY

Honesty is the quality of being honest,

Honesty reflects uprightness of character or action,

Honesty means being trustworthy, fair, loyal, and sincere,

Honesty implies a refusing to lie, steal, or deceive in any way,

Fairness or uprightness of character or actions,

Honesty reflects a part of one's moral character and reflects positive, virtuous attributes for example: truthfulness, integrity, and straight forwardness.

PROVIDING CARE/ SERVICES

In the provision of care and services, the professionals should respect the beliefs, values and customs of each individual, the family and community.

RELATIONSHIPS TO CLIENTS/PATIENTS

The professional establishes therapeutic relationships with the clients/ patients and administers care and services taking into consideration the individuals' lifestyle, religious beliefs, and values. Effective communication should always be employed to ensure that the clients / patients' needs are met at optimum levels of care.

RESPECT VALUES AND BELIEFS

The professionals should always respect the values and beliefs of the clients/ patients and avoid enforcing their personal values and beliefs on the clients/patients.

DECISION MAKING BY GUARDIAN OF THE PERSON CONCERNING MEDICAL TREATMENT

THE PATIENT'S RIGHT TO DECIDE

This is an especially important topic to discuss as individuals are being asked to participate in making decisions about end of life wishes and care. Every competent adult has the right to make decisions regarding his or her own health, which includes the right to choose or refuse medical treatment.

When an individual becomes unable to make decisions due to a physical or mental change, such as being in a coma or other conditions or disease such as Alzheimer's disease, they are considered incapacitated.

To ensure that an incapacitated person's decisions about health care will still be respected, the Florida legislature enacted legislation pertaining to health care advance directives (Chapter 765, Florida Statutes).

Providing assistance with activities of daily living (ADL)

Providing assistance with activities of daily living involves providing assistance with task such as:

- Ambulation
- Bathing
- Dressing
- Eating
- Personal hygiene
- Toileting Transfers
- Assistance with self-administered medication.

According to the Agency for Health Care administration, assistance with activities of daily living (ADL) means the certified nursing assistant or a home health aide provides to the patient individual assistance with activities of daily living, which includes:

- Ambulation.

Providing physical support to enable the patient to move about within or outside of the patient's place of residence. Physical support includes holding the patient's hand, elbow, under the arm, or holding on to a support belt worn by the patient to assist in providing stability or direction while the patient ambulates.

 Bathing.

Helping the patient in and out of the bathtub or shower being available while the patient is bathing. Can also include washing and drying the patient.

 Dressing.

Helping patients, who require assistance in dressing themselves, put

on and remove clothing.

 Eating.

Helping with feeding patients who require assistance in feeding

themselves.

 Personal hygiene.

Helping the patient with shaving. Assisting with oral, hair, skin and nail care.

 Toileting.

Reminding the patient about using the toilet, assisting him to the

bathroom, helping to undress, positioning on the commode, and helping with related personal hygiene, including assistance with changing of an adult brief.

Also includes assisting with positioning the patient on the bedpan and helping with related personal hygiene.

 Providing assistance with physical transfer.

Providing verbal and physical cueing, physical assistance, or both while the patient moves from one position to another, between the following: a bed, chair, wheelchair, commode, bathtub or shower, or a standing position. Transfer can also include use of a mechanical lift.

 Providing assistance with self-administered medication, as defined in subsection 59A-8.0095(5), F.A.C.

Various settings for different levels of care

There are several types of care ranging from skilled nursing care to senior living. They vary depending on the level of assistance that is required by the patient /resident.

Various settings include:

 Senior Communities

 Continuing Care

 Assisted Living

 Board and Care/ group home

 Skilled Nursing facility

Senior Communities

 Senior housing is designed for the elderly who are high functioning, which refers to those who do not require assistance with ADLs.

 Senior communities are often neighborhoods that are limited to elderly of a certain age group.

 They are developed for active seniors and they often provide a variety of social clubs for example arts and crafts, bingo, golf, cards, and other social activities.

Some senior communities also offer additional levels of care; many are not equipped for the elderly individuals who require assistance with ADLs. At times, the individual may require some assistance through home health care for a short period of time.

Continuing Care

 Continuing care communities are sometimes called progressive care facilities.

 They frequently offer a broad range of options; from independent living to special care.

 The residents are often admitted when they live independently but as their need changes or increases, they are guaranteed vacancies in another level of care.

Assisted Living

 Assisted living offers the elderly a place to live outside of their home, where they can receive basic assistance in housekeeping, 24-7 monitoring, meal preparation, assistance with shower, dressing, toileting, medication reminders or assistance, eating, transportation, activities and socialization.

 Some individuals may have their own apartment; others will consent to sharing a room with someone.

 There will be access to common areas such as an activity/ recreational room, TV room, library, and communal sitting areas. May also provide a common dining area where everyone will gather for all meals if they desire.

 Assisted living facilities are designed for individuals who require assistance with complex ADLs on a daily basis. More complex ADLs include shopping, money management, cooking, and other activities.

Board and Care/ group home

 Board and care / group home setting is similar to assisted living in terms of care.

 This is often a single-family dwelling which has been converted into a residence for elderly and/ or disabled residents.

 The monthly rent commonly includes room, meals, laundry services, 24-hour staffing and some transportation.

 Basic medical care can be attended to, however residents who have more serious medical conditions will be expected to move into a more appropriate facility to meet their needs.

Skilled Nursing facility (SNF)

 Skilled nursing facility (SNF) is a level of care that is licensed to administer medical treatment with nurses Licensed Practical Nurses (LPN), Registered Nurses (RN) and Certified Nurses Assistants (CNA).

 Skilled nursing facility (SNF) offers extensive nursing services for the residents.

Admission must be initiated by the individuals' physician, who recommends that the patient needs either rehabilitation care or a special care facility.

 Rehabilitation care programs are located in hospitals or long-term care, skilled nursing facilities/ nursing homes.

 Rehabilitation care programs provide intensive medical care for patients who are expected to regain functional capacity and return home in a short time.

Special care facility

 There are different types of special care facilities: some are involved with special medical issues and others manage behavioral problems that may arise from dementia/ Alzheimer's.

The patients are often admitted to a skilled nursing facility to address an acute condition for example, rehabilitating a fractured hip, or for treating an infection with intravenous (IV) antibiotics.

Many skilled nursing facilities have a portion of their residents who are long- term care patients. These are patients who require the treatment capabilities of a Skilled Nursing facility (SNF), but their status /condition requires that level of care permanently.

Long-term care includes nursing supervision and is focused on maintenance as opposed to curative care. The condition is not expected to improve, the nursing activities are focused on keeping the individual healthy, safe and function at the most optimal level within that person limits.

PHYSIOLOGICAL CHANGES THAT OCCURS WITH THE AGING PROCESS

AGING CHANGES IN THE BODY AND THEIR AFFECTS ON THE LUNGS

Changes to the bones and muscles of the chest and spine:

 Bones become thinner and change shape. This can change the shape of the ribcage. As a result, the ribcage cannot expand and contract as well during breathing.

 The diaphragm, the muscle that supports breathing becomes weakened. This weakness may prevent the individual from breathing enough air in or out.

These changes in the bones and muscles;

 May lead to lower the oxygen level in the body.

 Also, less carbon dioxide may be removed from the body. As a result, symptoms such as tiredness and shortness of breath can occur.

Changes to lung tissue:

 Muscles and other tissues that are near the airways may lose their ability to keep the airways completely open. This causes the airways to close easily.

 Aging also causes the air sacs to lose their shape and become baggy.

These changes in lung tissue can allow air to get trapped in the lungs.

Too little oxygen may enter the blood vessels and less carbon dioxide may be removed. This makes it hard to breathe.

Changes to the nervous system:

 The brain; the part of the brain that controls breathing may lose some of the function. When this occurs, the lungs are not able to get adequate oxygen. Not enough carbon dioxide may leave the lungs. Breathing may become more difficult.

 Nerves in the airways that trigger coughing become less sensitive. Large amounts of particles like smoke or germs may collect in the lungs and may be hard to cough up.

Changes to the immune system:

 The immune system can get weaker. This means the body is less able to fight lung infections and other diseases.

 The lungs are also less capable of recovering after exposure to smoke or other harmful particles.

