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GERIATRICS

Advanced Care Paramedicine

Module: 11

Section: 02a

Geriatrics

- Fundamental to geriatric practice is the fact that there is tremendous heterogeneity (multiple items having a large number of structural variations) among elderly people
- Clinicians recognize that chronological age is a poor descriptor of a patient's functional status
- This is the paradox of geriatrics (the study and practice of medicine in the elderly population) which is considered a group and yet is so diverse

Introduction

- The elderly are one of the fastest growing segments of the population
- Aging involves the gradual decline of body functions
- Age related changes occur at different rates
- People become less alike as they age
  - Psychologically and physiologically

Population Characteristics

- The mean survival rate of older persons is increasing.
- The birth rate is declining.
- There has been an absence of major wars or other catastrophes.
- Health care and living standards have improved significantly since WWII.

Definitions

- Gerontology
  - The scientific study of the effects of aging and age-related diseases on humans.
- Geriatrics
  - The study and treatment of diseases of the aged.

Societal Issues

- Elderly persons living alone
  - Represent one of the most impoverished and vulnerable parts of society.
  - Factors include living environments, poverty, loneliness, social support.
- A deterioration of independence is not inevitable
  - Not necessarily a function of aging
  - May well be a sign of an untreated illness

Table 43-1 Prevention Strategies for the Older Person

Issues	Strategies
Lifestyle	
Exercise:	Weight-bearing and cardiovascular exercise (walking) for 20–30 minutes at least three times a week
Nutrition:	Varies, but generally low fat, adequate fiber (complex carbohydrates), reduced sugar (simple carbohydrates), moderate protein; adequate calcium, especially for women*
Alcohol/tobacco:	Moderate alcohol, if any; abstinence from tobacco
Sleep:	Generally 7–8 hours a night
Accidents	Maintain good physical condition; add safety features to home (handrails, nonskid surfaces, lights, etc.); modify potentially dangerous driving practices (driving at night with impaired night vision, traveling in hazardous weather, etc.)
Medical Health	
Disease/Illness:	Routine screening for hearing, vision, blood pressure, hemoglobin, cholesterol, etc.; regular physical examinations; immunizations (tetanus booster, influenza vaccine, once-in-a-lifetime pneumococcal vaccine)
Pharmacological:	Regular review of prescriptive and over-the-counter medications, focusing on potential interactions and side effects
Dental:	Regular dental checkups and good oral hygiene (important for nutrition and general well-being)
Mental/emotional:	Observe for evidence of depression, disrupted sleep patterns, psychosocial stress; ensure effective support networks and availability of psychotherapy; compliance with prescribed antidepressants

*Vitamin supplements may be required, but should be taken only after other medications are reviewed and in correct dosages. Excessive doses of vitamin A or D, for example, can be toxic.

Anatomical Changes

Physiological Changes of Aging

- Respiratory system
  - ↓ function
  - ↓ pulmonary capacity
    - ↓ elasticity
    - Thorax more rigid
  - ↓ vital capacity
  - ↑ residual volume
  - ↓ arterial oxygen pressure
  - ↑ alveolar diameter
  - No change in CO_2
  - Loss of cilia
  - ↓ cough reflex
  - ↑ pulmonary infections

Physiological Changes of Aging

- Cardiovascular system
  - Cardiac function ↓ with age
    - Non ischemic changes
    - CAD
  - ↓ ability to ↑ HR
  - ↓ compliance of ventricles
  - Prolonged contractions
  - ↓ response to catecholamines
  - ↓ CO, ↑ PVR
  - ↓ perfusion of organs
  - Myocardial hypertrophy, CAD, hemodynamic changes
    - May cause ischemia, CHF, arrhythmias
  - ↓ electrical cells in SA and AV nodes
    - Afib, Sick Sinus, Conduction disturbances, bradycardia

Physiological Changes of Aging

- Neurological system
  - Function ↓ due to organic causes
  - ↓ number of neurons
  - ↓ brain weight
  - ↓ cerebral blood flow
  - Alterations in NTM (Parkinson's, Alzheimer's, depression)
  - ↓ velocity of nerve conduction (PNS)
  - Toxic/metabolic factors
    - Medications
    - Electrolyte imbalances
    - Hypoglycemia
    - Acidosis/alkalosis
    - Hypoxia
    - Organ failure
    - Pneumonia/CHF
    - Arrhythmias

Physiological Changes of Aging

- Integumentary system
  - ↓ elasticity
  - Thinner
  - ↓ skin turgor, wrinkles
  - ↓ sweat glands
  - Hair thinner, gray

Physiological Changes of Aging

- Immune system
  - ↓ primary antibody response
  - ↓ cellular immunity
  - ↑ abnormal immunoglobulins
  - ↑ risk of infection, auto immune disorders

Physiological Changes of Aging

- Musculoskeletal system
  - Muscle shrinkage
  - Calcification of muscles and ligaments
  - Thinning of intervertebral discs
  - Osteoporosis (↓ bone density)
  - Kyphosis (curvature of Thoracic spine)
  - ↓ balance
  - ↓ height

Physiological Changes of Aging

- Renal system
  - ↓ renal blood flow
  - ↓ GFR
  - ↓ renal mass
  - ↓ hepatic blood flow
  - ↓ free H_2O clearance
  - Na^+ retention
  - ↓ renal plasma flow
  - Prone to electrolyte imbalances and toxic manifestations

