

U C L A

Health System

GERIATRIC AGE SPECIFIC

Self Learning Module

For Clinical Staff

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Geriatric Age Specific Self Learning Module

Instructions:

- Review the objectives
- Read the module content
- After reading the module, please go to Mosby's Skills and complete the Self Learning Geriatric Age Specific Post Test.

Course Objectives:

At the completion of this self learning module the user will be able to:

1. List age-related changes for the normal elderly person.
2. Describe changes in the elderly as they relate to medication usage.
3. Differentiate between delirium and dementia.

CARE OF THE GERIATRIC PATIENT

INTRODUCTION

Geriatrics and Gerontology are often used to mean the same thing. Geriatrics is the branch of medicine that deals with the illness and care of the aged, while Gerontology is the study of factors affecting the normal aging process and the effects of aging on persons of all ages.

Geriatric nursing focuses on the care of the sick elderly. Gerontologic nursing includes not only the care of the sick elderly, but also health maintenance, illness prevention, and the promotion of quality of life to assist the person to grow to an ideal state of health and well being.

Simply stated, our role as health care providers is to assist our elderly patients to get better, to maintain at their current status – accepting declines – or to ease their dying.

When an elderly person is admitted to the hospital, it is essential to conduct as complete an assessment as possible. Not only does a physical assessment need to be completed, but also all that is around the patient needs to be assessed to allow the nurse to identify problem areas so that appropriate planning can begin.

GENERAL CHANGES

The aging person tends to stoop forward, with head tilted backwards and hips, knees, and elbows flexed. This can lead to gait and stability problems.

With aging there is a gradual loss in the number of cells, such that by the time a person reaches 70, the body has 30% less cells. The cells are of irregular structure. The intracellular fluid decreases, although the extra-cellular fluid and plasma remain unchanged.

This change in intracellular volume leads to an increased risk of dehydration.

Other changes include:

- Decrease in serum albumin
- Increase in globulin
- Decreased ability to metabolize glucose resulting in higher blood glucose levels in the absence of diabetes.

NEUROLOGICAL CHANGES

Age related changes in the nervous system can be difficult to accurately predict because of how systems interact. For example, cardiovascular problems can decrease cerebral blood flow and could be responsible for cerebral dysfunction.

Changes in the nervous system could progress so slowly that it goes unnoticed and is non-specific in nature.

Nerve cells are lost with age and there is a decrease in conduction velocity. Most reflexes are slowed, but the deep tendon reflexes remain intact.

Sleep stages 3 and 4 become less prominent and sleep is more frequently interrupted. However, the amount of sleep loss is minimal.

Alterations in proprioception (sense of physical position) can lead to problems with balance and spatial orientation.

IMPLICATIONS FOR NURSING: Assure safety and assess for balance and gait. If necessary provide assistive devices for ambulation.

Delirium/Acute Confusional State

Delirium is an acute confusional state, characterized by:

- Disorganized thinking
- Disturbances in attention
- Disorientation
- Changes in Short Term Memory
- Changes in psychomotor activities

Possible Causes:

- Sleep deprivation
- Psychological conflicts, depression
- Drugs, substance abuse
- Emotional trauma
- Environmental changes (relocation, hospitalization)
- Head injuries, brain injuries
- Metabolic disturbances
- Nutritional deficiencies
- Infections
- Changes in oxygenation

Once these are corrected, the delirium will clear.

Dementia

A general **irreversible, progressive, deterioration** of mental function caused by organic factors.

Causative/Contributing factors:

- Alzheimer's disease
- Multiinfarct dementia
- Alcoholism
- Parkinson's disease
- Huntington's disease
- HIV- related dementia
- Trauma
- Heavy metal toxicity
- Hydrocephalus

Sundowner's Syndrome

Agitation, disorientation, wandering, and general worsening of behaviors as evening approaches.