COMMON PROBLEMS

As a result of these changes, older individuals are at increased risk for:

- Lung infections; for example, pneumonia and bronchitis
- Shortness of breath
- Decreased oxygen level
- Abnormal breathing patterns, resulting in problems such as sleep apnea (episodes of stopped breathing during sleep).

PREVENTION

To decrease the effects of aging on the lungs:

- Do not smoke. Smoking harms the lungs and speeds up lung aging.
- Do physical activity / exercise to improve lung function.
- Get up and move. Lying in bed or sitting for long periods allows mucus to collect in the lungs. This puts the individual at risk of lung infections. This is especially true right after surgery or when the individual becomes ill.

OTHER CHANGES RELATED TO AGING

As people grow older, other changes will include:

- Changes in the cells, organs, and tissues
- Changes in the bones, joints, and muscles
- Changes in the heart and the blood vessels.

Aging changes in cells, organs, and tissues.

All vital organs begin to lose some function as the individual age during adulthood.

Aging changes occur in all of the body's:

- Cells,
- tissues, and
- organs

and these changes will affect the functioning of all body systems.

Living tissue is made up of cells. There are several different types of cells, but all have the same basic structure. Tissues are layers of similar cells that perform a specific function. The different kinds of tissues group together and form the organs.

There are four basic types of tissue:

Connective tissue

Connective tissue supports other tissues and binds them together. This includes:

- Bone,
- Blood, and
- lymph tissues and
- Other tissues that give support and structure to the skin and internal organs.

Epithelial tissue

Epithelial tissue is a sheet of cells that lines the body cavity or covers a body surface.

There are two forms of epithelial tissue that occur in the human body;

Covering and lining epithelium

- Forms the outer layer of the skin;
- lines open cavities of the digestive and respiratory systems;
- covers the walls of organs of the closed ventral body cavity.

Glandular epithelium (surrounds glands within the body).

Epithelial tissue provides a covering for the deeper body layers.

The skin and the linings of the passages inside the body, such as the gastrointestinal system, are made of epithelial tissue.

Muscle tissue:

The 3 types of muscle tissue are cardiac, smooth, and skeletal.

Cardiac muscle

Cardiac muscle cells are located in the walls of the heart, appear striated, and are involuntary control. Cardiac muscle makes up most of the heart wall.

Smooth muscle

Smooth muscle fibers are located in walls of hollow visceral organs, except the heart, appear spindle-shaped, and are also under involuntary control.

Smooth muscles (also called involuntary muscle), such as the muscles contained in the stomach and other internal organs.

Skeletal muscle

Skeletal muscle fibers occur in muscles which are attached to the skeleton. They are striated in appearance and are under voluntary control.

Nerve tissue

Nerve tissue is made up of nerve cells (neurons) and is used to carry messages to and from different parts of the body. The brain, spinal cord, and the peripheral nerves are made of nerve tissue.

AGING CHANGES

 Cells are basic building blocks of the tissues.

 The cells experience some changes with the aging process.

 Cells often become larger and are less able to divide and to multiply. Also, there is an increase in pigments and/ or fatty substances inside the cell (lipids).

 Many cells lose the ability to function, or they begin to function in an abnormal manner.

 As aging continues, waste products build up in tissue. A fatty brown pigment collects in many tissues, as well as other fatty substances.

 Connective tissue changes and often become stiffer. Therefore, the airways, organs, and the blood vessels become more rigid.

 Cell membranes also undergo changes, and many tissues have difficulty getting oxygen, nutrients, and removing waste and carbon dioxide.

 Atrophy develops and many tissues lose their mass.

 Some tissues become nodular (lumpy) and/ or more rigid.

Due to the changes in the cell and the tissue the organs also experience changes with the aging process.

The aging organs begin to gradually lose their function. Most individuals do not notice this loss right away.

The changes may appear slowly and over a long period. When the organs start to work harder than usual, it may not be capable of increasing their function. Therefore, the individual may experience sudden heart failure or other problems can develop when the body is worked harder than usual.

Things that can place an extra stressor /workload on the body include:

- Sickness
- Lack of sleep
- Significant life changes
- Medications
- Sudden increase in physical demands on the body, for example changes in activity.

Loss of reserve also makes it harder to restore equilibrium/ balance in the body.

Medications are removed from the body at a slower rate. Lower doses of medications are often needed, and side effects become a very significant concern.

THE AGING THEORY

The researchers, gerontologists and other scientists and other persons are still not sure how and why people change as they get older. There is no single process that can explain all the changes that occurs with the aging process.

Aging is a very complex process that varies as it affects different individuals in different ways.

Many gerontologists feel that aging is due to the interaction of several lifelong influences. These influences may include:

 Heredity, diet, environment, exercise, culture, past illnesses lifestyle and many other factors.

Each individual age at a unique rate. Some systems begin aging as early as age of 30.

Other aging processes are not manifested until much later in life.

Although some changes always occur with aging, they often occur at different rates and to different extents. There is no sure way to predict exactly how an individual will age.

TERMS TO DESCRIBE SOME TYPES OF CELL CHANGES EXPERIENCE WITH AGING

Atrophy:

 Atrophy refers to body tissue or an organ wasting away, such as occur in disuse atrophy which occurs from a lack of physical activity. In some individuals, muscle atrophy is caused by not using their muscles enough.

 With atrophy the cells begin to shrink. If enough cells decrease in size, the entire organ will waste away /atrophy. This is often a normal aging change and can occur in any tissue.

 Atrophy is most common in the skeletal muscle, the brain, heart, and the sex organs for example the breasts.

The cause of atrophy is not known, but may include:

 Reduced use,

 Decreased workload,

 Reduced blood supply to cells

 Reduced nutrition to the cells

 Reduced stimulation by nerves.

Hypertrophy

 With hypertrophy the cells, tissue/ organs enlarge. For example, left ventricular hypertrophy can occur when some factor makes the heart work harder than normal to pump blood throughout the body; such as hypertension which is the most common cause of left ventricular hypertrophy.

Hyperplasia

 With Hyperplasia the number of cells increases. There is increased rate of the cell division.

 Hyperplasia often occurs to compensate for a loss of cells.

It allows some organs and tissues to regenerate, including the:

- skin,
- Liver,
- lining of the intestines,
- bone marrow.

Tissues that have limited ability to regenerate include:

- Bone,
- cartilage,
- smooth muscle for example the muscles around the intestines.

The tissues that rarely or never regenerate include the:

- Nerves,
- skeletal muscle,
- heart muscle, and
- the lens of the eye.

When injured, these tissues are usually replaced with scar tissue.

Dysplasia

- Dysplasia refers to the changes in the shape, size or organization of mature cells becomes abnormal (also referred to as atypical hyperplasia).
- Dysplasia is common in the cells of the cervix and within the lining of the respiratory system/ tract.

Neoplasia

 Neoplasia refers to the formation of tumors, which may be cancerous/ malignant or noncancerous/benign.

 Neoplastic cells reproduce rapidly. They may have unusual shapes and also have abnormal function.

As mentioned before, as the individuals grow older, there will be various changes throughout the body, including changes in:

 Hormone production

 Immunity

 The skin

 Sleep pattern

 Bones, muscles, joints

 The breasts

 The face

 The female reproductive system

 The heart and blood vessels

 The kidneys

 The lungs

 The male reproductive system

 The nervous system.

Aging changes in the bones, muscles, and joints

 Changes in the bones, muscles and joints lead to changes in posture and gait / pattern of walking which is quite common with aging.

 The skeleton functions to provide support and structure to the body.

 The joints are the areas where the bones come together, this allows the skeleton to be flexible and allow movement.

 In the joint, bones do not contact each other directly; however, they are protected or cushioned by cartilage within the joint, synovial membranes that are around the joint, and fluid.

 Muscles provide the strength to move the body. The brain coordinates the activities are affected by changes in the muscles and joints.

 Changes in the joints, muscles, and bones affect posture and ambulation, and lead to weakness and much slower movement; therefore, the older individuals often ambulates at a slower pace.

AGING CHANGES

 Individuals lose bone mass or density as they age, especially women

after menopause. The bones lose calcium and other minerals.

