



GERIATRICS

DND Primary Care Paramedicine

Module: 08

Section: 05

- Introduction
- Epidemiology
- General pathophysiology, assessment and management
- System pathophysiology
- Common medical problems
- Trauma

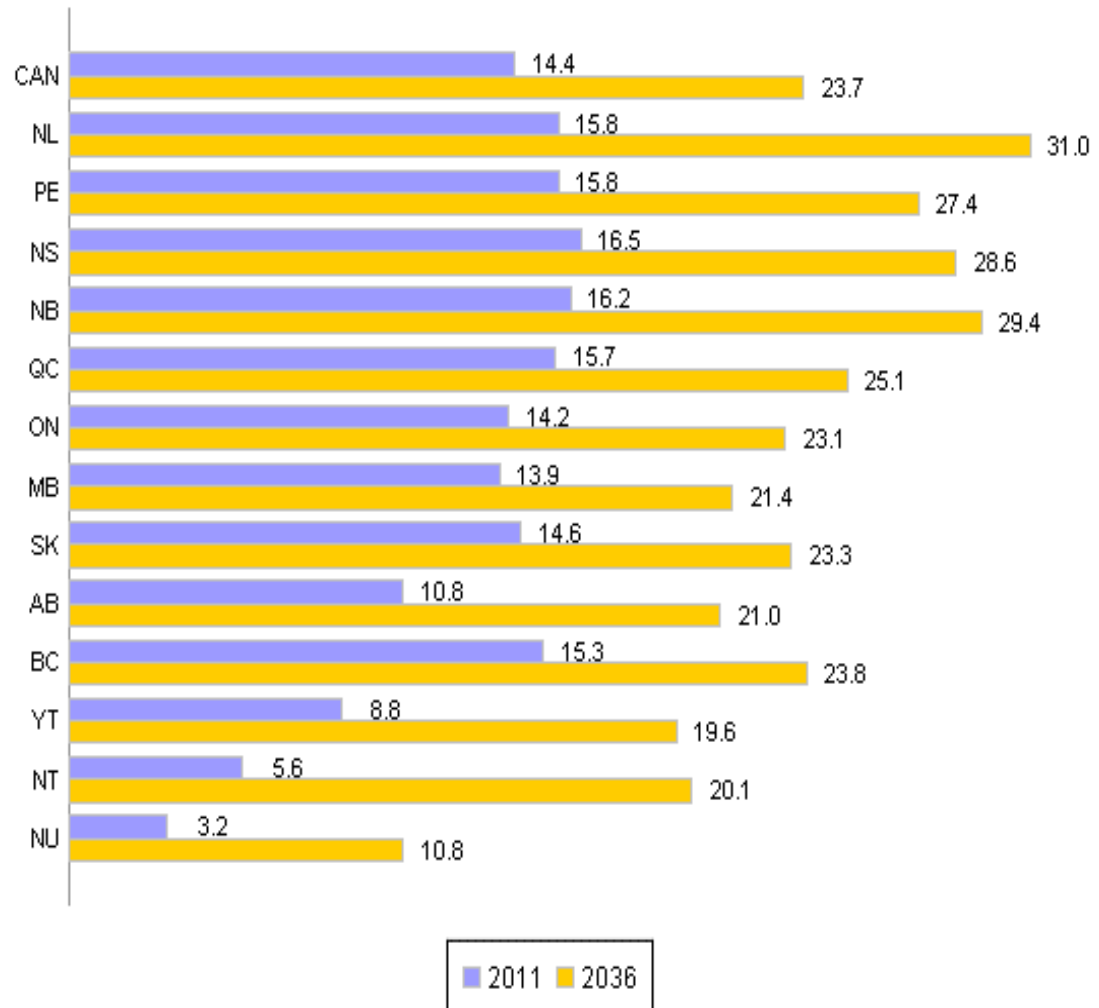
- The elderly are one of the fastest growing segments of the population
- Aging involves the gradual decline of body functions
- Age related changes occur at different rates
- People become less alike as they age
 - Psychologically and physiologically

- The study of the problems of all aspects of aging including:
 - Psychological
 - Social
 - Environmental
 - Physiological

- 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.

