

## Pre-Lecture

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### I. You are the Provider

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Time: 10 minutes

Small Group Activity/Discussion

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#### **Purpose**

This activity is designed to help introduce your students to the content of this chapter.

#### **Instructor Directions**

1. Direct students to read the “You are the Provider” scenario found throughout Chapter 42.
2. You may wish to assign students to a partner or a group. Direct them to review the discussion questions at the end of the scenario and prepare a response to each question. Facilitate a class dialogue centered on the discussion questions.
3. You may also assign this as an activity and ask students to hand in their comments on a separate piece of paper.

## Lecture

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### I. Introduction

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Time: 10 minutes

Slides: 2–5

Lecture

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#### **A. Geriatrics**

1. Assessment and treatment of disease in someone 65 years or older
  - a. In 2003, accounted for 12% of the US population
  - b. By 2030, the percentage is expected to grow to 20% (baby boomers).
  - c. The elderly population is growing older.
2. Elderly people
  - a. Ever-increasing proportion of patients in health care system
  - b. Individuals 65 years of age and older account for 36% of all hospital stays in the US.
3. Old-age dependency ratio
  - a. Depicts the dependency individuals place upon society as they age
  - b. The supply of “caregivers” is not keeping pace with the increase in population of elderly.
4. Nursing homes

- a. Most patients will not reside in nursing homes.
  - b. Countertrend for elderly people to maintain independent lives
5. Psychosocial factors
- a. May influence successful aging
  - b. May no longer feel useful or productive in society (diminished self-esteem)
  - c. Bereavement: sadness over the loss of friends and loved ones
  - d. Likelihood of death increases during the year following the death of one's spouse.
  - e. Loneliness and isolation

## II. Anatomy and Physiology

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Time: 40 minutes

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Slides: 6–30

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Lecture

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### A. Overview

1. Human growth and development
  - a. Peaks in the late 20s and early 30s
  - b. The aging process sets in at this point.
  - c. Aging is a linear process. (The rate at which we lose functions does not increase with age.)
  - d. The aging process can vary dramatically from one person to another.
  - e. All tissues in the body undergo aging.

### B. Changes in the Cardiovascular System

1. The net effect is to decrease the efficiency.
  - a. The heart hypertrophies (enlarges) with age.
  - b. Cardiac output declines (decreasing stroke volume).
  - c. Arteriosclerosis contributes to systolic hypertension.
  - d. Compliance of vascular walls depends on the production of collagen and elastin.
  - e. Widening pulse pressure, decreased coronary artery perfusion, and changes in cardiac ejection efficiency
2. The electric conduction system deteriorates.
  - a. The number of pacemaker cells in the sinoatrial node decreases.
  - b. In many cases, leads to bradycardia
3. Causes of decline
  - a. Not necessarily aging
  - b. Sedentary lifestyle has a deconditioning effect.
  - c. Disabilities or psychological factors lead to limited physical activity.

### C. Changes in the Respiratory System

1. Respiratory capacity
  - a. Significant reductions with age

- b. Decreases in the elasticity of the lungs and in the size and strength of respiratory muscles
  - c. Calcification of costochondral cartilage tends to make the chest wall stiffer.
  - d. Vital capacity decreases.
  - e. Residual volume increases.
  - f. Air flow deteriorates somewhat with age.
2. Changes in the distribution of blood flow within the lungs
- a. Result in declining PaO<sub>2</sub>
  - b. The respiratory drive becomes dulled (decreased sensitivity to changes in arterial blood gases or decreased central nervous system responses).
  - c. Slower reaction to hypoxemia and hypercarbia
3. Musculoskeletal changes
- a. Kyphosis: outward curvature of the thoracic spine (hunchback); may affect pulmonary function by limiting lung volume and maximal inspiratory pressure
  - b. The lungs' defense mechanisms become less effective as a natural consequence of aging.
  - c. Cough and gag reflexes decrease with age (increased risk of aspiration).
  - d. Ciliary mechanisms are markedly slowed.

#### **D. Changes in the Renal System**

1. Kidneys
- a. Responsible for maintaining the body's fluid and electrolyte balance
  - b. Decline in weight
  - c. Loss of functioning nephron units (smaller effective filtering surface)
  - d. Renal blood flow decreases by as much as 50% as a person ages.
  - e. Capable of dealing with day-to-day demands
  - f. May not be able to meet unusual challenges (illness)
  - g. Respond sluggishly to sodium deficiency
  - h. Rapid development of severe dehydration
  - i. Overhydration if exposed to large sodium loads
  - j. Potassium levels can reach serious levels.
2. Bowel and bladder continence
- a. Requires anatomically correct gastrointestinal and genitourinary tracts, functioning and intact sphincters, and properly working cognitive and physical functions
  - b. Urinary incontinence can have a significant social and emotional impact. (Relatively few people admit to the problem and even fewer seek treatment.)
  - c. Incontinence is not a normal part of aging (can lead to skin irritation, skin breakdown, and urinary tract infections).
  - d. Stress incontinence occurs during activities such as coughing, laughing, sneezing, lifting, and exercising.
  - e. Urge incontinence is triggered by hot or cold fluids, running water, and even thinking about going to the bathroom.
  - f. Treatment by medication, physical therapy, and surgery

- g. Urinary retention: difficulty voiding or absence of voiding (many medical causes)
- h. Enlargement of the prostate
- i. Bladder and urinary tract infections

## **E. Changes in the Digestive System**

1. Mouth
  - a. Decrease in the number of taste buds
  - b. Changes in olfactory receptors
  - c. Decrease in appetite from diminished sense of taste and smell
  - d. Reduction in the volume of saliva (dryness of mouth)
  - e. Dental loss is not a normal result of the aging process, but rather the result of disease of the teeth and gums.
2. Gastric secretions
  - a. Reduced as a person ages
  - b. Enough acid remains to produce ulcers under certain conditions.
  - c. Changes in gastric motility (slower gastric emptying)
3. Bowel
  - a. Function changes little as a consequence of aging.
  - b. The incidence of certain diseases increases as a person grows older.
4. Liver
  - a. Changes in hepatic enzyme systems (some decline, others increase in activity)
  - b. Detoxification of drugs declines as a person ages.

## **F. Changes in the Musculoskeletal System**

1. Bones
  - a. Widespread decrease in bone mass in men and women (especially postmenopausal women)
  - b. Become brittle and break more easily
  - c. Narrowing of the intervertebral disks and compression fractures of the vertebrae contribute to a decrease in height as a person ages (changes in posture).
  - d. Joints lose flexibility.
  - e. Arthritis: more than half of all elderly people have some form of arthritis.
  - f. Muscle mass decreases throughout the body.