 The spine is made up of bones called vertebrae. Between each bone is a gel-like cushion. The middle of the body / trunk becomes shorter as the disks gradually becomes thinner and gradually loses fluid.

 The vertebrae also lose some of the mineral content, making each bone thinner.

Therefore, the spinal column becomes curved and compressed.

 Bone spurs caused by aging and overall use of the spine may also form on the vertebrae.

 The arch of the foot become less pronounced; this contributes to a slight loss of height.

 The bones are more brittle because of mineral loss and are more susceptible to fractures.

 Joint stiffness is a frequent complaint of the elderly person and as the joints become stiffer, they also become less flexible.

 Fluid within the joints may also decrease, therefore the cartilage experiences some friction, as they rub together causing them to wear away.

 Sometime the elderly person may experience some calcification as minerals deposit in and around some of their joints for example in the shoulder.

 There might be degenerative changes in the hip and knee joints as they begin to lose the cartilage.

 The joints in the fingers can also lose cartilage.

 Lean body mass also decreases. This decrease is partly contributed by atrophy or loss of muscle tissue.

 Lipofuscin (age related pigment) and fats are deposited in muscle tissue.

 The muscle fibers also shrink. This lost muscle tissue may be replaced with a tough fibrous tissue.

 This is most noticeable in the hands, which may look bony and thin.

 The muscles become less toned and the ability to contract is reduced because of changes in the muscle tissue and the normal aging changes within the nervous system.

EFFECT OF THE CHANGES

 The bones become more brittle and may break more easily.

 Overall height decreases as the trunk and spine shorten.

 Breakdown of the joints may lead to pain, inflammation/ swelling, stiffness, and

deformity.

 These changes may present as minor stiffness to severe arthritis.

 The posture may become more bent over.

 The knees and hips may change and become more flexed.

 Movement slows and may become limited. Ambulation /gait or the walking pattern becomes slower and shorter.

 Ambulation /gait may become unsteady.

Great changes are seen in strength and endurance. As the individual ages they tend to get tired much more easily and have less energy. Loss of muscle mass causes a reduction in strength.

COMMON PROBLEMS THAT DEVELOPS

Osteoporosis

The bones are in a constant state of renewal; the new bone is made, and old bone is broken down. When an individual is young, the body makes new bone faster than it breaks down old bone and the bone mass increases, however as people age, the bone mass is lost faster than it is made.

Osteoporosis is a common problem, especially for older women. The bones break more easily. Compression fractures of the vertebrae can cause pain and decrease mobility.

Muscle weakness

Muscle weakness contributes to weakness, fatigue, and reduced activity tolerance. Joint problems ranging from mild stiffness to debilitating osteoarthritis are common.

High risk of falls / injuries

As the individual ages and these changes occur, the elderly person is at risk of injury because:

 Gait changes, pain, instability, unsteady gait, and loss of balance can lead to falls.

Involuntary movements

Involuntary movements, muscle tremors, fine movements (fasciculations) are more common in the elderly persons.

Contractures

Contractures develop when the normal elastic tissues are replaced by non-stretchy fiber like tissue. This tissue makes very difficult to stretch the area and thus prevent normal movement.

Elderly as well as individuals who are unable to move or they do not stretch their muscles with Range of motion (ROM) activities or other exercises, may develop muscle contractures.

PREVENTION MEASURES

Exercise/ Activities

 Exercise is one of the best ways to prevent or slow problems with the joints, muscles, and bones.

 Participation in moderate exercise / physical activities can help to maintain balance, strength, and flexibility. Exercise also helps the bones stay strong.

Well-balanced diet

As the individual ages, it is incredibly significant to eat a well-balanced diet with calcium. The women need to ensure that they get enough calcium and vitamin D as they get older.

Women who are postmenopausal and men over age 65 often take 1,200 mg of calcium and 400 to 800 international units (IU) of vitamin D per day (follow the physician's order).

Aging changes in the heart and blood vessels

AGING CHANGES

The Heart

The natural pacemaker system.

 The heart has a natural pacemaker system, the sinoatrial (SA) node, which functions to controls the heartbeat.

 As the individual ages, some of the pathways of this system may develop fat deposits and fibrous tissues.

 The natural pacemaker; the sinoatrial (SA) node, loses some of the cells. These changes may result in a slightly slower heart rate.

Increase in the size of the heart

An increase in the size of the heart is often observed in the left ventricle. The heart wall thickens, and the heart may fill more slowly.

Arrhythmias

 Abnormal rhythms or arrhythmias for example, atrial fibrillation, are more common in the older individuals. This is sometimes caused by heart disease.

 Normal changes in the heart include deposits of the lipofuscin (aging pigment).

The heart muscle cells degenerate.

 The valves inside the heart, that control the direction of the blood flow, may thicken, and become stiff.

 A heart murmur that is caused by valve stiffness is common in the elderly.

Blood vessels

 Receptors that are called baroreceptors monitor the blood pressure and make changes to help maintain the blood pressure when an individual changes position or is performing other activities.

The baroreceptors often become less sensitive as the individual ages.

Older individuals often experience orthostatic hypotension; this is a condition in which the blood pressure decreases when the person moves from lying position to standing or from a sitting position to standing. This causes the individual to experience some dizziness because less blood flow is going to the brain.

Sometimes the aorta (main artery from the heart) becomes stiffer, thicker, and not as flexible and may cause the blood pressure to be higher and makes the heart work much harder, which can lead to hypertrophy (thickening) of the heart muscle.

Other arteries also become thicker and stiffer.

Blood

 The blood changes slightly as the individual gets older.

 Normal aging process results in a reduction in total body water. With less fluid within the bloodstream, the blood volume is decreased.

 The rate in which the red blood cells are made or produced in response to an illness or stress is reduced. This results in a slower response to blood loss and anemia.

 Most of the white blood cells stay at the same levels, however some white blood cells important to immunity such as neutrophils, decrease in their number and the ability to fight off bacteria. Therefore, the elderly person experiences a reduction in the ability to resist infection.

EFFECT OF CHANGES

The heart continues to pump enough blood to supply all the parts of the body. However, the older heart may not be able to pump blood as effectively when it works harder.

Some of the things that will make the heart work a little harder are:

 Various types of medications

 Emotional / physical stress

 Physical exertion

 Illness

 Infections

 Injuries

SOME COMMON PROBLEMS

 Angina (chest pain caused by temporarily reduced blood flow to heart muscle),

 shortness of breath with exertion,

 heart attack may result from coronary artery disease.

 Abnormal heart rhythms (arrhythmias) of various types can occur.

 Anemia may occur, possibly related to malnutrition, blood loss from the gastrointestinal (GI) tract, chronic infections, or as a complication from other diseases or medications.

 Arteriosclerosis (hardening of the arteries), quite common in the elderly individuals.

 Fatty plaque deposits, within the blood vessels cause them to narrow and partially or totally block the blood vessels.

 Congestive heart failure is also quite common in the elderly.

 Hypertension (High blood pressure) and orthostatic hypotension are more common in older individuals.

 Heart valve diseases are common. Aortic stenosis (narrowing of the aortic valve) most common valve disease in the older individuals.

 Transient ischemic attacks (TIA) or strokes may occur if the blood flow to the brain become disrupted.

Some other complications with the heart and blood vessels may include:

 Blood clots

 Varicose veins

 Deep vein thrombosis

 Thrombophlebitis.

 Peripheral vascular disease (causing intermittent pain in the legs when walking claudication)

 Aneurysms

Aneurysms are abnormal widening of a part of an artery due to some weakness within the wall of the artery (blood vessel). An aneurysm may develop in one of the major arteries from the heart or in the brain. If an aneurysm bursts this is a medical emergency, and it may cause bleeding and death.

PREVENTION

Help the circulatory system, the heart, and the blood vessels.

Heart disease risk factors that each individual have some control over include:

 Obesity,

 High blood pressure,

 Cholesterol levels,

 Diabetes and

 Smoking.

Eating a heart healthy diet or adequate nutritional intake, which has reduced amounts of saturated fat and cholesterol, and controlling the weight is an excellent way to help the circulatory system.

As for individuals with various health and chronic conditions such as diabetes, hypertension, high cholesterol, following the health care provider's recommendations for taking care of these conditions will help.