Causes:

Not fully understood, but occurs most frequently in those with a cognitive impairment; contributing factors include recent admission to a health care facility, relocation within the facility, dehydration, sensory overload or deprivation, use of restraints or interruption of sleep.

Interventions:

- Turn lights on before dark to reduce transition from light to dark.
- Place familiar objects around the patient.
- Provide afternoon activities.
- Offer toileting assistance.

SENSORY ORGAN CHANGES

Each of the senses becomes less efficient with aging. Therefore, we need to look at how these changes affect the general well being and daily functioning of the individual.

Vision

- Presbyopia is a farsightedness that usually begins in the forties and causes older people to require corrective lenses.
- Narrowing of the visual fields
- Yellowing of the lens which distorts low tone colors
- Smaller pupils which reduces adaptation
- Opacity of the lens causes increased glare
- Less efficient reabsorption of intraocular fluid which leads to increased risk for glaucoma
- Distorted depth perception
- Decreased secretion from the lacrimal ducts which allows the eyes to become irritated very easily.

Hearing

- Prebycusis describes an age related hearing loss. It involves a dysfunction in the ability to transmit nerve impulses from the ear to the brain. Initially, the high frequency tones are filtered; as it progresses the middle and low frequency tones are also impaired. The progress is so gradual that frequently the person does not even know the extent of the loss.
- Hearing loss can also be caused by a blockage in the ear from earwax (cerumen).

Taste

- Taste sensation decreases because taste buds atrophy. Chronic irritation from smoking can also contribute to decreased taste sensation. By the later part of life, only one-third of the taste buds remain.

Smell

- Reduced with age due to few nerve cells in the nasal lining.

Touch

- There is an increased threshold to touch and pressure. Their ability to sense pressure and pain is reduced and they have greater difficulty differentiating temperature.
- Because of these sensory changes their environment may be unsafe. The decreased ability of the elderly to sense pressure could lead to skin breakdown.

Here are several actions, which may assist you in collecting data when sensory deficits exist:

- *Face the patient*
- *Eliminate background noise and limit distractions*
- *Speak slowly and clearly*
- *Keep questions brief*
- *Provide privacy*

CARDIOVASCULAR CHANGES

Usually the size of the heart does not change with aging. Therefore, enlargements in the elderly are associated with cardiac disease. In addition, marked inactivity can lead to cardiac atrophy.

The valves become thick and stiff due to sclerosis and fibrosis. As a compensatory mechanism for the decrease in oxygen utilization efficiency, the aortic volume and systolic blood pressure increases.

Decreased efficiency of the heart decreases cardiac output by approximately 1% per year through adulthood. The stroke volume also decreases by 0.7% each year.

- Most can adapt quite easily taking the elevator instead of the stairs, driving rather than walking great distances and they learn to pace themselves. However, when elders are faced with added demands, it is quite evident.

The resting heart rate is not significantly affected in the elderly. Even so, the heart rate may not reach the levels of a younger person. After a stressful event, however, it takes the heart longer to return to normal.

The Baroreceptors decreased sensitivity to blood pressure, leading to increased problems with orthostatic blood pressure.

Question patients on how they feel when going from a lying to a sitting position before letting them stand. If they are dizzy, allow time for the blood pressure to equilibrate.

There is increased peripheral resistance caused by:

- Calcium deposits
- Cross linkage of collagen
- Reduction in elastin

Capillary walls are thicker:

- Decreases the effective exchange of nutrients
- Promotes capillary fragility

RESPIRATORY ASSESSMENT

The lungs lose elasticity and become more rigid resulting in nearly a 50% drop in functional capacity. In other words we see a 50% decrease in residual volume, a lower vital capacity and a decreased maximum breathing capacity.

Alveoli are decreased in number but larger in size. Bronchioles and alveolar ducts have decreased diameters.

The front to back chest diameter increases. There is decreased mobility in the ribs due to costal cartilage calcification and less effective inspiration contractions.