## **G. Changes in the Nervous System**

1. Neurologic examination
  - a. Changes in thinking (cognitive) speed, memory, and postural stability are the most common normal findings in older people.
  - b. Studies have documented age-associated declines in mental function (slower central processing of sensory stimuli and language, and longer retrieval times for short- and long-term memory).
  - c. Slow responses to questioning or requests to repeat a question
2. Brain

- a. Decreases in terms of weight (5% to 10%) and volume
  - b. The functional significance is not clear.
  - c. Enormous reserve capacity
  - d. A smaller and lighter brain does not interfere with the mental capabilities of productive elderly people.
3. Sensory organs
- a. Most suffer with increasing age
  - b. Senses of taste and smell become diminished.
  - c. Visual changes may begin as early as 40 years of age.
    - i. Cataracts: hardening of the lenses over time; eventually become opaque, preventing light and images from being transmitted to the rear of the eye; blurred vision, double vision, spots, and/or ghost images
    - ii. Glaucoma: increase in intraocular pressure severe enough to damage the optic nerve, potentially resulting in permanent loss of peripheral and central vision
    - iii. Decreases in visual acuity are common in older people (night vision, adjustments to changes in light conditions, depth perception, and perceptions of color).
    - iv. Changes in vision can affect independence, ability to read, and ability to drive a vehicle.
  - d. Hearing loss
    - i. Presbycusis: progressive hearing loss, particularly in the high frequencies, along with lessened ability to discriminate between a particular sound and background noise
    - ii. Decreased ability to communicate (isolation and depression)
    - iii. Meniere's disease: onset usually in early middle age; typical symptoms include vertigo, hearing loss, tinnitus, and pressure in the ear
  - e. Speech
    - i. Weakness, paralysis, poor hearing, and brain damage can damage speech functions.
  - f. Proprioception (sense of body position) becomes impaired with age.
    - i. Postural stability through a variety of receptors in the joints and eyes
    - ii. Less steady on their feet
    - iii. Increased tendency to fall

## H. Changes in the Integumentary System

1. Wrinkling and loss of resiliency
  - a. Most visible signs of aging
  - b. Skin becomes thinner, drier, less elastic, and more fragile.
  - c. Subcutaneous fat becomes thinner (loosened outer cover for the body).
  - d. Elastin and collagen decrease.
  - e. Thinner skin tears more easily.
2. Dryer skin
  - a. Sebaceous glands produce less oil.
  - b. Sweat gland activity decreases.

- c. Hair follicles produce thinner hair or may stop producing hair.
  - d. Follicles produce less melanin (gray or white hair color).
3. Blood vessels supplying the skin
- a. Affected by atherosclerosis
  - b. Provide less oxygenated blood at the cellular level
  - c. Epidermal cells develop more slowly and do not replace outgoing cells as quickly as with younger skin.
  - d. Higher risk for secondary infection, skin tumors, and fungal or viral infections of the skin

## I. Homeostatic and Other Changes

1. Homeostasis
  - a. Process by which the body maintains a constant internal environment
  - b. Many mechanisms work on a feedback principle.
  - c. Aging is accompanied by a progressive loss of these capabilities.
  - d. Specific illness or injury is more likely to result in general deterioration.
  - e. More vulnerable to environmental stresses
  - f. Absence of febrile responses to infection
2. Blood glucose level
  - a. The regulatory system becomes impaired with increasing age.
  - b. Elevated blood glucose level occurs quite commonly in older patients.

## J. You are the Provider

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Slide: 31

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Lecture/Discussion

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1. Present the case study provided on the slide:
  - a. You are dispatched to a report of a fall. You and your partner arrive to find an 81-year-old female who has fallen in her kitchen.
  - b. Patient is laying supine on the floor, a puddle of blood around her head. She is confused and disoriented. She is slightly cold to the touch. Her breathing is heavy. The blood on the floor and in her hair has begun to coagulate. You take C-spine precautions immediately.
  - c. *How would you determine if the patient's confusion and disorientation are from dementia or the fall?*
  - d. *Is it possible to determine how long she may have been on the floor?*
    - You cannot determine what the patient's confusion and disorientation stem from because she has dementia. They both present with the same signs and symptoms.
    - You can determine a rough estimate of how long she has been on the floor by the coagulation factor of the amount of blood surrounding her head. With that amount of blood, it would take approximately 2 or more hours to be in its current condition (coagulation progression). If she has been lying there that long, the possibility of a severe head injury, including unconsciousness, is a bigger factor in your assessment of illness vs. injury.

## III. Pathophysiology

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Time: 1 hour 10 minutes

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Slides: 32–77

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Lecture

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### A. Cardiovascular System

1. Diseases of the heart
  - a. Remain the leading cause of death among older adults in the US
  - b. Coronary artery disease (CAD) is the number one culprit.
  - c. Heart attack is the major cause of morbidity and mortality in people older than 65, and its potential for mortality increases significantly after 70.
2. Myocardial infarction (MI)
  - a. Death of part of the heart muscle due to blockage of one of the coronary arteries
  - b. Chest pain is a common presentation for acute myocardial infarction in older patients. (It may be decreased in intensity or atypical.)
  - c. Major risk factors include tobacco use, hypertension, diabetes, obesity, psychosocial factors, physical activity, and alcohol consumption.
  - d. Preventive strategies include measures to prevent the first MI, avoidance of recurring MIs, and lifestyle interventions (cessation of tobacco use, healthy diet, control of blood glucose, exercise, weight control, and control of hypertension).
  - e. Aspirin may be ordered by a physician.
3. Heart failure
  - a. Most common reason for hospitalization in the geriatric population
  - b. Two paradoxical reasons
    - i. Better care of diseases that might otherwise result in failure (CAD and hypertension), which enables people to live long enough to develop heart failure
    - ii. More effective management of heart failure once it develops
  - c. Risk factors include sex, ethnicity, family history and genetics, long-term alcohol abuse, and multiple medical conditions.
  - d. Prevention is aimed at lifestyle changes.
4. Rhythm disturbances (arrhythmias)
  - a. The electrical system controlling the heartbeat experiences an interruption or malfunction.
  - b. Heartbeats that are too fast, too slow, irregular, or absent
  - c. Generally a result of age-related changes in the heart, existing cardiac disease, adverse drug effects, or a combination of these factors
  - d. Classified by the part of the heart from which they originate
  - e. Premature beats alter the regularity of the heartbeat.
  - f. Atrial fibrillation is the most common arrhythmia among elderly people (increases the risk of stroke and heart failure).
  - g. Bradycardias are also more common in elderly people.
5. Aneurysm

- a. The heart beats 2.5 billion times and moves 200 million liters of blood in an average lifetime.
  - b. Incidence increases with age.
  - c. Weakness in any artery that produces a balloon defect, weakening the arterial wall
  - d. Congenital or acquired
  - e. Hypertension, atherosclerotic disease, and obesity are contributing factors.
  - f. Life-threatening aneurysms can develop in the brain, chest, or abdomen.
  - g. Preventive measures aim to control risk factors.
6. Aortic dissection
- a. The inside wall of the artery becomes torn and allows blood to collect between the arterial wall layers.
  - b. Trauma or sustained hypertension
  - c. Weakens the arterial wall, making it prone to rupture
7. Hypertension
- a. More than half of all older people are hypertensive.
  - b. Isolated systolic hypertension resulting from loss of arterial elasticity
  - c. Controlled decline in blood pressure that often cannot be achieved in the field
8. Stroke
- a. Significant cause of death and disability in elderly people
  - b. More than 80% of all stroke deaths occur in persons older than 65 years.
  - c. Leading cause of long-term disability at any age
  - d. Mainly caused by atherosclerosis
  - e. Risk doubles each decade after 35 years.
  - f. Risk factors include hypertension, atrial fibrillation, age, family history, smoking, diabetes, high cholesterol, and heart disease.
9. Transient ischemic attacks
- a. Temporary disturbance of blood supply to the brain that results in a sudden, temporary decrease in brain function
  - b. Symptoms are the same as for a stroke.
  - c. Generally last less than 24 hours

## **B. Respiratory System**

1. Pneumonia
  - a. Inflammation of the lung
  - b. Secondary to infection by bacteria, viruses, or other organisms
  - c. Biggest impact on very young and elderly people (typically during the colder seasons)
  - d. People considered at risk:
    - i. Elderly people
    - ii. People with underlying health problems (COPD, diabetes mellitus, and vascular diseases)
    - iii. Any person with a depressed immune system

- e. Treatment is primarily supportive (bed rest, fluids, oxygen therapy via nasal cannula or mask, analgesics, and antibiotics).
2. COPD
    - a. Includes chronic asthma, chronic bronchitis, and emphysema
    - b. Characterized by the presence of bronchial obstruction and airway inflammation
    - c. Affects approximately 10% of the older population (mostly owing to tobacco use)
    - d. Preventive measures include immunization for influenza and pneumococcal pneumonia.
  3. Asthma
    - a. Approximately 1 in 20 elderly people has a history of asthma or is affected by it.
    - b. Onset can occur in old age.
    - c. Presenting symptoms of shortness of breath, chronic or nocturnal cough, and wheezing
  4. Pulmonary embolism
    - a. Arises when a blood vessel supplying the lung becomes blocked by a clot
    - b. Any obstruction can result in irreversible damage or infarction.
    - c. Risk increases with age because of increasing immobility.
    - d. Prevention is based on the patient's risk level.