For individuals who smoke- stop smoking is highly recommended.

Participate in more exercise.

Exercise has several benefits;

 Exercise may help prevent obesity

 Exercise helps individuals with diabetes control their blood sugar.

 Exercise may help maintain your abilities as much as possible

 Exercise helps to reduce stress.

 Individuals who exercise usually have less body fat

 Individuals who exercise also tend to have less problems with blood pressure and less heart disorder /disease.

Follow up with regular check-ups for the heart.

Aging changes in hormone production

The endocrine system is made up of tissues and organs that produce hormones.

 As the individuals get older, changes naturally occur in the way that the body systems are controlled.

 Some target tissues may become less sensitive to the controlling hormone. The amount of hormones produced may also change.

 Blood levels of some hormones increase, some decrease, and some are unchanged. Hormones are also metabolized (broken down) more slowly.

 Some of the organs that produce hormones are also controlled by other hormones. Aging also affects this process.

 An endocrine tissue may produce less hormone than it did at a younger age, or it may continue to produce the same amount but at a slower rate.

AGING CHANGES

The hypothalamus is located in the brain and produces hormones that control the other structures within the endocrine system. The amount of the regulating hormones tent to remain about the same, but the response by the endocrine organs may change as the individual gets older.

The pituitary gland, which is also located in the brain, reaches maximum size in middle age, and then gradually gets smaller as we age.

It has two parts:

The posterior section stores hormones produced in the hypothalamus.

The anterior section produces hormones that affect:

 Growth, the thyroid gland (TSH), adrenal cortex, ovaries, testes, and breasts.

 The thyroid gland produces hormones that help to control our metabolism.

 As the individual gets older, the thyroid gland may become nodular. Over time the metabolism slows down.

 In some individuals, the thyroid hormone levels may rise, which may lead to an increased risk of death due to cardiovascular disease.

 The parathyroid glands are four tiny glands located around the thyroid.

 Parathyroid hormone affects the calcium and phosphate levels, which then may influence bone strength.

 The parathyroid hormone levels rise as the individual gets older, which may contribute to osteoporosis.

 The pancreas- Insulin is produced by the pancreas. It helps to get glucose from the blood into the cells, where it will be used for energy.

 The average fasting blood glucose level rises after the individual reaches the age 50 as the cells become less sensitive to the effects of insulin.

 The adrenal glands (located just above the kidneys). The adrenal cortex layer produces the hormones aldosterone, cortisol, and dehydroepiandrosterone (DHEA).

 Aldosterone regulates the fluid and electrolyte balance. Aldosterone release decreases with age. This reduction may contribute to a decrease in the blood pressure with sudden position changes (orthostatic hypotension) causing lightheadedness etc.

 Cortisol (stress response) hormone affects the breakdown of glucose, fat, protein and has anti-allergy and anti-inflammatory effects. Cortisol release also decreases with aging, but the blood level of this hormone remains relatively the same.

 Dehydroepiandrosterone; the body uses DHEA to make androgens and estrogens, the male and female sex hormones.

 The ovaries and testes functions to produce the reproductive cells (ova and sperm). They also produce the sex hormones that control secondary sex characteristics, for example the breasts and facial hair.

 As the individual gets older, men sometimes have lower levels of testosterone.

Older women also display lower levels of estradiol and other estrogen hormones after they reach menopause.

EFFECT OF CHANGES

In general, some hormones stay the same, some decrease, and some increase with age. Hormones that usually show a reduction include:

- Aldosterone
- Calcitonin
- Growth hormone
- Renin.

In women,

- Estrogen and prolactin levels often shows significant reduction.

Hormones that usually remain the same or only show a slight decrease include:

- Cortisol
- Epinephrine
- Insulin
- Thyroid hormones T3 and T4
- Testosterone levels often decrease gradually as men get older.

Hormones that may increase include:

- Follicle-stimulating hormone (FSH)
- Luteinizing hormone (LH)
- Norepinephrine
- Parathyroid hormone.

Aging changes in immunity

The immune system helps protect the body from harmful or foreign substances such as viruses, bacteria, toxins, and tissues or blood from another individual. The immune system makes cells and antibodies that functions to destroy these foreign/ harmful substances.

Aging Changes and their effects on the Immune system

As the individual grow older, the immune system does not work as effectively as before.

The following immune system changes may occur:

 The immune system becomes slower to respond. Therefore, the individual now has increased risk of getting sick. The flu shots and other vaccines may not work as effectively or protect the individual for as long as it is expected.

 An autoimmune disorder may develop (the immune system can mistakenly attack and /or destroy the healthy body tissues).

 The body may heal much slowly because there are fewer immune cells in the body to bring about healing.

The ability of the immune system, to detect and to correct the cell defects also decreases. This may lead to an increased risk of cancer.

Prevention

To decrease the risks from immune system aging:

 Educate the individual to get the flu and pneumonia vaccines, and any other vaccines that the physician/ healthcare provider has recommended.

 Encourage the individuals to participate in exercise activities. Exercise helps boost the immune system (many gyms now offer the silver sneaker program covered by some insurance companies).

 Teach the individual to make healthy meal choices. Good nutrition helps to keep the immune system strength.

 Remind the individual to stop smoking (if applicable). Smoking can weaken the immune system.

 Teach the individual to limit the intake of alcohol; need to speak with physician regarding how much alcohol is safe, (also alcohol may have harmful interactions with other medications.

 Review safety measures to prevent accident / incidents, falls and injuries

because a weakened immune system can slowdown the healing process.

Aging changes in skin

Skin changes are very visible as the individual ages.

Skin changes are among the most visible signs of aging.

Changes such as:

 wrinkles

 sagging skin

 Whitening of hair or

 graying of hair.

Integumentary system

The skin is a protective layer/ barrier between the internal organs and the outside environment.

The skin has layers:

Epidermis: The Epidermis is composed of squamous cells that are less sensitive than underlying structures. The epidermis is the first line of defense against infection.

Dermis: Much thicker than the epidermis. This layer consists of blood vessels, hair follicles, sweat glands, sebaceous glands, collagen fibers, lymphatic vessels, and nerves. The dermis reacts quickly to painful stimuli as well as to temperature changes and pressure sensation.

The inner layer under the dermis (the subcutaneous layer) has sweat glands, hair follicles, blood vessels, and fat.

The skin also:

 Helps control our body temperature

 Assist in maintaining the fluid and electrolyte balance

 Has nerve receptors that allow the individual to feel pain, touch, and pressure.

 Is a protective layer/ barrier between the internal organs and the outside environment.

Skin changes may be related to environmental factors, exposure to the sun, genetic factors, nutrition among other factors.

AGING CHANGES

 As the individual gets older, the outer skin layer (epidermis) becomes thinner, although the number of cell layers remains the same.

 The number of melanocytes (pigment-containing cells), decrease. The other melanocytes that remain, increase in size.

 The aging skin appears pale, thinner, and much clearer- translucent.

 On sun exposed areas, large pigmented spots such as liver spots, age spots, liver spots may appear.

 The changes that occurs in the connective tissue, lead to a reduction the skin's elasticity and strength. This is referred to as elastosis. It is more noticeable in sun-exposed areas (solar elastosis).

 Elastosis produces a leathery appearance that is commonly seen in individuals who spend a lot of time in the sun/ outdoors.

 As the individual ages, the blood vessels of the dermis become more fragile. This often contributes to easy bruising/bleeding under the skin, which is referred to as senile purpura, cherry angiomas.

 As the individual ages, the sebaceous glands produce less oil. Therefore, with less moisture in the skin the elderly person often experiences dry itchy skin.

 As mentioned earlier, the subcutaneous fat layer becomes thinner; therefore, it has less insulation, less fat. This reduces the ability to maintain the body temperature (there is less natural insulation) therefore the individual will experience hypothermia in cold weather and complain of feeling cold when others around feel fine.

 As the subcutaneous fat layer becomes thinner, it has less insulation (fat) therefore there is also increase risk of skin injury.

 Some medications are absorbed by the subcutaneous (fat) layer. As this layer becomes thinner, this affects the way that the medications work.

 The sweat glands also produce less sweat. Therefore, this makes it more difficult to cool the body. This increases the risk for developing heat stroke.