Physiological Changes of Aging

- Body weight and Mass
  - ↓ lean body mass
  - ↑ fat tissue
  - Fat soluble drugs → more drug/body weight and larger reservoir for accumulation of the drug
  - ↓ in total body water with an ↑ in retention of water soluble drugs

Physiological Changes of Aging

- Thermoregulation
  - Homeostasis begins to ↓ at 30 y/o
  - Risk of heat/cold injury
  - Contributing factors
    - Impaired CNS therefore ↓ vasoconstriction
    - ↓ metabolic rate
    - Poor peripheral circulation
    - Chronic illness

Physiological Changes of Aging

- Nutrition
  - ↓ intake of vitamins
  - ↓ appetite
  - ↓ taste
  - Psychological/social issues
  - Poor dentations and mastication
  - ↓ esophageal motility
  - Frequent hypochlorhydria (HCL in gastric juice deficiency)
  - ↓ intestinal secretions therefore ↓ absorption

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General Pathophysiology, Assessment, and Management

General Principles in Assessment

- Normal physiological changes and underlying acute or chronic illness may make evaluation of an ill or injured older person a challenge
- Besides the components of a normal physical assessment, consider special characteristics of older patients that can complicate the clinical evaluation

Factors Complicating Assessment

- Atypical Disease Presentation (A disorder in one organ system may lead to symptoms in another, especially one compromised by preexisting disease)
  - Delirium
  - Falls
  - Urinary Incontinence
  - Failure to thrive/functional decline
- The organ system usually associated with a particular symptom is less likely to be the source of that symptom in older individuals than in younger ones

Factors Complicating Assessment

- Geriatric patients are likely to suffer from concurrent illness
  - Chronic problems can make assessment for acute problems difficult
    - Signs or symptoms of chronic illness may be confused with signs or symptoms of an acute problem
- Aging may affect an individual's response to illness or injury
  - Pain may be diminished or absent

Factors Complicating Assessment

- Social and emotional factors may have greater impact on health than in any other age group
  - The patient fears losing autonomy
  - The patient fears the hospital environment
  - The patient has financial concerns about health care

Polypharmacy

- Multiple drug therapy in which there is a concurrent use of a number of drugs.
- Existence of multiple chronic disease in the elderly often leads to the use of multiple mediations.

Decreased Compliance

- Limited income
- Memory loss
- Limited mobility
- Sensory impairment
- Fear of toxicity
- Child-proof containers
- Duration of drug therapy

Increased Compliance

- Good patient-physician communication
- Belief that a disease or illness is serious
- Drug calendars
- Compliance counseling
- Blister packaging
- Pill boxes
- Transportation services to the pharmacy
- Ability to read
- Clear simple directions

Falls

- Present an especially serious problem.
- Represent the leading cause of accidental death among the elderly.
- May be intrinsic or extrinsic.
- The elderly should be encouraged to make their homes safe.

Lack of Mobility

- Poor nutrition
- Difficulty with elimination
- Poor skin integrity
- Greater disposition for falls
- Loss of independence/confidence
- Depression
- Isolation and lack of a social network

Communications

- Normal physiological changes
  - Impaired vision
  - Impaired or loss of hearing
  - Altered sense of taste or smell
  - Lower sensitivity to touch
- Any of these conditions can affect your ability to communicate with the patient

Incontinence

- Common problem in the elderly
- Seriously impairs ability to function independently
- Continence requires
  - Anatomically correct GI/GU tract
  - Competent sphincter mechanism
  - Adequate cognition and mobility

Elimination

- Difficult can be a sign of a serious underlying condition
- Drugs that cause constipation
  - Opoiods
  - Anticholinergics
  - Cation containing drugs
  - Neutrally active drugs
  - Diuretics

Assessment

- Communications
  - Confusion (old or new?)
  - Impairments (visual, auditory)
  - Minimal or vague history
  - Need for space

Competence and decision making capacity

- In clinical practice, the word competence is often used to mean capacity
- Competence is a legal term and can only be determined by the court
- Capacity refers to a patient's ability to make decisions about accepting health care recommendations
- Capacity is always decision-relative rather than global

Competence and decision making capacity

- Components of Decision-Making Capacity
  - Knowledge of the options
  - Awareness of consequences of each option
  - Appreciation of personal costs and benefits of options in relation to relatively stable values and preferences (When ascertaining this, one should ask patients why they made a specific choice)