### C. Endocrine System

1. Diabetes
  - a. The body cannot oxidize complex carbohydrates due to impaired pancreatic activity (production of insulin).
  - b. More glucose is present in the blood than the body can handle.
  - c. Geriatric patients are at increased risk (medications, inadequate or irregular dietary intake, inability to recognize the warning signs, and/or blunted warning signs).
  - d. After 65, one of every five people in the US has diabetes (primarily type 2).
  - e. The most common risk factor is having more than one chronic disease.
  - f. Other risk factors include a family history of diabetes, genetics, age, diet, obesity, and a sedentary lifestyle.
  - g. Symptoms of an elevated blood glucose level include fatigue, poor wound healing, blurred vision, and frequent infections.
  - h. Three Ps: polyuria, polydipsia, and polyphagia
  - i. Prevention is aimed at changes in lifestyle that include dietary restrictions, exercise, and controlling obesity.
2. Hyperosmolar hyperglycemic nonketotic coma
  - a. The most frequent cause is infection.
  - b. The presentation is likely to be acute confusion with dehydration.
  - c. See Table 42-1 Signs of Dehydration in Elderly People.
3. Thyroid abnormalities
  - a. Increase with aging
  - b. Many remain asymptomatic (diagnosis only by blood test).
  - c. Signs and symptoms in hypothyroidism may match those seen with normal aging.

- d. A small percentage of elderly hyperthyroid patients present with symptoms opposite those expected (weakness, lethargy, and depression).
- e. Field care is supportive.

## D. Gastrointestinal System

1. Constipation
  - a. Frequent and significant problem
  - b. Acute abdominal pain could be caused by constipation, but assume the worst (acute abdominal aneurysm or mesenteric ischemia).
  - c. Diverticulosis: small outward pouches in the colon wall
  - d. Appendicitis can be difficult to diagnose in older people.
  - e. Incidence of peptic ulcer disease is increased.
2. Large bowel obstructions
  - a. Likely to be caused by cancer, impacted stool, or sigmoid volvulus
  - b. Small bowel obstruction secondary to gallstones increases significantly with age.
  - c. Cholelithiasis (gall stones): one third to one half of all elderly people have them; most remain asymptomatic.
  - d. Obstruction from adhesions due to previous surgery or infection
  - e. Hernia in the abdominal wall
3. Stomach or duodenal ulcers
  - a. Main risk factors are regular use of NSAIDs and infection with *Helicobacter pylori*.
  - b. Other medications have been implicated in ulcer formation.
  - c. The main symptom is dyspepsia.

## E. Musculoskeletal System

1. Physical abilities
  - a. Changes can affect older adults' confidence in their mobility.
  - b. The muscle system atrophies and weakens with age.
  - c. Ligaments and cartilage lose their elasticity.
2. Stooped posture
  - a. Atrophy of the supporting structures
  - b. Two of every three older patients will show some degree of kyphosis.
  - c. Lost height from compression in the spinal column
3. Osteoporosis
  - a. Affects men and women
  - b. Characterized by a decrease in bone mass leading to reduction in bone strength and greater susceptibility to fracture
  - c. The extent of bone loss is influenced by numerous factors.
    - i. Genetics
    - ii. Smoking
    - iii. Level of activity
    - iv. Diet
    - v. Alcohol consumption

- vi. Hormonal factors
  - vii. Body weight
  - d. The most rapid loss of bone occurs in women during the years following menopause.
  - e. Calcium and vitamin D supplementation is another treatment for the condition.
  - f. Remain active and perform low-impact exercises to maintain bone and muscle strength.
4. Osteoarthritis
- a. Progressive disease of the joints that destroys cartilage, promotes the formation of bone spurs in joints, and leads to joint stiffness
  - b. Thought to result from “wear and tear” and repetitive trauma to the joints
  - c. Affects 35% to 45% of the population older than 65
  - d. Typically affects several joints of the body (hands, knees, hips, and spine)
  - e. Pain and stiffness that gets worse with exertion
  - f. The end result is often substantial disability and disfigurement.

## **F. Nervous System**

1. Normal age-related cognitive changes
- a. Relatively isolated (not associated with multiple abnormal neurologic findings that suggest specific disease states)
  - b. Onset and progression of these findings are “in time” with the person’s aging process.
2. Delirium
- a. Also known as acute brain syndrome or acute confusional state
  - b. A symptom, not a disease
  - c. Reflection of an underlying disturbance to a person’s well-being
  - d. Temporary, usually reversible, condition
  - e. Results in rapid changes in brain function
  - f. In elderly people, often replaces or confounds the typical presentation caused by a medical problem, an adverse medication effect, or drug withdrawal
  - g. Onset is abrupt but generally resolves with treatment of the underlying problem.
  - h. Rapid alteration between mental states (lethargy and agitation), serious attention disruption, disorganized thinking, and changes in perception and sensation
3. Dementia
- a. Disease that produces irreversible brain failure
  - b. Causes include conditions that impair vascular and neurologic structures within the brain (infections, strokes, head injuries, poor nutrition, and medications).
  - c. The two most common degenerative types of dementia in older people are Alzheimer’s disease and multi-infarct or vascular dementia.
  - d. Diagnosed when two or more brain functions are impaired
  - e. Language, memory, visual perception, emotional behavior and/or personality, and cognitive skills
  - f. Other risk factors for predisposition include lower level of education, female sex, and African-American ethnicity.

4. Alzheimer's disease
  - a. No single cause
  - b. Most experts believe that it is not a normal part of the aging process.
  - c. Age is a significant risk factor, but not the cause.
  - d. Cannot be cured or reversed by any known treatment
  - e. Symptoms are subtle at onset.
  - f. Over time, patients lose their ability to think, reason clearly, solve problems, and concentrate.
  - g. May present with altered behavior that includes paranoia, delusions, and social inappropriateness
  - h. In later stages, patients cannot take care of themselves and may lose the ability to speak.
5. Parkinson's disease
  - a. Two or more of the following symptoms
    - i. Resting tremor of an extremity
    - ii. Slowness of movement
    - iii. Rigidity or stiffness of the extremities or trunk
    - iv. Poor balance
  - b. Caused by degeneration of the substantia nigra (controls voluntary movement by producing dopamine)
6. Seizures
  - a. Incidence is increased in elderly people.
  - b. Increase in risk factors (stroke, dementia, primary or metastatic brain tumors, and acute metabolic disorders)

## **G. Toxicology**

1. Medications
  - a. As the number of uses increases, the likelihood of adverse drug reactions and interactions increases.
  - b. Changes in drug metabolism in the elderly make them more prone to adverse reactions.
  - c. Diminished hepatic drug elimination
  - d. Diminished renal function
  - e. Changes in body composition (increased body fat and decreased body water)
  - f. Changes in the responsiveness to drugs that affect the CNS
2. General changes affecting medication
  - a. Vision: declines, making it difficult to read small print; night vision makes reading in dim light difficult
  - b. Short-term memory loss
  - c. Inability to distinguish flavors
3. Polypharmacy
  - a. The elderly consume more than 25% of all prescribed and over-the-counter drugs sold in the US.