 Other changes that are more common in an older individual are growths such as warts, skin tags, warts keratoses (rough patches).

EFFECT OF THE CHANGES

As the individuals get older, they have an increased risk for skin injury. The skin is much more fragile, thinner and they lose the protective subcutaneous layer.

 The individual may also be less able to sense pressure, touch, vibration, cold and/or heat.

 The blood vessels are fragile therefore they may break easily; hematomas may form after minor injury.

 Friction (pulling or rubbing) on the skin can cause skin impairment or injuries/ skin tears, bruises, purpura.

The elderly individual may also develop pressure injury as a result of prolonged “pressure” to a site, which reduces the blood flow to that site and can eventually lead to tissue death.

These pressure injuries or ulcers may also be caused by some contributing factors such as changes in the skin, loss of the subcutaneous (fat) layer, poor nutrition, reduced activity, and illness.

These pressure ulcers can occur anywhere on the body, especially on bony prominences.

As the individual grows older, the healing process is also much slower. The skin repairs itself more slowly than when the person was younger. Other factors such as blood vessel changes, Diabetes, lowered immunity, and other illnesses can also affect healing.

Skin disorders although common among the elderly population, can also be caused by many conditions, such as:

 Poor Nutritional intake- resulting in deficiencies

 Diseases for example Diabetes, Liver, and heart disease

 Stress

 Blood vessel diseases, for example arteriosclerosis Obesity

 Reactions to some medications.

Some other causes of skin changes may also include:

 Allergies to plants and other substances

 Exposures to household and /or industrial chemicals

 Indoor heating

 Climate.

The exposure to sunlight can cause:

- Pigment changes for example liver spots
- Loss of the elasticity of the skin
- Increased thickness of the skin
- Noncancerous growths of the skin.

Sun exposure has also been linked to skin cancers, including:

 Basal cell cancer,

 squamous cell carcinoma

 melanoma.

PREVENTION

Encourage good nutrition intake. Sometimes nutritional deficiencies cause skin changes such as rashes, and other skin lesions.

Teach the importance of adequate hydration / fluid intake as dehydration often increases the risk of skin injury.

Educate the patient to prevent sunburn, utilize a good quality sunscreen whenever they go outdoors and to wear a hat and protective clothing as needed.

Keep skin moist with lotions and other moisturizers.

Teach the patient to avoid soaps that have excess perfume.

AGING CHANGES IN SLEEP

As the individual gets older, there are changes seen in sleep patterns.

Some older persons have a harder time falling asleep.

They awaken more often during the night and earlier in the morning.

As the individuals get older, they may spend more total time in bed.

Older individuals wake up more often because they spend less time in deep sleep.

There are other factors that also affects sleep such as:

 Pain /discomfort from chronic illnesses

 Nocturia – frequently waking up during the night to urinate; this may also be due to medications such as a diuretic.

 Anxiety

 Depression

 Stress or worried about something etc.

EFFECT OF THESE CHANGES

Sleeping difficulty, chronic insomnia, sleep deprivation can lead to:

Fatigue, chronic insomnia is a major cause of auto accidents.

Sleep problems are also a common symptom of depression.

Sleep deprivation can eventually cause confusion and other mental changes, but the individual can reduce symptoms when they get enough sleep.

COMMON PROBLEMS

Insomnia is a very common sleep problem in the elderly population. Other sleep disorders that may also occur includes:

 restless legs syndrome,

 narcolepsy (a chronic brain disorder which involves poor control of sleep-wake cycles)

 hypersomnia (recurrent episodes of excessive daytime sleepiness or prolonged nighttime sleep) can also occur.

 Sleep apnea (breathing stops for a period during sleep) can cause severe problems and sleep is frequently interrupted.

PREVENTION

Sleep medications

The elderly individuals respond differently to medications than when they were younger.

Sleep medications do have side effects and falls risk is also a concern for the elderly patients. Teach patients to take only as recommended by physician or healthcare provider. Some medications can build up in the body. The older individual can develop toxic effects.

Some measures to take to help go to sleep:

For at least 3 or 4 hours before bedtime, people should avoid stimulants for example, caffeine products such as:

- coffee,
- Tea,
- Cola drinks
- Chocolate.

Eating a light bedtime snack can be helpful; sometimes causes people to become sleepy.

Some individuals report that warm milk increases sleepiness it contains a natural, sedative-like amino acid).

Teach patients to avoid tobacco products before bedtime.

Remind individual to avoid too much stimulation before bedtime. Stimulation such as violent shows on the television, loud music and/ or games.

Teach patients relaxation techniques that they can utilize at bedtime.

Remind the individuals to avoid taking naps during the day.

Encourage the patient to try to go to bed the same time every night and wake up at the same time every morning.

Encourage the individual to do some moderate exercise in the afternoon.

Check current medications; some medications may affect sleep.

Aging changes in the breast

As the female gets older, the breasts lose:

- Tissue
- fat
- Mammary glands.

Some of these changes are due to the decrease in the levels /production of estrogen that takes place at menopause.

As estrogen levels decrease, the gland tissue shrinks, making the breasts less full and smaller. The connective tissue which supports the breasts starts to lose its elasticity and the breasts starts to sag due to the decreased elasticity.

The breast nipples also change. The areola (area surrounding the nipple) becomes smaller. Around the time of menopause, lumps within the breasts are common (often noncancerous cysts).

Teach the women about the benefits as well as the limitations of breast self-exams. Breast self-exams do not always detect breast cancer in the early stage.

Remind the individuals to discuss mammograms with their physician/ healthcare provider.

Aging changes in the face

The face typically changes with age. As the individuals loose muscle tone and the skin becomes thinner the skin gives the face a drooping appearance. Also due to the increase dryness of the skin and the subcutaneous (fat) layer is reduced, the face no longer has the plump or smooth surface. Wrinkles are seen as the individual ages. The dark spots on the face increase as well.

The appearance of the neck also reveals changes with age as the skin appears loose.

The mouth

The shape of the mouth changes as the gum recedes due to missing teeth and changes the appearance of the mouth and lips. The jaw also loses bone mass.

The ears

Men sometimes develop long, course hair in their ears. Ear wax becomes much drier, there are fewer wax glands in the ears and less oil is produced. The hardened ear wax may block the ear canal and affect the ability to hear, many elderly individuals experience decreased hearing caused by various factors.

The eyes

Eyelashes and /or eyebrows may change to gray. Eyelids may droop as the muscle that supports the upper eyelids becomes weaker.

Aging changes in the female reproductive system

Changes in the hormone levels bring about changes in the female reproductive system.

Menopause - as the female ages older menopause occurs (menstrual periods stop permanently). The period of time before menopause is called perimenopause. (It may begin several years before the last menstrual period).

Signs of perimenopause include:

As the individual ages, changes occur in the menstrual period sometimes the individual experiences occasional missed periods. At times, the period may be longer and other times it may be shorter. Changes also occur in the amount of the menstrual flow.

Eventually the periods become much less frequent, until they eventually stop.

AGING CHANGES AND THEIR EFFECTS

 Many women experience menopause around the age of 50, although it can occur before that age as well as after. When menopause occurs, the ovaries stop producing the hormones estrogen and progesterone. The ovaries also stop releasing eggs therefore the individual cannot become pregnant.

 As hormone levels decreases, the older women have increased risk of vaginal yeast infections. The walls of the vagina become dryer, thinner, and less elastic.

Sometimes sexual activities become painful.

 The older women experiences symptoms of menopause such as hot flashes, headaches, trouble sleeping and moodiness.

 Decrease in the breast tissue as mentioned before.

 Decreased libido /lower sex drive and sexual response.

 The pubic muscles loose tone and some older women experience prolapse, (falling out of position) of the uterus or bladder.

 Increased risk of osteoporosis / bone loss.

MANAGING THE CHANGES

Hormone therapy

Hormone therapy with progesterone or estrogen may help menopause symptoms for example, hot flashes and vaginal dryness, however there are also risks with hormone therapy.

 Educate the older person regarding how to manage problems for example, painful sexual intercourse by using a lubricant during sexual activities. There are some vaginal moisturizers that are available without a prescription.