Assessment

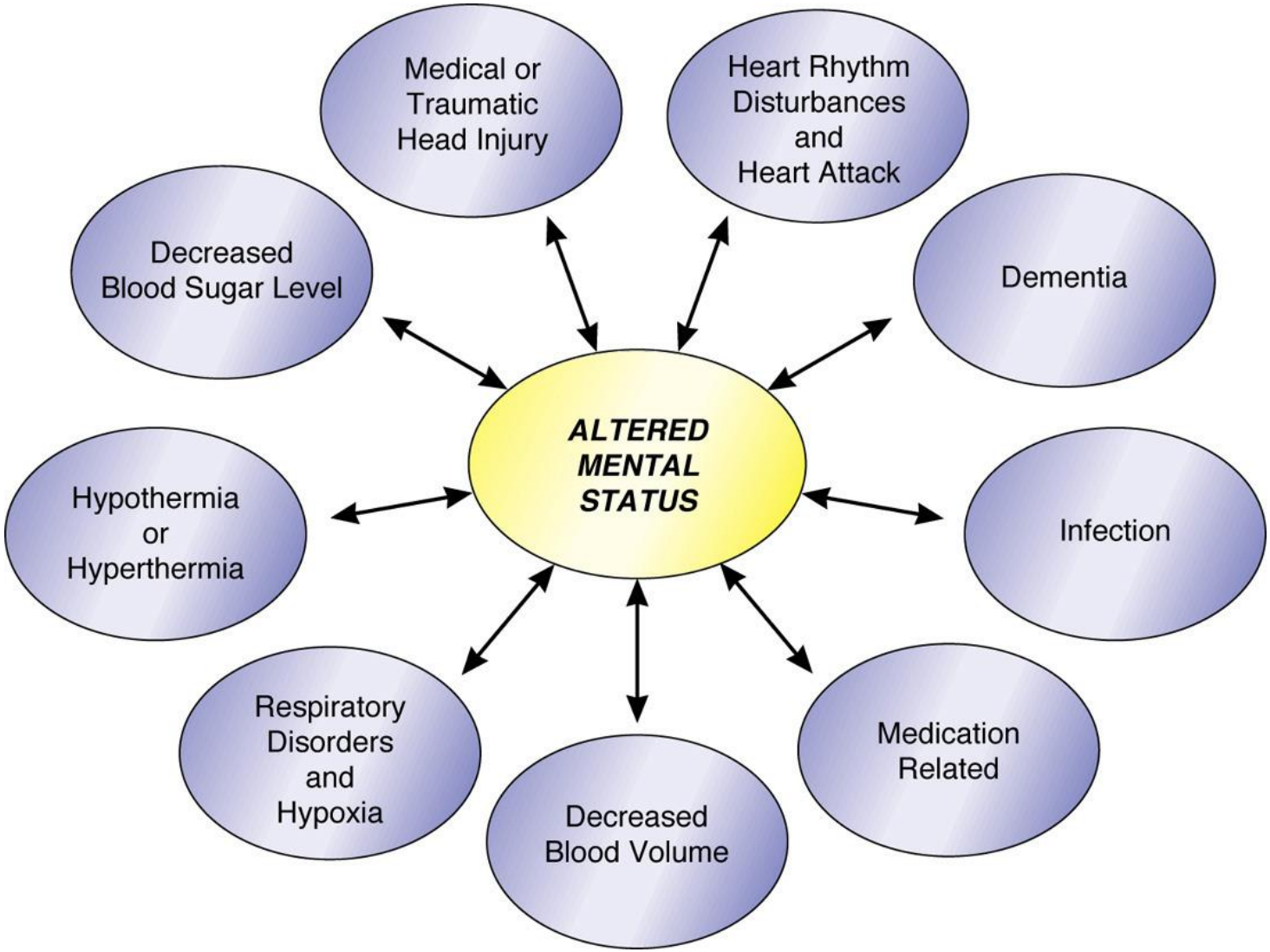
- Neuro
  - Mentation – A/O X 3 or Norm
  - Cognitive
    - ST or LT memory
    - Problem solving/thought process
    - Object recognition
    - Dysphasia
  - Pupils (cataracts?)
  - Motor function
    - Gross motor (walking – with assistance?)
    - Fine motor (detailed activity)
    - Lateralizing signs
    - Gait disturbances
    - Paralysis
    - Balance

Assessment

- Sensory
  - Visual acuity
    - Double vision
    - Blurred
  - Hearing
  - Paresthesias
  - Temperature regulation
  - Tactile

Table 43-2 Age-Related Sensory Changes and Implications for Communication

Sensory Change	Result	Communication Strategy
Clouding and thickening of lens in eye	Cataracts; poor vision, especially peripheral vision	Position yourself in front of patient where you can be seen; put hand on arm of blind patient to let patient know where you are; locate a patient's glasses, if necessary.
Shrinkage of structure in ear	Decreased hearing, especially ability to hear high frequency sounds; diminished sense of balance	Speak clearly; check hearing aids as necessary; write notes if necessary; allow the patient to put on the stethoscope, while you speak into it like a microphone.
Deterioration of teeth and gums	Patient needs dentures, but they may inflict pain on sensitive gums, so patient doesn't always wear them	If patient's speech is unintelligible, ask patient to put in dentures, if possible.
Lowered sensitivity to pain and altered sense of taste and smell	Patient underestimates the severity of the problem or is unable to provide a complete pertinent history	Probe for significant symptoms, asking questions aimed at functional impairment.


Medical or Traumatic Head Injury
Heart Rhythm Disturbances and Heart Attack
Decreased Blood Sugar Level
Dementia
ALTERED MENTAL STATUS
Hypothermia or Hyperthermia
Infection
Respiratory Disorders and Hypoxia
Medication Related
Decreased Blood Volume

History Taking

- Gathering a history from an older patient usually requires more time than with younger patients
- Pertinent HPI/MOI, PHx
- Obtain ADL's (activities of daily living)
- Patience is important
- Medications

ADL's

- Personal self-care
  - Feeding oneself
  - Bathing
  - Toileting
- Mobility
  - Able to move from bed to a standing position or to a chair
  - Able to walk (with or without assistive devices) or use a wheelchair
- Continence
  - Continent of urine: always or rarely incontinent, or frequently or usually continent
  - Continent of feces

Instrumental ADL's

- Within the home
  - Cooking
  - Housecleaning
  - Laundry
  - Management of medications
  - Management of telephone
  - Management of personal accounts
- Outside the home
  - Shopping for food, clothing, drugs, etc.
  - Use of transportation to travel to necessary and desired activities (e.g., physician's appointments, religious and social events)