- b. Community-dwelling older people take an average of three to five medications per day.
  - c. Nursing home patients take an average of six to seven routinely scheduled medications daily, and two to three additional medications on an as-needed basis.
  - d. Multiple drug interaction may prove harmful.
  - e. The best dosage for an elderly patient is the lowest dosage that will achieve a therapeutic effect.
4. Medication noncompliance
- a. Not following instructions or advice on the use of medications
  - b. Failure to fill a prescription
  - c. Improper administration of medication
  - d. Discontinuation of medication
  - e. Taking inappropriate medications

## **H. Drug and Alcohol Abuse**

1. Alcohol
- a. Preferred substance of abuse among older persons
  - b. Much smaller segment use illicit drugs
  - c. Some develop abuse problems in response to a life-changing event (loss of a spouse, declining health, or low self-esteem).
2. Prevalence
- a. Attributable to the multiplicity of medications and heightened vulnerability to abuse owing to the effects of aging
  - b. Decreased body mass and total body water mean higher concentrations of blood alcohol.
  - c. Digestive, renal, and hepatic system changes mean slower elimination of alcohol from the body.

## **I. Psychiatric Conditions**

1. Depression
- a. Not part of normal aging (medical disease)
  - b. Treatable with medication and therapy
  - c. Often goes unrecognized and untreated (associated with a higher suicide rate in the elderly population)
  - d. Can mimic the effects of many other medical problems
  - e. Risk factors include a history of depression, chronic disease, and loss (of function, independence, or significant others).
  - f. Often will not complain of feeling sad, worthless, or unwanted
2. Suicide
- a. The majority of elder suicides occur in people who have recently been diagnosed with depression.
  - b. Have recently seen their primary care physician
  - c. Typically do not make suicidal gestures or attempts to get help
  - d. The rate of completed suicide is disproportionately high in the geriatric population.

- e. Terminal illness or debilitating cardiac or neurologic condition
- f. White men 85 years and older who use firearms as their method of suicide

## **J. Injury in Elderly People**

1. Environmental injury
  - a. Internal temperature regulation is slowed.
  - b. Delayed recognition of fluctuations in temperature changes
  - c. Heat gain or loss in response to environmental changes is delayed in atherosclerotic vessels, slowed circulation, and decreased sweat production in the skin.
  - d. Half of all deaths of hypothermia occur in elderly people. (Most indoor hypothermia deaths involve geriatric patients.)
  - e. Death rates from hyperthermia are more than doubled in elderly people.
2. Trauma in elderly people
  - a. One of the top 10 causes of death among elderly people
  - b. Deaths from injury in people older than 65 years account for one fourth of all trauma deaths in the US.
  - c. Risk factors of trauma
    - i. Slower reflexes
    - ii. Visual and hearing deficits
    - iii. Equilibrium disorders
    - iv. Overall reduction in agility
  - d. Changes in homeostatic compensatory mechanisms combined with the effects of aging on the body and preexisting conditions add up to a less-than-favorable outcome.
  - e. Falls
    - i. The elderly account for 75% of all fall-related deaths.
    - ii. Associated with a higher incidence of anxiety and depression, a loss of confidence, and postfall syndrome
    - iii. Extrinsic causes: tripping or slipping on external obstacles
    - iv. Intrinsic causes: dizzy spell or syncopal attack
    - v. Preexisting gait abnormalities and cognitive impairment increase risks.
  - f. Motor vehicle crashes
    - i. Second leading cause of accidental death among elderly people
    - ii. 10% of licensed drivers are elderly (account for 10% of all traffic deaths, 11% of all vehicle occupant deaths, and 16% of all pedestrian deaths).
    - iii. Impaired vision, errors in judgment, and underlying medical conditions
3. Types of injuries commonly seen in elderly people
  - a. Head trauma or injury
    - i. Increased fragility of cerebral blood vessels, enlargement of the subdural space, and a decrease in the supportive tissues of the meninges all contribute to vulnerability to intracranial bleeding (subdural hematoma).
    - ii. The most important early symptom is headache (may be worse at night).
  - b. Cervical spinal cord injury and cord compression

- i. Degenerative changes in the cervical spine cause arthritic “spurs” and narrowing of the vertebral canal.
- ii. Nerve roots exiting from the cervical spine gradually become compressed.
- iii. Sudden movement of the neck may result in spinal cord injury.
- c. Chest injuries
  - i. More likely to produce rib fracture and flail chest (brittleness of the ribs and overall stiffening of the chest wall)
  - ii. Abdominal trauma often produces liver injury.
- d. Orthopedic injuries
  - i. Common result of falls
  - ii. Hip fractures are the most common acute orthopedic injury.
  - iii. Fractures of the femur, pelvis, tibia, and upper extremities
  - iv. The most important risk for hip fracture is osteoporosis.
- e. Burns
  - i. Significant risk of morbidity and mortality because of physiologic and pathophysiologic changes
  - ii. Risk of mortality increases with preexisting conditions, weakened defense mechanisms against infection, and complicated fluid replacement.
  - iii. Monitor hydration status

### **K. You are the Provider (continued)**

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Slide: 78

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Lecture/Discussion

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1. Continue reading the case study provided on the slide:
  - a. You attempt again to question the woman as to the events leading up to her fall, why she may have fallen, and other pertinent information. Her answers make no sense and have nothing to do with your questions.
  - b. You quickly and gently put a C-collar on her and put her on a backboard.
  - c. In the ambulance you take her vitals. Her blood pressure is 180/110; pulse is 58; respiratory rate is 28, deep and labored; and her O<sub>2</sub> stat is 92% in room air.
  - d. *What condition do these signs and symptoms most likely indicate?*
  - e. *What about the situation should be immediately addressed?*
    - These signs and symptoms together most likely indicate Cushing's reflex.
    - Based on the age of the woman, keeping in mind that there can be a loss in brain weight of up to 20% in the elderly, along with the signs and symptoms of Cushing's reflex, there is a strong likelihood that she has a hematoma. In this case, you need to prepare for both immediate transport and rapid deterioration during assessment and care because of increasing intracranial pressure.