Aging changes in the kidneys and bladder

The kidneys have multiple functions including:

 Filtering the blood and help to remove waste and excess fluid from the body.

 The kidneys also assist in controlling the body's chemical balance.

The urinary system includes:

 The kidneys, ureters, bladder, and the urethra.

Aging Changes and The Effects on the Kidneys and Bladder

 As the individuals get older, the kidneys and the bladder change. This can affect their function.

 Muscular changes and changes in the reproductive system also affect bladder control.

Within a healthy aging individual, kidney function remains normal. However, with illness, medications, and other diagnosis or conditions may cause changes in the kidney function.

Changes in the kidneys:

As the individual gets older the amount of kidney tissue also decreases. The nephrons, (filtering units in the kidneys) also decreases. The nephrons are responsible for filtering waste material from the blood; therefore, you can imagine what will happen when this function is not taking place effectively.

The blood vessels that supply the kidneys can become hardened. This will affect the rate at which the kidneys will filter blood (slower rate).

Changes in the bladder:

As the individual gets older, there are changes in the bladder wall. The elastic tissue becomes tough and the bladder becomes less able to stretch.

The bladder is unable to hold as much urine as before.

The bladder muscles become weaker.

The urethra may become blocked. In women, this can be due to prolapsed from weakened muscles that cause the bladder or vagina to fall out of its original position.

In men, an enlarged prostate gland may block the urethra.

Common Problems

 Bladder control issues, for example leakage of urine or urinary incontinence (unable to hold the urine), or urinary retention (unable to completely empty the bladder)

 Bladder infections

 other urinary tract infection (UTI)

 Chronic kidney disease

Instruct the patients to contact the health care provider or physician if they have any of the following:

Urine that is very dark urine

Fresh blood in the urine

Difficulty with urinating (unable to urinate or hesitant or leakage)

Urinary frequency (more often than usual)

Sudden urge or need to urinate (urinary urgency)

Signs of a urinary tract infection, including

- fever
- chills,
- burning on urination,
- nausea / vomiting,
- low back pain
- extreme fatigue.

Aging changes in the male reproductive system

As the male get older some of the changes in the male reproductive system may include changes in:

- Testicular tissue,
- Sperm production, and
- Erectile function.

Most of the time, the changes occur gradually.

Testicular tissue mass, changes and decreases.

The level of testosterone (the male sex hormone) decreases gradually or may stay the same. Some older men may have difficulty getting an erection.

The testes continue to produce sperm; however, the rate of sperm cell production slows.

The tubes that carry the sperm may become less elastic.

The prostate gland, seminal vesicles and epididymis also experience changes and lose some of their surface cells.

The prostate gland often enlarges with age (some of the prostate tissue is replaced with a scar like tissue).

Benign prostatic hypertrophy (BPH) may cause problems slowing urination and slowing ejaculation.

EFFECT OF CHANGES

Some men may experience a lower sex drive. Decreased testosterone levels may cause sexual responses to become slower. It may also be the result of social or psychological changes illness, chronic conditions, and /or medications.

SOME COMMON PROBLEMS

Erectile Dysfunction (ED)

 Erectile dysfunction (ED) is sometimes a concern for older men. Erectile dysfunction (ED) is often the result of a medical problem, rather than aging.

Some medications, such as medications for hypertension and other conditions, may prevent a man from getting an erection. Other conditions such as diabetes can also cause erectile dysfunction (ED).

 If the bladder is not fully drained of urine, this could cause urine to back up into the ureters and even up to the kidneys (vesicoureteral reflux). This is a serious condition which requires treatment. If it is not treated, it can lead to kidney failure.

 Prostatitis (prostate gland infections or inflammation) may also occur.

 The older male may also develop prostate cancer.

Aging changes in the nervous system

The brain and nervous system control the body's:

 Movements

 Memory

 thoughts

 Senses

 They also help control the organs such as the bowels and heart.

AGING CHANGES AND THEIR EFFECTS ON THE NERVOUS SYSTEM

As the individuals get older, the brain and the nervous system experience natural changes. The brain and the spinal cord atrophies and lose nerve cells. The nerve cells may start to pass messages much more slowly than earlier age.

As nerve cells break down, waste products can collect within the brain tissue. This can cause abnormal changes in the brain; plaques and tangles may form. Lipofuscin (fatty brown pigment) can also build up in nerve tissue.

When the changes and breakdown occur in the nerves these changes can affect the senses.

The individual may lose or have reduced or lost reflexes and/ or sensation. This will lead to problems with movement and affects safety of the individual.

As the individual ages, slowing of the thought process and memory may also occur.

Some individual has multiple changes in the brain tissues and nerves while others only experience a few changes.

NERVOUS SYSTEM PROBLEMS IN OLDER INDIVIDUALS

Severe memory loss and dementia are not normal part of the aging process, but may be caused by brain diseases for example, Alzheimer disease, (associated with plaques/ tangles form in the brain).

Delirium (sudden severe confusion) leads to changes in behavior and thinking. Delirium is most often caused by physical illness or mental illness.

Delirium is usually temporary and reversible; often lasts about 1 week but may take several weeks for the mental function to return to normal.

It is sometimes due to illness that is not related to the brain, for example an infection can cause the older person to become extremely confused. Some medications may also cause this.

Other causes of delirium may include:

- Surgery
- Alcohol or drug withdrawal
- Electrolyte disturbances
- Poisons
- Infections such as pneumonia or urinary tract infections.

Behavior problems and thinking can also be caused by diabetes that is poorly controlled. Increasing and decreasing levels of blood glucose can interfere with thought process.

Changes in thinking, behavior and /or memory are important if it is different from the usual or normal pattern and also vital if it affects the patient's lifestyle.

PREVENTION

Physical exercise and mental activities can help the brain stay sharp. Mental exercises include activities such as:

- Physical exercise (promotes blood flow to the brain).
- Reading
- Socialization (becoming involved in conversation)
- Doing some crossword puzzles.

Aging changes in the senses

As the individual ages, there are changes in the way the senses deliver information.

Senses include;

- Hearing,
- Vision,
- Taste,
- Smell,
- Touch

The senses may become less sharp, making it more difficult for the individual to notice details.

Sensory changes may affect the person's lifestyle. They may have problems

- Communicating,
- Enjoying activities,
- Staying involved with other people.

As the individuals get older, all of the senses can be affected. Sensory changes may lead to isolation.

When hearing and vision are affected, devices such as glasses and hearing aids, or lifestyle changes may improve the individuals' ability to hear and see.

HEARING

The ears functions include

- Hearing and
- Maintaining balance.

Hearing occurs when the sound vibrations cross the eardrum to the inner ear. The vibrations are then changed into nerve signals within the inner ear and are then carried to the brain by the auditory nerve.

Balance is controlled in the inner ear.

As the individual gets older, the structures within the ear begin to change and functions decline. Sometime the ability to hear sounds decreases. The older persons may also have problems maintaining balance as they stand, sit and walk.

Age-related hearing loss is called presbycusis. The individual may also have difficulty telling the difference between certain sounds, may have difficulty hearing a conversation when there is background noise.

Hearing problems or having trouble hearing can make it difficult to:

- Understand and follow instructions,
- Respond to warnings,
- Hear phones, doorbells, smoke alarms
- Enjoy talking with friends and family (leading to feelings of isolation).

Hearing aids may help to manage hearing loss.

Abnormal ear noise or ringing in the ear (tinnitus) is another common problem in older population. Causes of tinnitus may include wax buildup over time, changes in the eardrum or medications that damage structures inside the ear.

Impacted ear wax, is a very common problem in the older population, which also cause trouble hearing. The health care provider can assist and remove impacted ear wax.

VISION

As the individual grows older, vision is often affected. The eye structures change with aging.

The cornea becomes less sensitive, so you might not notice eye injuries. By the time the individual becomes 60, the pupils may decrease to about one third of the size they were when the individual was younger.

The pupils may react more slowly in response to darkness or bright light.

The lens may become less flexible, yellow, and slightly cloudy. The fat pads that support the eyes decrease and the eyes sink into their sockets. The eye muscles become less capable of fully rotating the eye.

As the individual grows older, visual acuity (the sharpness of vision) gradually declines.