Interview Techniques

- Always identify yourself
- Talk at eye level to ensure that the patient can see you as you speak
- Locate hearing aid, eyeglasses, and dentures (if needed)
- Turn on lights
- Speak slowly, distinctly, and respectfully
- Use the patient's surname, unless the patient requests otherwise
- Listen closely
- Be patient
- Preserve dignity
- Use gentleness

Physical Examination Considerations

- The patient may fatigue easily
- Patients commonly wear many layers of clothing for warmth, which may hamper the examination
- Respect the patient's modesty and need for privacy unless it interferes with patient care procedures
- Explain actions clearly before examining all patients, especially those with diminished sight

Physical Examination Considerations

- Be aware that the patient may minimize or deny symptoms through fear of being bedridden or institutionalized or losing self–sufficiency
- Try to distinguish symptoms of chronic disease from acute immediate problems

Physical Examination Considerations

- If time permits, evaluate the patient's immediate surroundings for:
  - Evidence of alcohol or medication use (e.g., insulin syringes, “vial of life,” medic–alert information)
  - Presence of food items
  - General condition of housing
  - Signs of adequate personal hygiene

Physical Examination Considerations

- If available, ask friends or family members about the patient's appearance and responsiveness now versus his or her normal appearance, responsiveness, and other characteristics
- Ensure gentle handling and adequate padding for patient comfort if ambulance transport is necessary

Physical Assessment

- Different pain thresholds
- Accessories (colostomy bags, etc)
- Dehydration
- Determine old or new
  - Deficits
  - Edema
  - LOC/cognitive function
  - VS
- Temp (body)
- Head to toe

Trauma Management Considerations

- Priorities of trauma care for older patients are similar to those for all trauma patients
- Special consideration should be given to the older patient's:
  - Cardiovascular system
  - Respiratory system
  - Renal system
  - Transport strategies should be given special consideration

Table 43-3 Possible Causes of Elimination Problems

Difficulty in Urination	Difficulty with Bowel Movements
Enlargement of the prostate in men	Diverticular disease
Urinary tract infection	Constipation*
Acute or chronic renal failure	Colorectal cancer

*Constipation may be related to dietary, medical, or surgical conditions. It could also be the result of a malignancy, intestinal obstruction, or hypothyroidism. Treat constipation as a serious medical problem.

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Caring for the Elderly

- Encourage patients to express their feelings.
- Do not trivialize their fears.
- Avoid questions that are judgmental.
- Confirm what the patient says.
- Recall all that you have learned about communicating with the elderly.
- Assure patients that you understand that they are adults.

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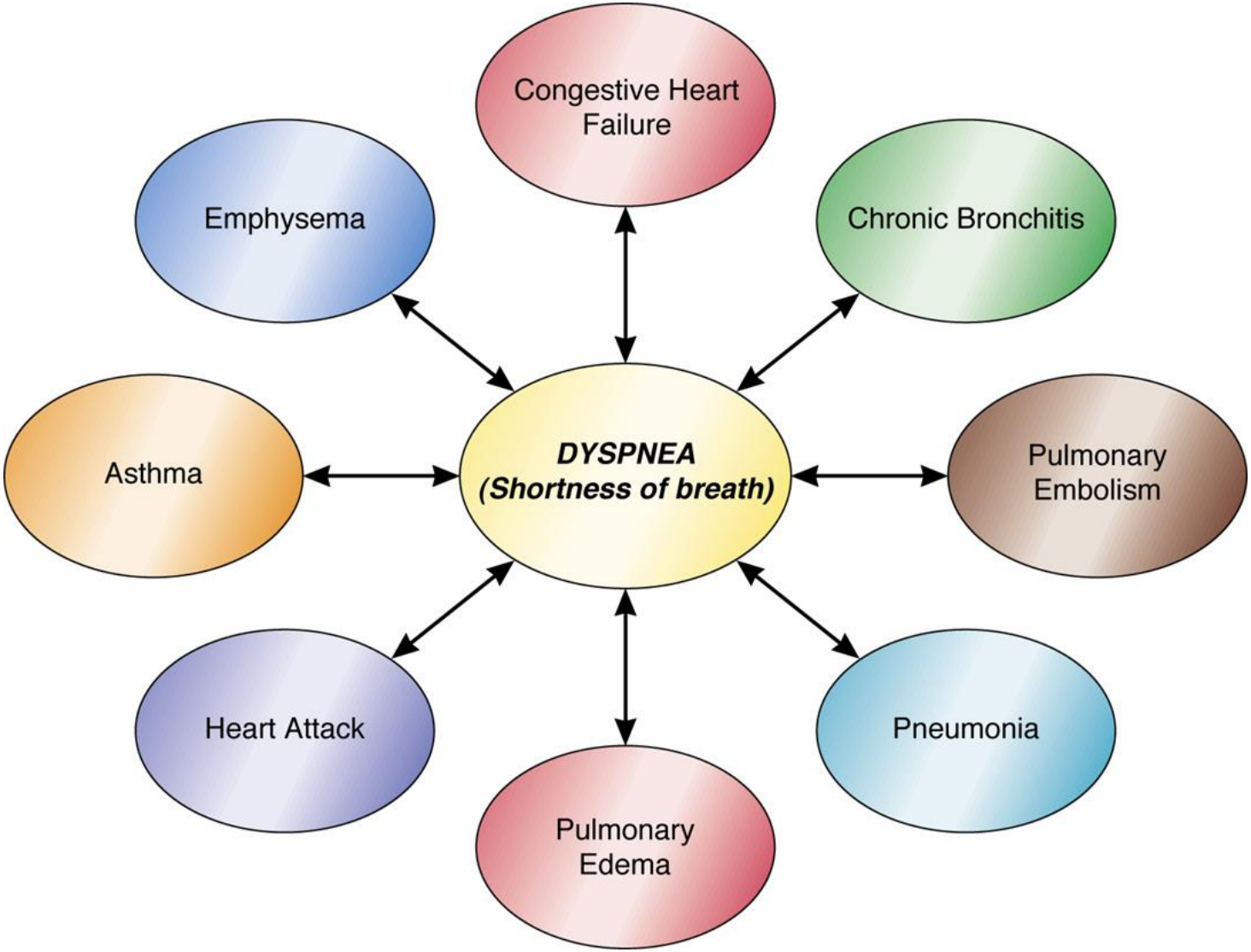
Common Medical Problems in the Elderly