## **IV. Assessment of Geriatric Patients**

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Time: 10 minutes

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Slides: 79–83

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Lecture

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## A. Overview

1. Illness is common among the elderly.
  - a. Not an inevitable part of aging
  - b. Aging is a continuous process and a normal development sequence that affects people in multiple ways.
  - c. Normal wear and tear concept and genetic makeup are two theories that have been suggested to explain the biologic effects of aging.
2. Widespread misconception that elderly people tend to be hypochondriacs
  - a. Dozens of imaginary or minor complaints
  - b. Far less common among the elderly than among younger patients
  - c. Older patients tend not to complain, even when they have legitimate symptoms.
3. Know what is and what is not part of the aging process.
  - a. Signs and symptoms of disease may be altered from their presentation in younger patients.
  - b. A variety of acute illnesses may present simply as delirium.
4. Multiple problems
  - a. The older the patient, the more likely they are to have multiple problems.
  - b. Medical, psychological, and social
  - c. The proportion of older people with a disability has decreased, but the total number of older people with a chronic disability has increased (more elderly people).
  - d. Debilitating health conditions often found include hypertension, arthritic symptoms, heart disease, cancer, diabetes, stroke, and COPD.
  - e. Incidence of depression also increases with age.
5. Consequences of multiple pathologic conditions
  - a. The symptoms of one disease or disability may alter or hide the symptoms of another condition.
  - b. A disturbance in one system may have repercussions throughout the body.
  - c. Difficult to diagnose

## V. The GEMS Diamond

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Time: 25 minutes

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Slides: 84–98

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Lecture

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### A. Overview

1. Recall key themes when dealing with geriatric patients.
  - a. See Table 42-3: The GEMS Diamond.
2. “G”
  - a. Recognize that the patient is a geriatric patient.
  - b. Thought process geared to the possible problems of an aging patient
  - c. May present atypically

3. "E"
  - a. Environmental assessment
  - b. Is the home too hot or too cold? Well kept and secure?
  - c. Are there hazardous conditions?
4. "M"
  - a. Medical assessment
  - b. Older patients tend to have a variety of medical problems.
  - c. May be taking numerous prescription, over-the-counter, and herbal medications
  - d. A thorough history is essential.
5. "S"
  - a. Social assessment
  - b. May have less of a social network
  - c. Death of a spouse, family members, or friends
  - d. May need assistance with activities of daily living (dressing and eating)
  - e. Numerous social agencies are readily available to help geriatric patients.

## **B. Scene Size-up and Initial Assessment**

1. Gather information.
  - a. Look for potential clues from the patient's social history.
  - b. General living conditions, availability of social and family support, activity level, medications, overall appearance (nutrition, general health, cleanliness, and personal hygiene), and attitude and mental well-being
  - c. Be aware of sensory alterations, verbal communication skills, mental and physical capabilities, and the ability of health care providers to accommodate and comprehend these conditions.

## **C. Patient History**

1. Explain everything you plan to do.
  - a. Confusion (is it normal or a new manifestation?)
  - b. Elements
    - i. Patient's chief complaint
    - ii. Present illness or injury
    - iii. Pertinent medical history
    - iv. Current health care status and needs
  - c. The ability to elicit a good patient history comes from education and experience.
  - d. The object is to reduce anxiety.
2. Communication
  - a. Good communication skills will help you gather the information you need during your assessment.
  - b. You could frighten, alienate, insult, anger, or even harm your patients.
  - c. Gain the patient's trust.
  - d. Introduce yourself.
  - e. Use respect when addressing the patient.

- f. Speak slowly, distinctly, and respectfully.
  - g. Communication is not just talking; it is also listening.
  - h. Active listening
  - i. Nonverbal communication is just as important as verbal communication.
  - j. Eye contact, hand gestures, body position, facial expressions, and touch communicate a message.
  - k. Preserve the patient's dignity during exposure and when discussing his or her history around others.
3. Chief complaint
- a. May not be as simple with some elderly patients
  - b. Tend not to report significant symptoms
  - c. Some fear a diagnosis or treatment that will jeopardize their independence.
  - d. Symptoms they do report tend to be vague and apparently trivial.
  - e. Review of systems: standard list of screening questions designed to evaluate the functions of the body's major organ systems (cardiovascular, respiratory, neurologic, gastrointestinal, and genitourinary)
  - f. Helps to elicit the true chief complaint
  - g. Sort out whether symptoms are from chronic difficulties.
  - h. Be prepared to listen for an extended period.
4. Other medical history
- a. It is not usually feasible to obtain a comprehensive medical history in the prehospital setting.
  - b. You should inquire about recent hospitalizations and allergies.
  - c. Obtain the most detailed history possible of the patient's medications (all medications, not just prescription drugs).
  - d. Obtain the patient's permission to take medications to the hospital, and then collect them all.

#### **D. Physical Exam**

1. Difficult
- a. Poor cooperation and easy fatigability
  - b. Keep manipulations of the patient to a minimum.
  - c. You may have to peel many layers of clothing off an elderly patient to perform an adequate exam.
2. General appearance
- a. Including dress and grooming
  - b. Inattention to appearance may be one of the first signs of depression or a serious medical condition.
  - c. Level of consciousness
3. Position and degree of distress
- a. Check the color, moisture, and temperature of the skin.
  - b. Loss of elasticity in the skin of elderly patients may produce apparent signs of dehydration.

4. In the home
  - a. Take a good look at the patient's surroundings.
  - b. Try to assess the patient's self-care capability.
  - c. Record observations on the patient care report to enable social service personnel to make appropriate arrangements for follow-up care.
5. Vital signs
  - a. Measure carefully.
  - b. Postural changes in blood pressure vary among elderly people.
  - c. Changes increase with increasing fragility and heighten the person's risk for falls.
  - d. Normal blood pressure for a young person may represent significant hypotension in an elderly patient.
6. Respiratory rate
  - a. Tachypnea can be a very sensitive indicator of acute illness in elderly people.
  - b. Listen to lung sounds in all fields, noting adventitious sounds that might aid in development of a treatment plan.

## E. Detailed Physical Exam

1. As you would for any other patient
  - a. When examining the mouth, make a note of any upper or lower dentures.
  - b. In the chest examination, keep in mind that elderly people may have pulmonary crackles without apparent pathology.
  - c. Edema in the legs may be the result of chronic venous insufficiency and not right-sided heart failure.

## F. You are the Provider (continued)

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Slide: 99

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Lecture/Discussion

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1. Continue reading the case study provided on the slide:
  - a. Based on your assessment findings, you initiate rapid transport to a trauma facility for an immediate CT scan.
  - b. En route, you start two large bore IVs, place the patient on 15 lpm of oxygen via a nonrebreather, and place her on the cardiac monitor. The patient shows sinus bradycardia.
  - c. You reassess every 5 minutes en route to the trauma center, while calling the hospital with your assessment findings and ETA (estimated time of arrival).
  - d. *Is there any definitive treatment of this patient in the field?*
  - e. *If time allowed, what other assessments would it be wise to perform?*
    - There is no definitive care for this patient in the field—she needs rapid transport to a facility with a CT scanner for an immediate diagnosis and treatment of what you strongly believe is a serious head injury.
    - If time permitted, you would do a rapid trauma assessment for any other injuries she may have sustained in the fall. Given her age and gender, osteoporosis could be a factor, and she may have a fracture or break somewhere. Because her skin was cold and dry, she could be hypothermic (also likely because of her age and the amount of time she spent on the floor), so a core body temperature would be

wise, along with making sure she is kept warm en route to the hospital. Because she has an altered mental status, a glucometer reading should be obtained (despite the very strong evidence that your field diagnosis is correct). If there are any issues with blood sugar, treat accordingly as well.