Presbyopia

Presbyopia (the most common problem experience) is difficulty focusing the eyes on close up objects. Device that can help to correct presbyopia includes:

- Reading glasses,
- Bifocal glasses,
- Contact lenses.

Glare may become extremely difficult to tolerate; affecting the ability to see. The older person may even have trouble adapting to darkness and/ or bright light, leading to high risk for falls / accidents and incidents.

Reduced peripheral vision is also common in older individuals.

As the individual gets older, the vitreous humor (a clear, jelly-like substance that fills the middle of the eye) starts to decrease. This may create some tiny floaters (particles) in the field of vision.

The older individual often experiences dry eyes. If this condition is not treated, the cornea may become inflamed, infected and/ or scarring can develop. However, dry eyes can be relieved by using eye drops or artificial tears.

SMELL AND TASTE

Some loss of smell and taste is natural with aging.

Many factors can also contribute to the loss of taste and smell such as:

 Nasal problems (nasal polyps)

 Sinus problems (sinusitis)

 Allergies

 Head injury

 facial injury

 Some medications, such as angiotensin-converting enzyme (ACE) inhibitors and beta blockers

 Smoking

 Dental problems

Loss of smell and taste can lead to decreased appetite that result in poor nutrition. Loss of smell and taste also might tempt the individual to use excessive salt or sugar on their meals to enhance the taste, which could be a problem if the individual has hypertension as well as other cardiovascular conditions and diabetes. At times the individual needs to switch to a different medication, if the medication is affecting their ability to smell and taste; other times the individual may simply need to try different spices or change the way that the meal is prepared.

TOUCH, VIBRATION, AND PAIN

The sense of touch

Touch makes the individuals aware of:

- Pressure
- Pain,
- Temperature,
- Vibration,
- Body position.

Within the body, the skin, tendons, muscles, joints, organs have nerve endings that are able to detect sensations.

As the individual ages, sensations may be changed or reduced. The changes may occur due to various factors such as of reduced flow of blood to the nerve endings or to the brain or spinal cord.

The spinal cord function to transmit nerve signals and the brain interprets the signals.

When the individual experiences health problems they can lead to sensation changes.

For example, problems in the brain or brain surgery can result in changes in sensation.

Also nerve damage from injury or nerve damage from chronic diseases for example diabetes can result in changes in sensation.

Symptoms of changed sensation will vary depending on the cause. When there is decreased temperature sensitivity, the individual may have difficulty differentiating between cold or cool and warm or hot.

This will cause much safety concerns because the individual is at increased risk of injury for example from frostbite, if exposure to hypothermia or may experience burns from exposure to extreme heat. As well as many other conditions.

Scenario: An older individual with diabetic neuropathy had some difficulty removing his shoes, when his wife assisted; there was a nail in the shoe. He reported that he had no pain or discomfort; was not aware that he had stepped on a nail.

There are also reported cases of older individuals with diabetic neuropathy who had ants covering the entire lower extremity and was not aware. Ants bite marks were obvious later as pimples appear at sites.

As the individuals experience decrease ability to detect touch, vibration, and pressure there is increased risk of injuries, for example pressure injuries or other injuries.

As the individuals ages, he or she may have reduced sensitivity to pain. Therefore, when an injury occurs the individual may not know how severe the injury is because the pain may not be severe.

Teach the older persons measures that they can take to help stay safe such as:

 Monitor the thermometer to decide what appropriate attire to wear to avoid feeling chilly or overheated.

 To avoid burns, lower the water heater temperature to no higher than 120°F (49°C).

 Inspect the skin, especially the feet, for injuries.

 Follow up for treatment of an injury; may be profoundly serious even if not experiencing pain.

Aging changes in vital signs

Vital signs include (TPR BP):

 body temperature,

 heart rate (pulse),

 breathing rate,

 Blood pressure.

As the individual gets older, the vital signs may change. Some health problems may cause changes in one or more vital signs.

BODY TEMPERATURE

Normal body temperature does not change much with aging.

But as the individuals get older, it becomes much harder for the body to control its temperature.

A decrease in the amount of body fat below the skin (subcutaneous) makes it harder to stay warm. The individual may need to dress in layers of clothing to feel warm.

As mentioned earlier aging decreases the ability to sweat. The individuals may have problems telling when they are becoming overheated. This may lead to heat stroke.

The older person may also be at risk for dangerous drops in body temperature.

ALERT!!

Fever

Fever is an important sign of illness or infection in older individuals. Teach patient to see the physician/ health care provider if they experience fever that is not explained by a known cause or illness.

Some older individuals may not be able to produce a higher temperature when they have an infection; therefore, it is important to assess the other vital signs, as well as any signs and symptoms of infection.

HEART RATE AND BREATHING RATE

As the individuals get older the pulse rate may be about the same as before. But with exercise, it may take longer for the pulse to increase and longer for it to slow down after the exercise. The highest heart rate with exercise may also be lower than it was at a younger age.

Breathing rate usually does not change with age. But lung function decreases slightly.

Healthy older individuals can usually breathe without effort.

BLOOD PRESSURE

Older individuals often experience orthostatic hypotension; this is a condition in which the blood pressure decreases when the person moves from lying position to standing or from a sitting position to standing. This causes the individual to experience some dizziness because less blood flow is going to the brain.

The risk of having hypertension also increases as the individuals get older.

Other heart related problems that are common in older adults include:

Very slow or fast pulse

Problems with heart rhythm for example atrial fibrillation (a-fib)

EFFECTS OF MEDICATIONS ON VITAL SIGNS

Some medications that are used to treat health problems in older individuals can affect the vital signs. Such as

digitalis used for heart failure and

blood pressure medications for example, beta blockers may cause the pulse to slow.

Diuretic (water pill) can cause a reduction in blood pressure (hypotension), especially when the individuals change body positions too quickly.

PROBLEMS WITH MEMORY, THINKING AND BEHAVIOR

Alzheimer's Disease

Alzheimer's is defined as a type of dementia that causes the individual to experience problems with memory, thinking and behavior. The symptoms usually develop slowly, and they become worse over time. The symptom become so severe that they interfere with the individual ‘s daily tasks.

Alzheimer's is not a normal part of aging, although the greatest known risk factor is increasing age, and the majority of individuals with Alzheimer's are 65 and older. But Alzheimer's disease is not just a disease of old age. According to the Alzheimer's association, up to 5 percent of people with the disease have early onset Alzheimer’s, which is also known as younger onset, which often appears when the individual is in their 40s or 50s.

Alzheimer's disease is the most common form of dementia, which is a general term for memory loss and other intellectual abilities serious enough to cause an interference with daily life. Alzheimer's disease accounts for 60 to 80 percent of dementia cases.

Alzheimer's is not the only cause of memory loss.

Many individuals have problems with memory; this does not mean that they have Alzheimer’s disease. There are many different causes of memory loss.

Visit the online Alzheimer’s and Dementia Caregiver Center or locate a support group in your community and you can also visit the Alzheimer’s Association virtual library at http://www.alz.org/library/index.asp

Some care giving tips which will assist the caregiver include:

 Instruct caregiver to learn about the disease. Read literature /books, consult with the healthcare professional and attend workshops.

 Learn how to avoid caregiver burnout by making time for themselves and join caregiver support groups.

 Discuss the situation with family and friends. Support systems are particularly important

 Pursue interests beyond the care giving role, such as hobbies, exercise, and journaling.

 Do cognitive stimulation activities with him /her. For example, memory games, listening to music and word puzzles.

 Employ positive thinking. Focus on the individual's remaining strengths and enjoy the relationship while they still can.

 Smile and show kindness, humor and creativity are especially important aspects of care giving. Hugs, Smiles, hand massage and other gentle physical contact will help their loved one feel connected and loved.

 Take care of the financial, legal, and long-term care planning issues. Try to involve the individual in decision-making, if he /she is still able of providing input and include his/ her wishes related to any future care and / or end-of-life issues.

 Learn care giving techniques. The main areas include safety concerns, communication skills, managing behavioral changes /challenges and assisting with activities of daily living.

 Understanding the experience, be kind and patient with their loved one.

 Maintain their own mental and physical health. Get involved in activities to reduce stress such as: Exercise, respite, and hobbies.