Respiratory Disorders

- Pneumonia
- COPD
- Pulmonary Embolism
- Pulmonary Edema
- Lung Cancer


Congestive Heart Failure
Emphysema
Chronic Bronchitis
Asthma
DYSPNEA
(Shortness of breath)
Pulmonary Embolism
Heart Attack
Pneumonia
Pulmonary Edema

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Cardiovascular Disorders

- Angina Pectoris
- Myocardial Infarction
- Heart Failure
- Dysrhythmias
- Aortic Dissection/Aneurysms
- Hypertension
- Syncope

Neurologic Disorders

- Cerebrovascular Disease
- Seizures
- Dizziness/Vertigo
- Delirium, Dementia, Alzheimer's Disease
- Parkinson's Disease

Table 43-5 Distinguishing Dementia and Delirium*

Dementia	Delirium
Chronic, slowly progressive development	Rapid in onset, fluctuating course
Irreversible disorder	May be reversed, especially if treated early
Greatly impairs memory	Greatly impairs attention
Global cognitive deficits	Focal cognitive deficits
Most commonly caused by Alzheimer's disease	Most commonly caused by systemic disease, drug toxicity, or metabolic changes
Does not require immediate treatment	Requires immediate treatment

*These are general characteristics that apply to most, but not all cases. For example, some forms of dementia, such as those caused by hypothyroidism, may be reversed.

Endocrine Disorders

- Diabetes mellitus
- Thyroid disorders

Gastrointestinal Disorders

- GI Hemorrhage
- Bowel Obstruction
- Mesenteric Infarct

Skin Disorders

- Pruritus (itching)
- Herpes zoster (shingles)
- Pressure ulcers (Decubitus ulcers)

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Musculoskeletal Disorders

- Osteoarthritis
- Osteoporosis

Environmental Emergencies

- Hypothermia
- Hyperthermia

Toxicological Emergencies

- Lidocaine
- Beta-blockers
- Antihypertensives/diuretics
- ACE inhibitors
- Digitalis (digoxin, Lanoxin)
- Antipsychotropics
- Parkinson’s disease medications
- Analgesics
- Corticosteroids

Substance Abuse

- Factors that contribute to substance abuse in the elderly include:
  - Age-related changes
  - Employment loss
  - Loss of spouse
  - Multiple prescriptions
  - Malnutrition
  - Loneliness
  - Moving to an apartment/care home

Behavioral/Psychological Disorders

- Depression
- Dependent personality
- Paranoid disorders

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Trauma in the Elderly

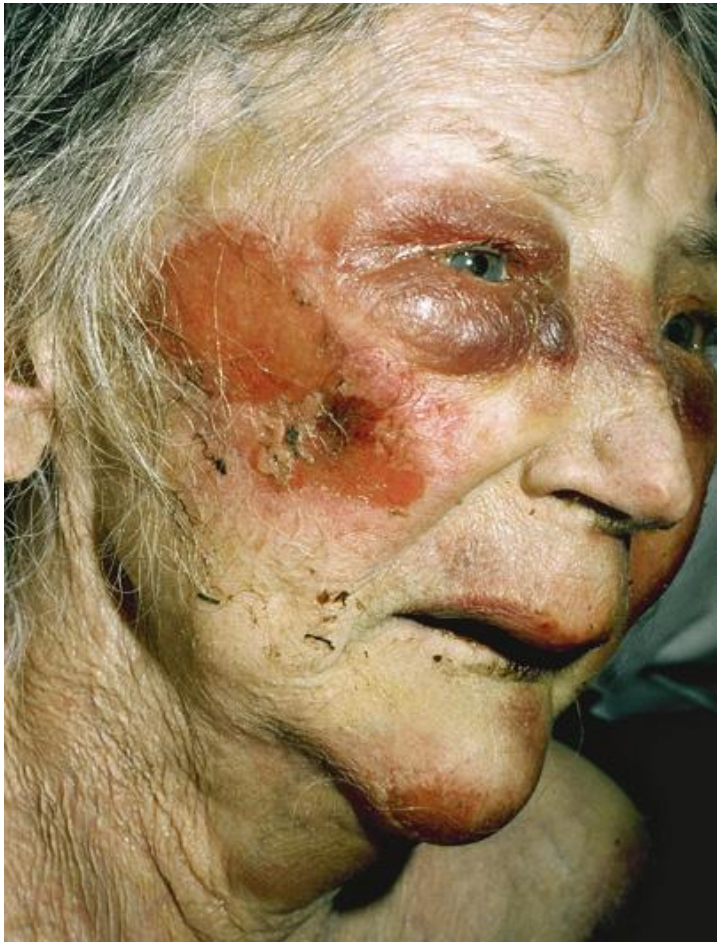
Trauma

- Trauma is the leading cause of death in the elderly.
- Factors include:
  - Osteoporosis
  - Reduced cardiac reserve
  - Decreased respiratory function
  - Impaired renal function
  - Decreased elasticity in the peripheral blood vessels

Assessment

- Remember that blood pressure and pulse readings can be deceptive indicators of hypoperfusion.
- Leading causes of trauma in the elderly include falls, motor vehicle crashes, burns, assault, and syncope.
- Observe the scene for signs of abuse and neglect.