## VI. Assessment and Management of Medical Complaints in Elderly People

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Time: 45 minutes

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Slides: 100–128

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Lecture

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### A. Cardiovascular Complaints

1. Chest pain
  - a. Prehospital treatment remains essentially unchanged in elderly patients.
  - b. Extra cautions because of the increased potential for medication side effects
  - c. Nitroglycerin and morphine may produce more hypotension or respiratory compromise.
  - d. Aspirin may increase bleeding in a patient who is already taking anticoagulants.
2. Heart failure
  - a. Presentation in an older person can be confused by symptoms and signs symbolic of old age and shared by a number of chronic diseases.
  - b. Acute exacerbations of heart failure are often related to poor diet, medication noncompliance, onset of arrhythmias, or acute myocardial ischemia.
  - c. Prehospital treatment is unchanged from that of younger patients.
  - d. Close monitoring of fluids and avoidance of excessive fluid overload
  - e. Beta blockers
  - f. Digoxin or diltiazem in patients with atrial fibrillation or atrial flutter
3. Nonperfusing rhythms
  - a. Same treatment as younger adults
  - b. Survival depends on the prearrest health of the patient and the usual factors (early recognition, prompt and effective CPR, and early defibrillation).
4. Thoracic aneurysms
  - a. Generally remain asymptomatic until they become large or rupture
  - b. Early symptoms may be related to compression by the aneurysm (difficulty swallowing or hoarseness).
  - c. Abdominal aortic aneurysms present typically with abdominal pain or possibly only with back pain.
  - d. Generally treated without surgery but are reassessed on a regular schedule
5. Systolic hypertension
  - a. The usual treatments prove safe and effective in geriatric patients.
  - b. In case of rapid onset of symptomatic systolic hypertension, treatment aims to reduce the systolic pressure with antihypertensive therapy.

## B. Respiratory Complaints

1. Pneumonia
  - a. Often does not have the classic presentation of chills, fever, and productive cough
  - b. Symptoms often are supplanted by acute confusion, normal temperature, and a minimal to absent cough.
  - c. Prehospital treatment is supportive.
2. Asthma
  - a. Clinical practice guidelines are the same.
  - b. Epinephrine may be indicated for a life-threatening exacerbation.
3. COPD
  - a. Treatment goals are to reduce the symptoms and complications.
  - b. Shortness of breath, fatigue, and a decreased activity level
  - c. Immediate assessment and correction of respiratory difficulties with supplemental oxygen
  - d. Bronchodilators, oral steroids, or antibiotics
4. Pulmonary emboli
  - a. Silent or present with tachypnea alone many times
  - b. The classic triad (dyspnea, chest pain, and hemoptysis) is often altered or absent.
  - c. Check for swelling, erythema, and warmth or tenderness of the lower leg (deep venous thrombosis).
  - d. Prehospital treatment is largely supportive.

## C. GI Complaints

1. Many causes
  - a. Constipation and its accompanying abdominal pain
  - b. Ask the patient about food and fluid intake, history of abdominal complaints, current bowel and bladder habits, and medications and supplements.
  - c. Symptoms are often vague and manifest only as diffuse abdominal pain with no particular point of origin.
  - d. Often require surgical treatment
2. Upper GI hemorrhage
  - a. Bleeding from the esophagus, stomach, or duodenum
  - b. When severe, this is a true medical emergency.
  - c. Greater risk of complications
  - d. Impossible to determine the cause without an endoscopic examination of the esophagus, stomach, and duodenum
  - e. History can offer clues.
  - f. Slower bleeding is characterized by emesis with coffee-grounds appearance.
  - g. With minor bleeding, the heart rate and systolic blood pressure are normal.
  - h. Brisk bleeding presents with hematemesis or melena.
  - i. Prehospital treatment is supportive (adequate pain control).
3. Lower GI hemorrhage

- a. Primarily bleeding from the colon and rectum
- b. Should never simply be attributed to hemorrhoids
- c. Colon polyps and colon cancer are also possible causes.
- d. Minor is characterized by small amounts of red blood covering formed brown stools or scant amounts of red blood noticed on toilet paper.
- e. Severe lower GI bleeding is characterized by passing significant amounts of red blood or maroon-colored stools.
- f. Assessment should begin with identifying risk factors (history of previous lower GI bleeding, symptoms or signs suggestive of colon cancer, recent constipation or diarrhea, and use of medications such as blood thinners).
- g. Treat for shock.
- h. Immediate transportation to the nearest emergency department

#### **D. Neurologic and Endocrine Complaints**

1. Acute stroke
  - a. Effective prehospital care includes early recognition, discovery of stroke-mimics, and timely transport.
  - b. Stroke assessment tool
  - c. Always ask family or caregivers for information that may help you identify deviations from the patient's normal pattern of behavior or activity.
  - d. Assess for new weakness, fatigue, syncope, and near syncope and for changes in these symptoms (mood and sleep pattern).
2. Dementia
  - a. Signs and symptoms take months to years to become apparent (short-term memory loss or shortened attention span, jargon aphasia, hallucinations, confusion, disorientation, difficulty in learning and retaining new information, and personality changes).
  - b. Not synonymous with delirium
3. Delirium
  - a. Assess for recent changes in the patient's level of consciousness or orientation.
  - b. Look for acute onset of anxiety, an inability to think logically or maintain attention, and an inability to focus.
  - c. Assess for changes in vital signs, temperature, glucose level, and medications.
  - d. DELIRIUMS mnemonic
    - i. Drugs or toxins
    - ii. Emotional (psychiatric)
    - iii. Low PaO<sub>2</sub>
    - iv. Infection
    - v. Retention of stool or urine
    - vi. Ictal
    - vii. Undernutrition or underhydration
    - viii. Metabolism
    - ix. Subdural hematoma

4. Altered mental status
  - a. Symptom, not a disease
  - b. Assessment and subsequent management are complicated.
  - c. Always consider head injury, heart rhythm disturbances, dementia, medications, fluid balance changes, respiratory disorders, endocrine changes, hyperthermia or hypothermia, and infection.
  - d. Consider neurologic causes and endocrine changes.
5. Alzheimer's disease
  - a. Symptoms may present as confusion, changes in personality or judgment, and extreme difficulty with daily activities.
  - b. Parkinson's disease may present as dyskinesia, dementia, depression, autonomic dysfunction, and postural instability.
6. Endocrine changes
  - a. Many may have occurred earlier in life.
  - b. Grave's disease, Addison's disease, Cushing's syndrome, osteoporosis, or diabetes
  - c. Look for signs of dehydration or hyperglycemia.

## **E. Toxicologic Complaints**

1. "Double dosing"
  - a. Most common therapeutic error
  - b. Inadvertently taking or giving medication twice
  - c. In essence, medications are poisons with beneficial side effects.
  - d. Obtain a careful history and collect and transport all medications with the patient.
2. Multiple medications
  - a. Prescribed by more than one physician
  - b. Over-the-counter medications or medications prescribed for a family member or friend
3. Aging-related changes in pharmacokinetics
  - a. Absorption, distribution, metabolism, and excretion of drugs
  - b. May be influenced by diet, smoking, alcohol consumption, and use of other drugs
  - c. Drugs that depend on the liver and kidneys for metabolism and excretion are particularly likely to accumulate to toxic levels.
4. "Dirty dozen"
  - a. Certain drugs and classes of drugs are implicated more often than others.
  - b. See Table 42-4: Drugs Most Commonly Causing Toxic Reactions in Elderly People.
  - c. Typically present with psychiatric symptoms and cognitive impairment

## **F. Sepsis**

1. Infections
  - a. Can be severe and dangerous
  - b. Disease state that results from the presence of microorganisms or their toxic products in the bloodstream
  - c. Hot, flushed patient who is also tachycardic and tachypneic

- d. Other signs include an oral temperature greater than 38°C or less than 36°C, a respiratory rate of more than 20 breaths/minute or PaCO<sub>2</sub> less than 32 mm Hg, and a pulse rate of greater than 90 beats/minute.
- e. Can be caused by bacteria, fungi, and viruses

## G. Skin Complaints

1. Herpes zoster (shingles)
  - a. Caused by the reactivation of varicella virus on nerve roots
  - b. More common in the older population
  - c. Most are in good health.
  - d. Affects any nerve in the body
  - e. Usually starts with pain in the affected area
  - f. A cluster of tiny blisters erupts on reddened skin.
  - g. One of the most common complications is pain or postherpetic neuralgia.
  - h. Antiviral medications can be used (preferably within 48 hours of the activation of the disease).
2. Cellulitis
  - a. Acute inflammation in the skin
  - b. Caused by a bacterial infection
  - c. Usually affects the lower extremities
  - d. Symptoms include fever, chills, and general malaise.
  - e. Can cause warmth, swelling, redness, tenderness, and enlarged nodes in the affected area
  - f. Elevation of white blood cell count and presence of bacteria
  - g. Treatments include antibiotics, adequate fluid intake, and local dressings.