 Ensure communication with the physicians. Become involved in the individual's medical care. Ask any questions they have regarding the progression of the disease, talk about the concerns, and discuss available treatment options.

Infection Control

Infection control refers to guidelines / regulations that are designed for educating, reporting, monitoring, managing, and isolating healthcare related and/or community acquired infections. Therefore, infection control measures are important to control, eliminate or minimize patients/ residents, clients, and employee exposure to bloodborne pathogens and communicable diseases.

Infection control standards and policies published by Occupational Safety and Health Administration (OSHA), the Centers for Disease Control and Prevention (CDC) the Association for Professionals in Infection Control and Epidemiology (APIC) and National Institute of Occupational Safety and Health (NIOSH) have made recommendations.

These guidelines are designed to reduce the transmission of bloodborne and other pathogens and apply to every patient/resident/client regardless of their diagnosis.

Universal Precautions

Universal Precautions is an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infection for HIV, HBV and other blood-borne pathogens.

HAND CONTACT

The hands are one of the most common transmitters of pathogens from one person or item to either yourself or another person. According to the Centers for Disease control and Prevention (CDC), appropriate hand washing results in a reduction of both nosocomial (hospital-acquired) and community infections. Guidelines from National and International infection control and prevention organizations have acknowledged that hand washing is the single most important procedure for preventing infections.

HAND WASHING

Review the common aseptic practices that should be followed in all settings to prevent the spread of infections. The following applies to patients as well as individuals assisting with medications:

 Wash hands BEFORE and AFTER providing any type of care,

 Always wash your hands after using the bathroom, after urination, bowel movements, and changing of sanitary products,

 Wash hands when there is contact with body fluid and /or substance (for example: blood, saliva, urine, vomit, feces, respiratory secretions, wound drainage, and any other body fluid or drainage).

 Wash hands after covering the mouth and / or nose when coughing or sneezing.

 Wash hands before preparing food

 Wash hands before eating food.

The components of good hand washing include:

Using adequate amount of soap

Rubbing the hands together to create some friction and

Rinsing under running water

The mechanical action of washing and drying removes most of the transient bacteria that is present. Washing hands thoroughly between patient contacts and after contact with body fluids, blood, excretion, secretion, articles, or equipment contaminated by them is an important component of infection control and isolation precautions.

Some institutions recommend use adequate soap, make a lather, and continue rubbing for 15-20 seconds. To wash for the correct time, sing - Happy Birthday to You- two times. If soap and water are not available, you can use an alcohol-based hand rub to clean your hands. These foam gels significantly reduce the number of germs on the skin and are fast acting.

Follow your institutions' policy and procedure.

Rights of medication administration

When assisting with the medications:

Always do the - Triple check

Check

1. The medication label with the medication record,

2. Check the medication record, then the medication label,

3. then the medication record before providing the medication to the patient

And FOLLOW the Rights of medication administration.

The Rights of medication administration

When assisting a person with their medications, you must make sure that you are following the Rights of medication administration. Medication safety is the responsibility of everyone who handles medications. The original five rights of medication administration (Right patient, medication, dosage, time, and route) have increased to the nine rights of medication administration within some ALF, adding the right documentation, right to refuse, right reason, and right response which we will review in this course study. Other resources have also added the Right drug preparation, Right assessment and the Right approach. Follow your facility's policy and procedures.

1. The Right Patient

ALWAYS check to make sure that you have the Right patient.

Two patients may have the same name, and the same birthday

Patients may be moved to a different room

Patients may switch beds within the same room.

Identification Procedure

ALWAYS verify the name of the patient by getting:

Two verbal identifiers: Ask the patient to state their full name,

and their Date of Birth (DOB).

Check the ID bracelet very carefully

Check the identity of the patient before you help him/her with their medication.

It is mandatory for you to use at least two (2) identifiers- Use 2 methods to identify the patient. If you assist the wrong patient this may cause a fatal error.

You cannot use a bed or room number as identifiers. A patient may accidentally enter a room and even go to bed in the wrong room.

Some identifiers include the patient's:

- First, middle, and last name,
- DOB – Date of Birth (month, day, and year),
- Photograph,
- a medical record number/ code number given to that patient
- social security number.

2. The Right Medication

The medication may belong to someone else in the household, so ALWAYS verify the medication label.

Do NOT use any medication that has a label that you cannot read.

Do NOT use any medication unless it has a complete label.

Read and check the label against the medication record at least three times and tell the person the name of the medicine before you help them.

If the person says they do not take this medicine, STOP. Do not help. Report this to your supervisor. It is an error if a patient takes the wrong medication. This must be reported.

3. The Right Dosage

The patient needs to take the right dosage that is ordered by the Physician or the Health care Practitioner, to achieve the desired effect of the medication. Taking too much of the medication can lead to an overdose. Take steps to reduce overdose errors.

Follow the systems in place – for triple checking dosages. Make sure the medication is recorded, so that a second dose is not accidentally given. Giving a half of the ordered dose of medication is also not the correct dosage. Not giving the right amount of the drug is also a medication error and must be reported.

4. The Right Time

Timing is also especially important when assisting with self-administration of medication.

Some medications need to reach a consistent level in the bloodstream to work effectively. This means that the medications need to be taken at the right times to keep that level of medication in the system. Usually, the liver or kidneys will remove the medication from the blood and high levels of the medication can build up in the system which can lead to toxicity if that dose is taken too soon. Also, if the patient misses a dose or wait too long between the doses, there might not be enough of the medication in the body to work effectively.

The standard acceptable time is within one hour before or after the scheduled administration time or it is considered a medication error.

5. The Right Route

Check the medication label to find out the right route. If the medication label states by mouth and the medication is placed in the ear. It is an error and must also be reported.

6. The Right Documentation

The right documentation involves properly recording /documenting each dose offered on the patient's record. Document only AFTER you have assisted with the ordered medication.

Never document that you assist with a medication before you have actually helped the patient. You may be called to another task and another individual takes over; your documentation ahead of the task will stop that other CNA/HHA from assisting, because the documentation reflects that the patient has already received the medication when he/she did not.

Document the time, route, and any other specific information, including refusal of medication. If the patient does not want to take the medication, notify the supervisor. Patient has a right to refuse; the supervisor will make sure that follow up is done with the patient and the physician as needed.

7. Right to REFUSE

By Florida's law, a resident/patient has the right to refuse a medication. A patient should not be forced to take a medication. Also, you cannot hide the medication in the patient's food and / or drink.

8. Right Reason

Confirm the rationale for the ordered medication. Is the patient taking the Tylenol for the headache or for fever? If you are not sure of the reason for a medication, ALWAYS ask.

Ask the doctor, pharmacist, or the nurse. Knowing the reason for the medication will help you to check the patient for the desired effect.

9. Right Response

Assisting with administration of medication is not just helping the patient to take the medication; It also involves observation of what happens afterward.

Professionals are trained to know how medications move through the body, what the effect of the medication is, and what adverse effects may occur.

Adverse effects may include allergic reactions to the drug, overdose of the drug, and drug interactions between multiple drugs.

Make sure that the medication had the desired effect. If a Tylenol was taken for a headache, check the patient and find out if the headache was relieved. If the headache was not resolved the Physician / health care practitioner needs to be notified.

Document the patient's report and your observation and that the supervisor / physician was notified.

MEDICATION ERRORS

A medication error is any preventable event that can cause or lead to inappropriate medication use or harm to the patient while the medication is in the control of the health care professional, pharmacist, patient, or consumer. Errors in prescribing, dispensing, and administering medications can lead to serious injuries.

Other causes of medication errors include poor communication between health care providers, between providers and patients, prescribing errors; product labeling, packaging, dispensing, distribution, education, monitoring, medical abbreviations, sound alike medication names, Illegible prescriptions or confusing directions.

Most medication errors can be prevented. Patient needs to be educated regarding their medications and take responsibility for monitoring the effectiveness and side effects.

Always ask questions or share concerns with the physician or pharmacist and other health care workers. Also, the health care worker should take steps to prevent medication errors.

Conclusion

When caring for the elderly, an entire team may be responsible for ensuring that the individual is safe and that various aspects of the patients/ residents right to decide and measures are implemented to ensure that those rights are understood and honored.

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