- Serious head injuries sometimes denote geriatric abuse



General Management

- Consider the various changes and underlying conditions which may affect your care:
  - Cardiovascular considerations
  - Respiratory considerations
  - Renal considerations

Orthopedic Injuries

- Greatest mortality, greatest incidence
- 33% of falls involve at least one fractured bone
- Most commonly fractures of the hip or pelvis
- Osteoporesis

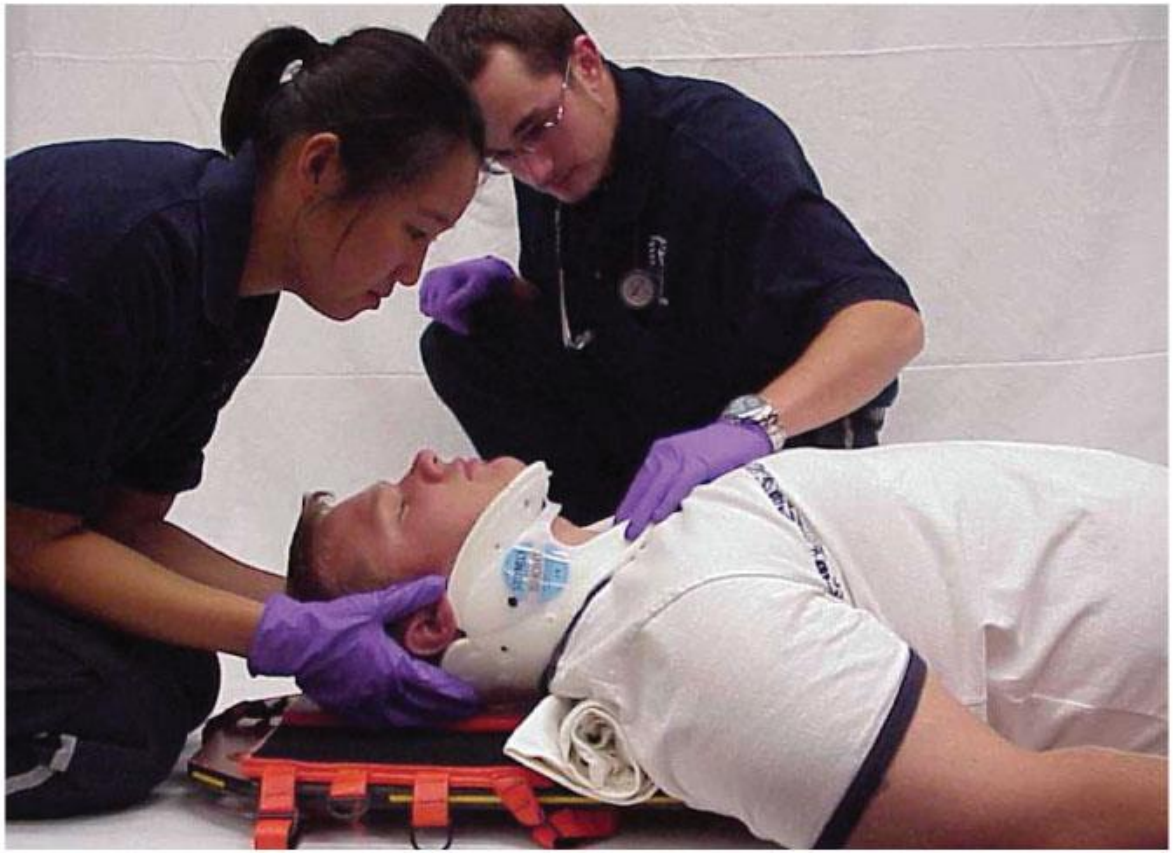


FIGURE 43-10a In an elderly patient with curvature of the spine, place padding behind the neck when immobilizing a patient to a long spine board.