## H. Psychological Complaints

1. Depression
  - a. Can be a normal, short-term reaction to a particular event
  - b. When sadness, restlessness, fatigue, and hopelessness persist for weeks, it becomes a larger concern.
  - c. Increases in polyopathy, psychosocial stress, and aging-related changes in the brain collectively lead to greater cognitive impairment, increased medical illness, dependency on health care services, and more suicide attempts.
  - d. Polypharmacy may cause depression as well.
2. Behavioral emergency or crisis
  - a. Emergency implies a significant risk of serious harm to self or others.
  - b. Crisis: the patient's ability to cope is insufficient and becomes overwhelmed, sending the patient in search of alternative methods of coping.
3. Psychotic
  - a. Out of touch with reality
  - b. Many forms including schizophrenic and paranoid behaviors
  - c. Information about changes in the patient's normal routine may be obtained from family, friends, or caregivers.

## VII. Management of Medical Emergencies in Elderly People

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Time: 5 minutes

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Slide: 129

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Lecture

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### A. Overview

1. Complex situations
  - a. Be prepared.
  - b. Complete a scene size-up to confirm safety, determine the nature of the call, identify the number of patients, and ascertain the need for additional resources.
  - c. Formulate a general impression based on the patient's mental status and the status of his or her airway, breathing, and circulatory systems.
  - d. Determine transportation priorities.
  - e. Most prehospital care is supportive.
  - f. Additional steps in the patient treatment plan will depend on the patient's specific medical emergency and chief complaint.
  - g. See Table 42-5: Common Medical Complications in Elderly People and Their Management.

## VIII. Assessment and Management of Trauma in Elderly Patients

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Time: 10 minutes

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Slides: 130–136

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Lecture

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### A. Overview

1. Mechanism of injury
  - a. Falls account for the largest number of injuries in elderly people (followed by motor vehicles and burns).
  - b. Always look for signs and symptoms that the patient may have experienced a medical problem before the trauma.
2. Initial management
  - a. Follows the ABC pattern of trauma care with some special concerns
  - b. While securing the airway, check for dentures. (If intact, leave in place; if broken or loose, remove them and place them in a safe container.)
  - c. Aggressive suctioning of blood or secretions is required (lessened airway and gag reflexes).
  - d. When assessing breathing, check for rib fracture.
  - e. Use a bag-mask gently.
  - f. Administer oxygen early to assist the body in compensation.

- g. Neurologic status should include an evaluation of the pupils and the level of consciousness.
  - h. Expose the entire injured area.
3. Complete history
    - a. From the patient or anyone who witnessed the event
    - b. Obtain a complete list of all medications the patient takes regularly.
    - c. Conduct the focused physical exam as usual.
  4. Additional treatment
    - a. Will depend on the patient's specific injuries
    - b. Insert an IV catheter and give an isotonic solution (use small boluses and reassess the patient frequently).
    - c. Monitor cardiac rhythm throughout care of the patient.
    - d. Take steps to preserve temperature in elderly trauma patients.
    - e. Frail patients may not do well with a traction splint for a femoral fracture.
    - f. Immobilize the cervical spine before transporting the patient.

## IX. Elder Abuse

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Time: 5 minutes

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Slides: 137–139

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Lecture

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### A. Overview

1. Any form of mistreatment that results in harm or loss to an older person
  - a. Physical, sexual, emotional, neglect, and financial
  - b. Financial abuse involves improper use of an older person's funds, property, or assets.
  - c. The abuser is almost always known to the abused and is often a family member.
2. Unexplained injuries
  - a. Assessment must include not only the physical exam, but also the environmental and social clues.
  - b. Look at the hygiene and review how he or she interacts with caregivers.
  - c. If the patient's condition is stable, but the situation is unsafe, see if the patient will accept transportation to the hospital.
3. Laws
  - a. Many states have elder abuse statutes.
  - b. Reporting of suspected abuse is required in some jurisdictions.
  - c. Only one of five cases of elder abuse is ever reported.
  - d. Carefully document your observations and report your findings and suspicions to the receiving facility.

## X. End-of-Life Care

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Time: 5 minutes

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Slide: 140

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Lecture

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### A. Overview

1. DNR
  - a. "Do not resuscitate" not "do not respond to the needs of a terminal patient"
  - b. Begin by demonstrating a caring and concerned attitude and approach.
  - c. Many communities have a local hospice (an organization that provides terminal care for patients and support for their families).

### B. You are the Provider Summary

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Slide: 141

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Lecture/Discussion

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1. Continue reading the case study provided on the slide:
  - a. Upon arrival at emergency facility, the patient was quickly assessed by the emergency room physician and sent for an immediate CT scan. She was found to have an epidural hematoma and concussion. She was taken to emergency surgery.
  - b. She did recover from her injuries. It was determined that the concern of her neighbor, along with quick field diagnosis, contact with the ER by the paramedics involved, and immediate treatment in the field resulted in rapid and definitive care.

### C. Summary

1. Anatomy and physiology
2. Assessment
3. The GEMS diamond
4. Medical and trauma management

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## Post-Lecture

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### I. Prep Kit Activities

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Time: 55 minutes

*Note: This section contains various student-centered end-of-chapter activities designed as enhancement to instructor's preparation. As time permits, these activities may be presented in class. They are also designed to be used as outside homework/activities.*

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#### A. Assessment in Action

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Time: 20 minutes

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Individual/Small Group Activity/Discussion

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#### Purpose

This activity is designed to assist students in gaining a further understanding of the chapter content. This activity allows students an opportunity to analyze an emergency care scenario, develop responses, and integrate what they have learned.

### Instructor Directions

1. Direct students to read the "Assessment in Action" scenario located in the Prep Kit at the end of Chapter 42.
2. Direct students to read and individually answer the quiz questions at the end of the scenario. Facilitate a class review and dialogue of the answers, allowing students to correct responses as may be needed. Use the quiz question answers noted below to assist in building this review.
3. You may also wish to assign these as individual activities and ask students to turn in their comments on a separate piece of paper.

### Answers to Multiple-Choice Questions

*You are dispatched to a private residence for a fall. When you arrive on scene, you find an elderly man lying on his back. A large pool of blood is around his head. The patient is conscious, alert, and oriented to person, place, and day. He denies experiencing any loss of consciousness. He states that he was trying to get around the corner and tripped over his feet. His wife tells you that he has neuropathy to both his lower legs, bilateral knee replacements, and a hip replacement. He also has a history of blood clots and hypertension. His medications include lisinopril (Zestril) and warfarin (Coumadin). He has a large laceration to the back of his head. His vital signs are stable.*

1. A common change seen in the cardiovascular system of the elderly patient is:
  - A. neuropathy.
  - B. hypertrophy.
  - C. increased inotropy
  - D. increased automaticity.