- In most parts of the world, people are living longer, and this means that diseases that affect elderly people are becoming more common

Population 65 years and over, by region, 2011 and projected 2036
 (percent)



- Fundamental to geriatric practice is the fact that there are 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

- 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

Many older adults lead active lives



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.

Geriatrics

GENERAL PATHOPHYSIOLOGY, ASSESSMENT, AND MANAGEMENT

- The body becomes less efficient with age.
- The elderly often suffer from more than one illness or disease at a time.
- The existence of multiple chronic diseases in the elderly often leads to the use of multiple medications.

- 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 medications.

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

- 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

- 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.

- Poor nutrition
- Difficulty with elimination
- Atrophy of muscles
- Decreased bone density
- Decreased joint function
- Poor skin integrity
- Greater disposition for falls
- Loss of independence/confidence
- Depression
- Isolation and lack of a social network

- 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

Cataracts Diminish Eyesight

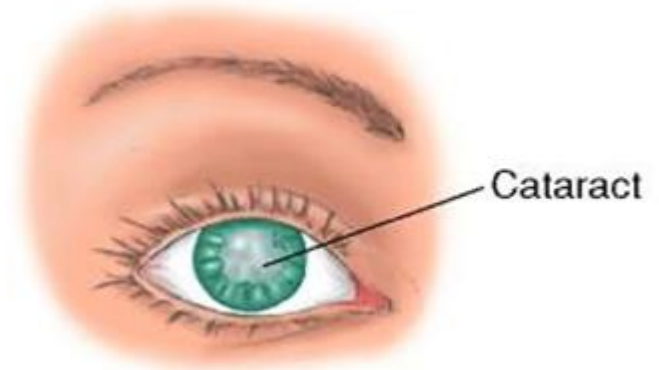
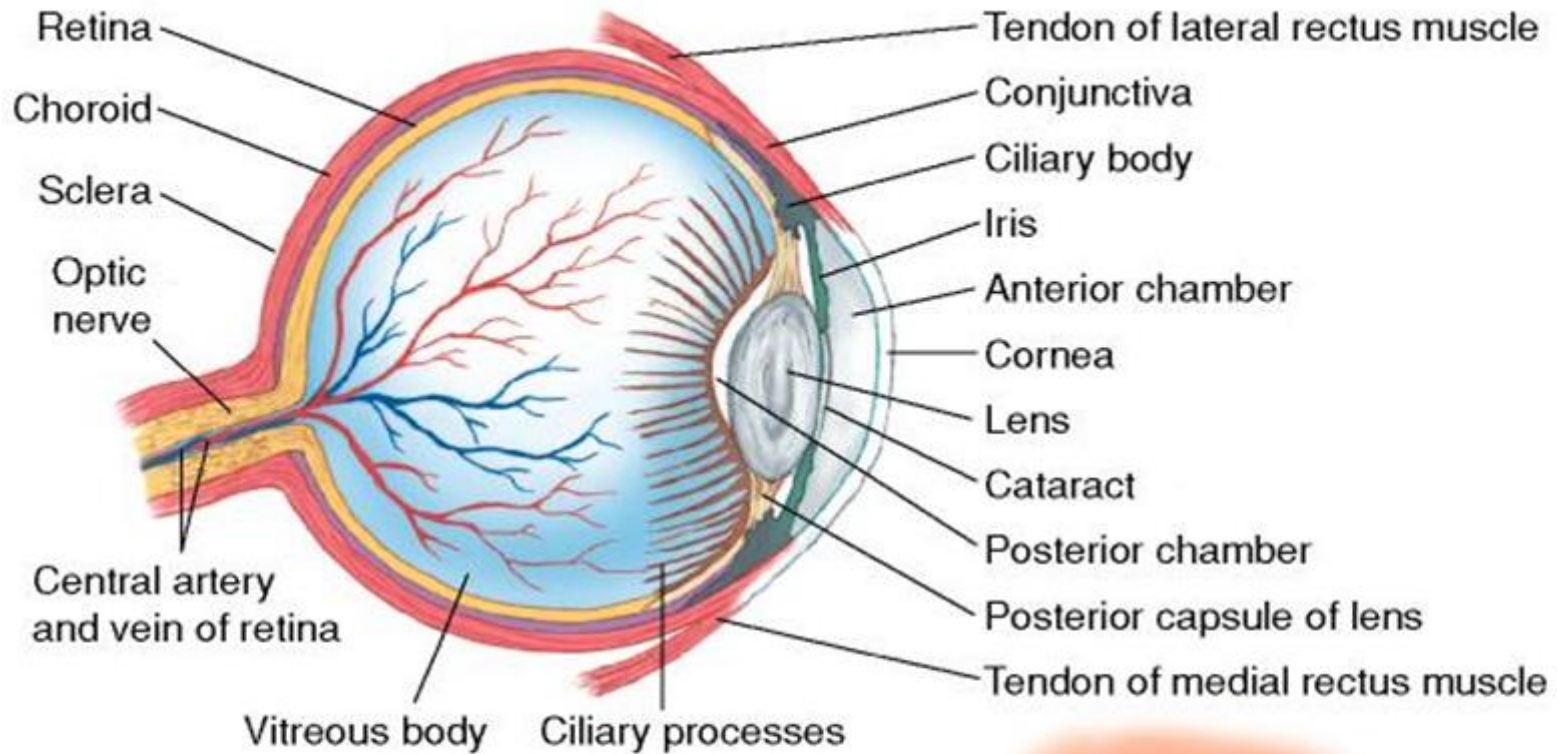