There is decreased ciliary function.

Weak thoracic inspiratory and expiratory muscles lead to:

- Incomplete lung expansion
- Insufficient inflation in the bases
- Decreased ability to expel foreign bodies or secretions
- Inefficient cough

ALL OF THESE LEAD TO AN IDEAL CONDITION FOR RESPIRATORY INFECTIONS

- PO₂ levels decrease by 10-15 %
- PCO₂ levels remain constant.
- This accounts for the high incidence of COPD in the elderly population.

GASTROINTESTINAL CHANGES

The GI system has age related effects at every part.

Tooth loss is not a normal part of aging, but with years of poor dental hygiene, diet and environmental influences, most of today's elderly have lost their teeth. Many rely on dentures, which may be ill fitting or uncomfortable.

Taste sensation decreases because taste buds atrophy. Chronic irritations with smoking can also cause decreased taste sensation. Excessive use of seasonings to combat diminished taste could lead to health problems.

The amount of saliva produced is decreased by two thirds. Salivary ptyalin is also decreased, so digestion of starches is less efficient.

Esophageal motility is decreased and the esophagus tends to become slightly dilated. It empties more slowly which can lead to discomfort from food remaining for longer periods of time. There is also slower stomach motility.

The chance for aspiration is increased due to the changes in motility. Encourage the patients to sit up in their chairs for meals. If they are unable to get out of bed, make sure the head of the bed is elevated. Have patients sit up Have patients sit up a MINIMUM of 30 minutes after each meal. These precautions are also important for patients receiving NG tube or G-tube feedings.

The lining of the stomach is thinner, the production of digestive juices (HCL, pepsin, and pancreatic enzymes) is decreased and fats are not tolerated well.

Both the small and large intestines atrophy. The elderly are predisposed to constipation due to decreased motility of the colon and dulled sensation for defecation.

Assure adequate fluids, a high fiber diet, physical activity and laxatives and/or enemas if necessary. Monitor bowel status.

The mass of the liver decreases in weight and storage capacity. The incidence of gallstones increases because of less efficient cholesterol metabolism. The fat content of the pancreas increases.

GENITOURINARY CHANGES

The renal mass becomes smaller with age. There is approximately a 50% decrease in renal blood flow and glomerular filtration rate.

Tubular function decreases leading to:

- Decreased ability to concentrate urine
- Decrease in the re-absorption of glucose

Changes in the kidney's function with aging alter the renal excretion of drugs. Drugs are likely to be excreted more slowly.

Drug dosages such as digitalis, aminoglycosides, and other antibiotics should be calculated using creatinine clearance. A decrease in clearance time means an increase in the drug's half life. Drugs excreted by the kidneys stay longer in the body.

- Urinary frequency, urgency and nocturia are associated with bladder changes in the elderly. Emptying becomes more difficult leading to large residual volumes. Bladder muscle and volume decreases. The micturition reflex is delayed.

Assure safety at night. If patient gets up to void during the night, keep path free from furniture (tray table, chairs, etc.). Keep a light on.

Encourage patient to call for assistance anytime, especially if there is any incontinence.

- Incontinence is not a normal outcome of aging.
- In women stress incontinence may occur due to a weakened pelvic diaphragm.
- Prostate enlargement occurs in most elderly men. Three-fourths of men 65 years old and older have some degree of prostate disease, which causes urinary difficulties. Although most are benign, there is a risk of malignancy, so evaluation is essential.
- Male reproductive changes include:
 - Decreased testosterone production
 - Reduced sperm count
 - Smaller testes
 - A need for more direct physical stimulation to achieve an erection
- Female reproductive changes include:
 - Decreased estrogen production
 - Reduction in breast tissue
 - Vaginal secretions are more alkaline, therefore increasing possible vaginitis
 - Vaginal canal is drier, requiring longer foreplay or the use of lubricant to facilitate penile penetration
- There is no change in libido of either sex. Sexual activity patterns and preference tend to be consistent over the lifespan.