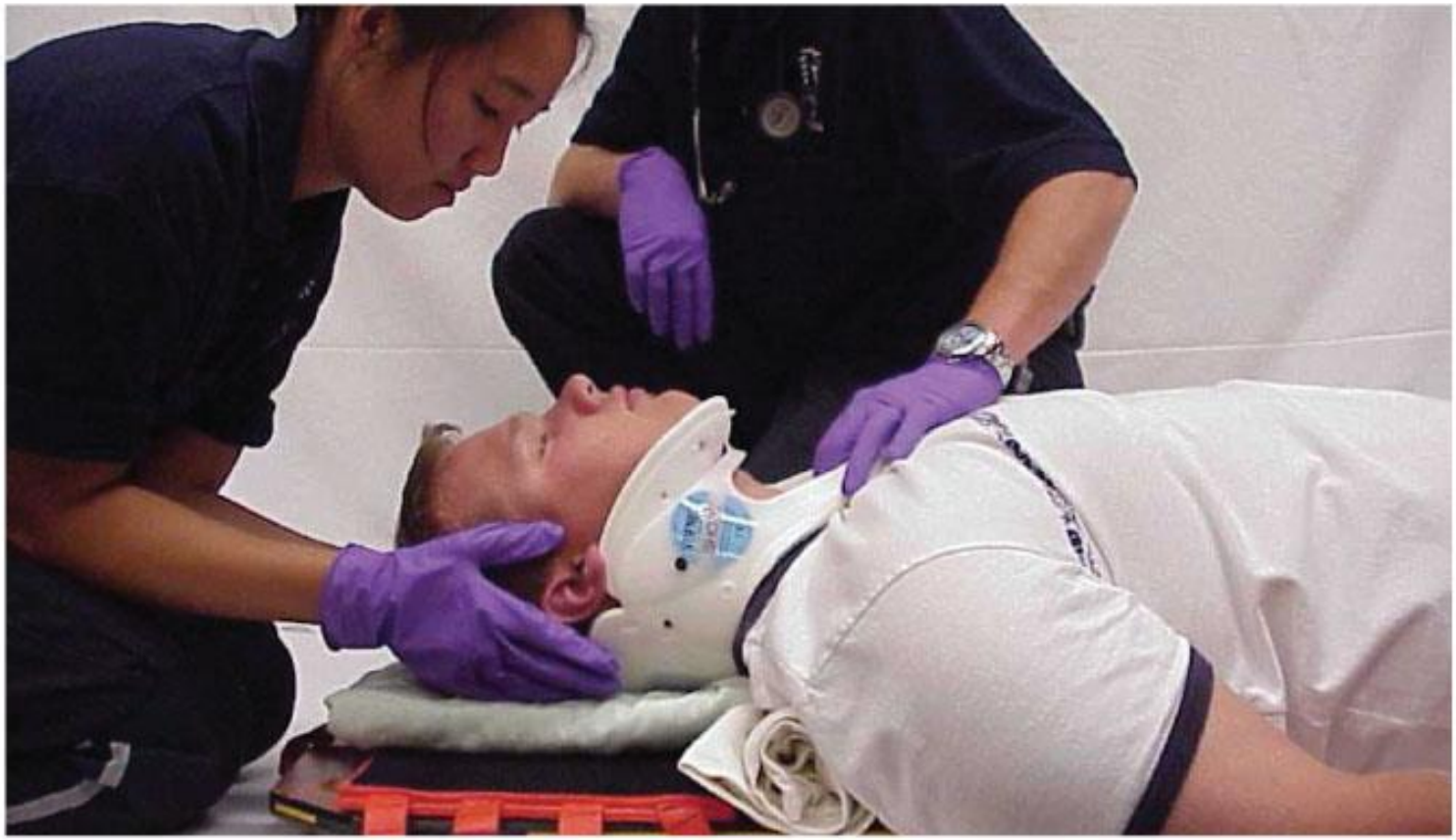


FIGURE 43-10b Additional padding, such as rolled blankets or towels behind the head, may be needed to keep the head in a neutral, in-line position.