**Answer: B.** Hypertrophy most likely occurs due to increased afterload from stiffened blood vessels. However, a larger heart does not equal increased cardiac output. Cardiac output decreases with age.

2. Changes in thinking, speed, memory, and postural stability are effects of the:
  - A. cardiovascular system.
  - B. nervous system.
  - C. pulmonary system.
  - D. renal system.

**Answer: B.** These are some of the most common findings associated with aging.

3. What is homeostasis?
  - A. Maintaining the constancy of the external environment
  - B. An acute confusional state
  - C. A decrease in bone mass and density
  - D. Maintaining the constancy of the internal environment

**Answer: D.** The body constantly attempts to maintain homeostasis through feedback mechanisms.

4. What is osteoarthritis?

- A. A progressive disease process of the joints resulting in the destruction of cartilage
- B. A condition that affects only women and is characterized by a decrease in bone mass
- C. Atrophy of the supporting structures of the body
- D. A condition in which muscle fibers are smaller and fewer in number

**Answer: A.** Osteoarthritis affects 35–45% of the population over age 65. It is thought to result from “wear and tear” on the joints. It often leads to severe pain and disability for the patient.

5. For what reasons are elderly persons particularly prone to adverse drug reactions?

- A. Changes in drug metabolism because of diminished hepatic function
- B. Changes in drug elimination because of diminished renal function
- C. Changes in body composition, increased body fat, and decreased body water
- D. Changes in responsiveness to drugs that affect the central nervous system
- E. All of the above

**Answer: E.** As the body ages, changes in the various body systems all affect the body's ability to metabolize drugs effectively. Overall, elderly individuals are more prone to drug toxicity due to the body's inability to clear the drugs through the liver and kidneys.

6. The underlying causes of falls among the elderly are classified as being:

- A. extrinsic and intrinsic.
- B. medical illness and trauma.
- C. extrinsic and external.
- D. intrinsic and internal.

**Answer: A.** Extrinsic causes are external such as tripping on a rug or slipping on ice. Intrinsic causes are internal, such as dizziness or a syncopal episode.

7. In the elderly, \_\_\_\_\_ are MOST common after a fall.

- A. epidural hematomas
- B. subdural hematomas
- C. intracerebral aneurysms
- D. ruptured cerebral arteries

**Answer: B.** Subdural hematomas are more common in elderly patients due to increased fragility of the cerebral blood vessels, an enlargement of the subdural space, and a decrease in the supportive tissue of the meninges.

### Challenging Question

8. Why do many geriatric patients present atypically when they experience an injury or illness that causes shock?

**Rationale:** Many elderly patients are on hypertensive medications, specifically beta-blockers, which will mask the early signs of shock. Hypertensive medications will falsely maintain a low heart rate, despite hypoperfusion. Paramedics and EMTs are trained to look for tachycardia as an early sign of shock. This sign will be absent in many geriatric patients. Furthermore, decompensated shock is considered a drop in blood pressure, normally when the systolic blood pressure is less than 90 mm Hg. However, because elderly patients are often hypertensive, a blood pressure of 100 mm Hg might be considered significantly hypotensive for a patient. A paramedic must consider the mechanism of injury or nature of illness, the patient and the patient's medical history, and all information when making a determination about the patient's clinical condition.

### **B. Points to Ponder**

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Time: 20 minutes

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Individual/Small Group Activity/Discussion

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This activity addresses the affective objectives of the chapter, allowing you to help students probe the more difficult situations that they face. Use this as an opportunity to allow them to express differences of opinion and approach, while directing them to be thorough and decisive in their answers. Encourage challenges.

### **Purpose**

To allow students an opportunity to apply critical thinking analysis to a given case study.

### **Instructor Directions**

1. Direct students to read the "Points to Ponder" scenario found in the Prep Kit at the end of Chapter 42.
2. You may wish to assign students to a partner or a group and direct them to review the discussion question at the end of the scenario and prepare a response. Facilitate a class dialogue centered on the discussion point.
3. You may also ask students to complete this activity on their own and hand in their comments on a separate piece of paper.
4. Personally review the scenario and discussion question based on your experience and knowledge as an emergency care professional. Develop your own key points for guiding this discussion.

### **Scenario**

*It's 7:00 AM and your shift has just begun. You are dispatched to the assisted-living facility across town for an 86-year-old woman with chest pain. You recognize the address and apartment number as one that you have been to on several occasions. When you arrive, the patient's condition appears stable, but she has chest pain on palpation, inspiration, and movement. Her vital signs are as follows: pulse rate, 58 beats/min with sinus bradycardia on the cardiac monitor; blood pressure, 110/72 mm Hg; respiratory rate, 16 breaths/min; and pulse oximetry, 95% on room air. The patient tells you that this*

*pain began after she received a phone call from her daughter, who was supposed to come and visit her and is now unable to do so.*

Does this patient need to be transported immediately?

How will you manage this patient?

### Issues

Being an Advocate for the Elderly, Recognizing the Need for Independence in the Elderly.

### Discussion

This patient does not need immediate transport because she is stable; however, she does require transport for further evaluation. Her chest pain does not appear to be of a cardiac nature. Cardiac chest pain traditionally does not increase with palpation or movement. Furthermore, the pain began after she received upsetting news, which indicates that the patient may be having an anxiety issue. However, all patients with chest pain should receive a 12-lead EKG and transport to the hospital. The patient also should be placed on oxygen and an IV should be established. A complete history and physical exam should be conducted. The patient needs reassurance and an empathetic paramedic. Because this is a patient you have seen several times before, hopefully you have already established an excellent rapport with her.

## II. Lesson Review

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Time: 10 minutes

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Discussion

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*Note: Facilitate the review of this lesson's major topics using the review questions as direct questions or overhead transparencies. Answers are found throughout this lesson plan. Each question includes a reference to the slide where the information is covered.*

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1. Given a list of organ systems, briefly explain some of the physiological changes that occur with aging. (Lecture II)
2. List six different diseases of the heart and cardiovascular system frequently encountered in geriatric patients, and state some of their potential risk factors. (Lecture III-A)
3. As humans become older, the nervous system is affected by age-related cognitive changes. Describe these cognitive changes and include possible causes and symptoms. (Lecture III-F)
4. Elderly patients are prone to adverse drug reactions and interactions, and this increase in incidence can be affected by several body functions and systems. List four body system changes that may directly increase the potential for adverse reactions in geriatric patients. (Lecture III-G)
5. List four risk factors that may lead to an increase in trauma seen in geriatric patients, and list five of the most common types of injuries. (Lecture III-J)

6. The GEMS diamond is an acronym created to help providers recall key themes when dealing with geriatric patients. Explain what each part of the acronym represents. (Lecture V-A)
7. Describe the management of cardiac complications in geriatric patients and possible obstacles encountered with treatments plans. (Lecture VI-A)
8. The assessment and management of neurologic and endocrine complaints in geriatric patients is a complex and complicated process. Describe, in detail, the assessment process. (Lecture VI-D)
9. List six of the medications that most commonly cause toxic reactions in elderly people. (Lecture VI-E)
10. Elder abuse is a form of trauma that results in harm or loss to an older person. List the five forms of abuse that can involve geriatric patients. (Lecture IX-A)

### III. Assignments

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Time: 5 minutes

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Lecture

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1. Review all materials from this lesson and be prepared for a lesson quiz to be administered (date to be determined by instructor).
2. Read Chapter 43: *Abuse, Neglect, and Assault* for the next class session.