MUSCULOSKELETAL CHANGES

Muscles experience an overall loss of cells, mass, strength and movement. Sometimes muscle tremors can occur. This is associated with degeneration of the extrapyramidal system.

Bones become brittle and can break easily. The cartilage surface of joints can deteriorate, thus limiting joint movement.

Between the ages of 20 and 70, there is an average two inch loss in height. This is due to the intervertebral disc becoming thinner, causing the shortening of the vertebral column, as well as slight kyphosis and flexion of the hip and knees.

Osteoporosis is a condition that occurs so frequently that it is generally considered to be an age related phenomenon rather than a disease. It is characterized by a decrease in the bone density, allowing the bones to break easily.

Bone loss begins about age 20 but does not begin to show symptoms until age 45 for women and 55 for men. This condition occurs four times more frequently in women.

Patients are encouraged to exercise by walking or swimming to slow the bone loss. They should also avoid strain to the spine.

INTEGUMENTARY CHANGES

The skin becomes less elastic, drier and more fragile. Advancing age is evidenced by wrinkles and sagging.

The risk of skin breakdown is increased.

The clustering of melanocytes causes “age spots” of “liver spots” in areas that have had excessive exposure to the sun.

Scalp, pubic and axilla hair thins and loses color. But nose and ear hair thickens. Women may develop some facial hair.

Fingernail growth slows and they become thicker and more brittle.

There is a loss of tissue, with the exception of fat tissue.

Increased proportion of adipose tissue is a consideration during:

- nutritional assessment
- drug therapy since certain medications are stored there

Doses may need to be adjusted.

The loss in subcutaneous tissue is evidenced by:

- deepening of the hollows of intercostal and supraclavicular spaces, orbits, axilla and sagging breast.

Reduced subcutaneous tissue leads to:

- less insulation
- more severe response to temperature changes.

IMMUNE SYSTEM CHANGES

There is a depression in the immune system in the elderly, leading to an increased risk of infection.

Natural antibodies decrease in number.

Autoantibodies increase causing a greater risk of autoimmune disorders.

Antibody response to antigens declines.

Temperature may not be elevated; Confusion is often the first indication of an infection.

PAIN

Misconception: Pain is expected as part of aging.

Correction: Pain is not an inevitable part of aging; the presence of pain requires assessment, diagnosis and treatment.

Misconception: The possible side effects of narcotics make them too dangerous to use in the elderly population.

Correction: Narcotics can be used as long as the effectiveness and the pharmacokinetics are monitored.

Misconception: If an old person is asleep, or otherwise distracted, then he must not have much pain.

Correction: He need not act like he is in any pain; he may have experienced so much pain, he shows minimal expression.

Misconception: If the older person is depressed, then the depression is causing the pain. Pain is a symptom of depression, and pain will subside if the depression is treated.

Correction: It is normal to be depressed about pain, especially chronic pain.

Special considerations in Assessment of Pain in the Elderly:

- Communication Problem
- May not be able to report accurately their pain
- May need to rely on reports of family or care givers
- Some don't use the word pain, they may use aches, soreness, hurt
- Elders frequently believe that nurses and doctors know when they are in pain, so it may be under-reported.

ENDOCRINE

The pituitary gland loses weight and vascularity and contains more connective tissue. The follicle stimulating hormone (FSH) increases in women.

The thyroid gland experiences fibrosis, cellular infiltration and modularity. There is a decrease in T3 and a lower basal metabolism rate.

Insulin release by the beta cell is delayed. There is some reduced peripheral sensitivity to circulating insulin. Increased blood glucose levels are not uncommon and necessitate the use of age related gradients for interpreting glucose tolerance tests.

Ovarian produced estrogen ceases after menopause. Progesterone production and excretion are decreased. Testosterone production and metabolic clearance rate decline.