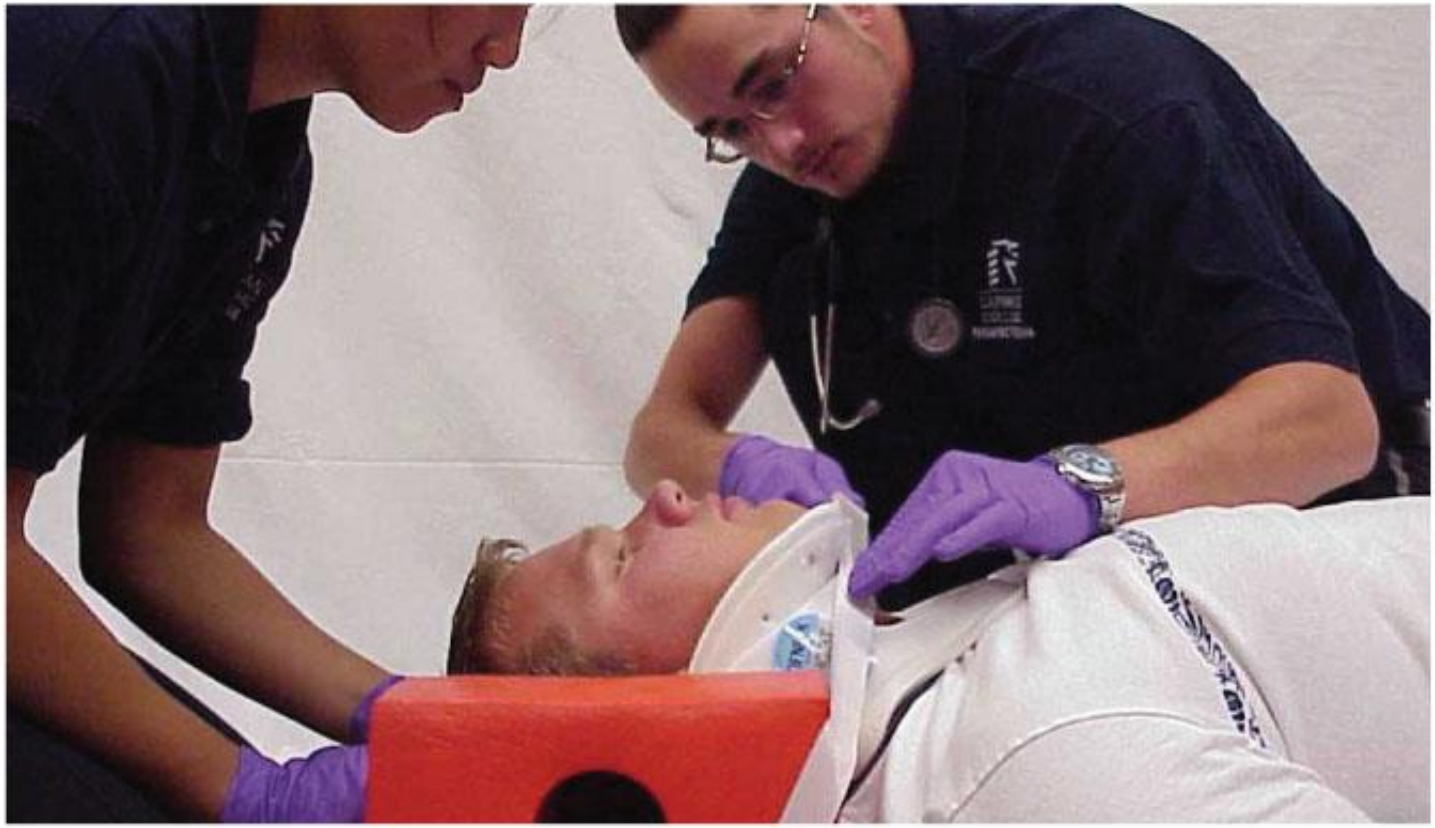
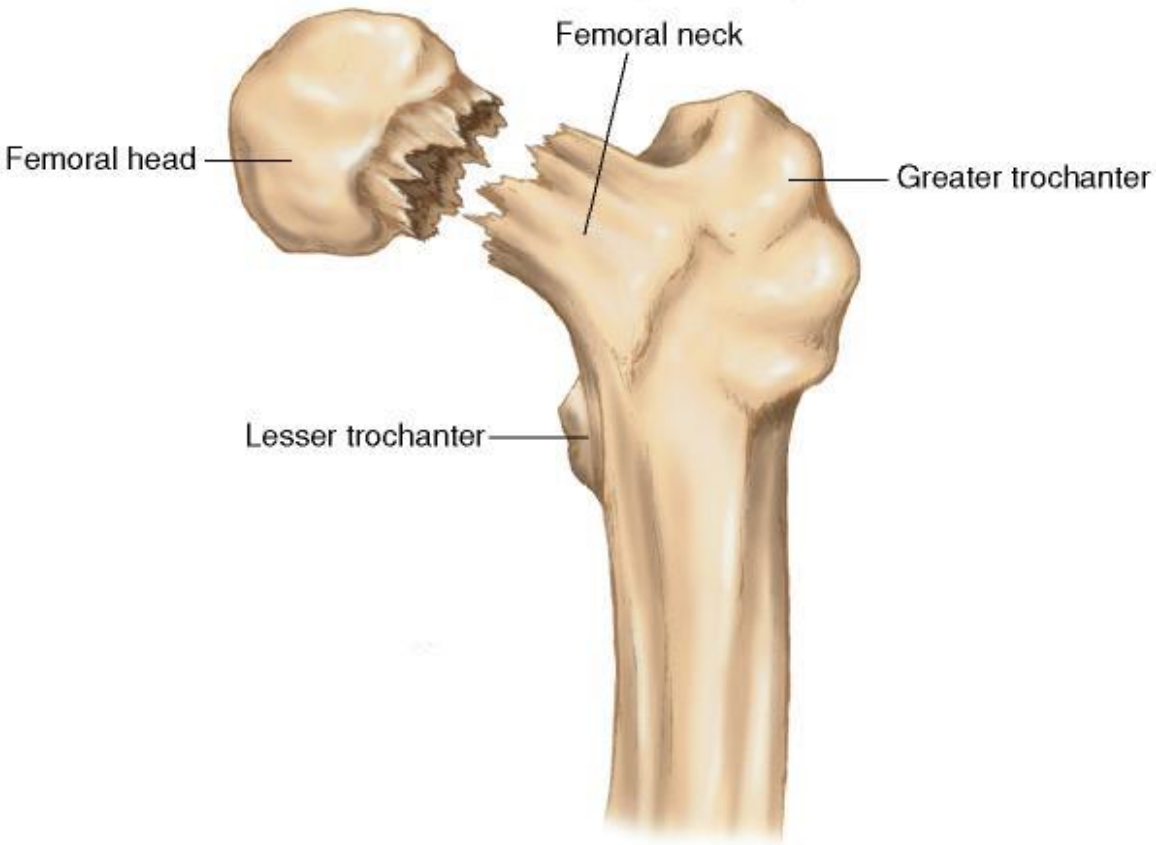


FIGURE 43-10c Secure the patient's head with a head immobilizer device. To prevent spinal damage, maintain manual stabilization until the head is secured.

Orthopedic Injuries

- Hip or pelvis fractures
- Proximal humerus
- Distal radius
- Proximal tibia
- Thoracic and lumbar bodies

- Subcapital femoral neck fracture, common in the elderly



Burns

- People age 60 and older are more likely to suffer death from burns than any other group except neonates and infants:
  - Slower reaction time
  - Pre-existing diseases
  - Age-related skin changes
  - Immunological/metabolic changes
  - Reductions in physiological function