LEARNING

The ability to learn is not significantly changed with age; however other factors, such as motivation, attention span, delayed transmission to the brain, peripheral deficits and illness can be affected.

- May display less readiness to learn.
- May depend upon previous experiences for solutions rather than problem solving with new ideals.

Nursing Implications for Teaching the Elderly:

- Identify learning needs with them and include in discharge planning process.
- Assess knowledge and literacy level; identify sensory deficits which may affect learning and/or teaching plan.
- Be aware of cultural influence.
- Present material that is relevant and meets need.
- Relate to previous learning experiences.
- Use informal, quiet teaching atmosphere.
- Allow time for return demonstration.

COGNITIVE CHANGES

Psychological changes in aging cannot be separated from simultaneous physical and social changes. Sensory impairments can decrease interactions with the environment and others.

Personality

- Normally does not change in aging. A kind old man was probably a kind young man; a nasty grumpy old man was probably a nasty, grumpy young man.
- Change in personality traits may be related to events that altered one's attitude to oneself, like retirement, loss of independence, or loss of a spouse.

Memory

- May be altered with age.
- Long term memory undergoes little change.
- Short term memory declines.
- Memory problems are more common in the presence of illness.

Intelligence

- Basic intelligence is maintained.
- Crystallized intelligence, which enables a person to rely on past learning and experiences for problem solving, is maintained and continues to grow throughout life.
- Fluid intelligence, which controls emotion, retention of non-intelligent information, and creative capacity shows decline later in life.

With increasing age, there is more time needed for problem solving.

Significant changes are associated with physical or mental problems.

People cannot be compared. Sick old people cannot be compared to healthy old people. A person skilled in test taking cannot be compared to those with sensory deficits or who may have never taken a test.

DEVELOPMENTAL TASK

Young-old adults are expected to maintain some of the norms of middle-aged adults, such as employment, activity, replacement of lost relationships.

As aging continues, the old-old should work towards:

- Adjusting to decrease strength and health status
- Maintaining involvement with friends and society
- Establishing satisfactory living arrangements
- Readjusting one's lifestyle to reduced income and retirement
- Coping with the death of a spouse

The final stage of development is accepting one's life as having been whole and satisfying. Dissatisfaction can lead to despair and disgust.

It is important to remember that most elderly are proud people, striving to maintain their independence. They want to lead a purposeful life.

Always address them with respect, such as Mr. or Mrs.

Allow time to answer questions.

Identify any recent losses or transitions that have occurred that may impact their health.

Assess for concerns about spouse or significant other that may impact.

Be aware of the possible impact of others on the elder's situation. For example, previously independent, 80 year old Mrs. Jones lives with her 40 year old son. Also living in the home are his wife and their children. Depending on her status on discharge from the hospital, it could propose quite a problem if both her son and daughter-in-law work and Mrs. Jones now requires assistance with her ADLs during her recuperative period.

SPECIAL CONSIDERATIONS – MEDICATIONS

Older adults take a large volume of drugs.

Even though the elderly represent 12% of the population, they consume nearly one third of all the prescribed drugs. A majority of older persons take at least one drug daily, with many taking several.

Drugs behave differently in the elderly.

Advanced age causes differences in the pharmacokinetics (absorption, distribution, metabolism, and excretion of medications) and pharmacodynamics (biologic and therapeutic effects of drugs at the site of action or target organ).

Older adults use drugs with serious side effects.

Here is a list of the most common drug types used by the elderly.

- Cardiovascular agents
- Antihypertensives
- Analgesics
- Antiarthritic agents
- Sedatives
- Tranquilizers
- Laxatives
- Antacids

These drugs carry risks that can threaten the health and well being of the elderly. Some of the side effects are altered mental status, lightheadedness, dizziness, and fluid and electrolyte imbalance.

It is important that the nurse become familiar with the side effects associated with medications to attempt to safeguard older patients.

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