Table 43-2 AGE-RELATED SENSORY CHANGES AND IMPLICATIONS FOR COMMUNICATION

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.

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

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

Table 43-3 POSSIBLE CAUSES OF ELIMINATION PROBLEMS

Difficulty in Urination

Enlargement of the prostate in men
Urinary tract infection
Acute or chronic renal failure

Difficulty with Bowel Movements

Diverticular disease
Constipation*
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.

- Living situation
- Level of activity
- Network of social support
- Level of independence
- Medication history
- Sleep patterns
- Voiding history

- Breathing or respiratory problems
- Abdominal pain
- Nausea and vomiting
- Poor dental care
- Medical problems
- Medications
- Alcohol or drug abuse
- Psychological disorders
- Poverty
- Problems with shopping or cooking

- People 65 or older (particularly men) have the highest rate of suicide of any other group
- Baby Boomers (born 46 – 64) have highest rate.
- Rates of 30 per 100,000

- Alcohol
 - Alcohol is the substance most commonly used by seniors.
 - 22% drink four or more times per week.
 - Signs of intoxication or prolonged use can be misattributed to aging, cognitive impairment or dementia.
 - Early-onset drinkers comprise approximately two-thirds of older problem drinkers, and late-onset drinkers comprise one-third.
- Prescription drug use
 - Is more prevalent among those 65 and over than among younger cohorts.
 - The prescription medications most commonly used are heart medication, blood pressure medication, pain relievers and benzodiazepines.
 - Approximately 20% of seniors use over-the-counter pain relievers in addition to their prescribed pain relievers.
 - Less than 1% of Canadian seniors report using illicit drugs.
- Men consume larger quantities of alcohol, but women may be at greater risk of becoming dependent on prescription medications.

- Always introduce yourself
- Speak slowly, distinctly and respectfully
- Speak to patient first
- Speak face to face, at eye level
- Locate hearing aid or glasses
- Turn on room lights
- Show concern and empathy

- Talk directly to the elderly, if possible

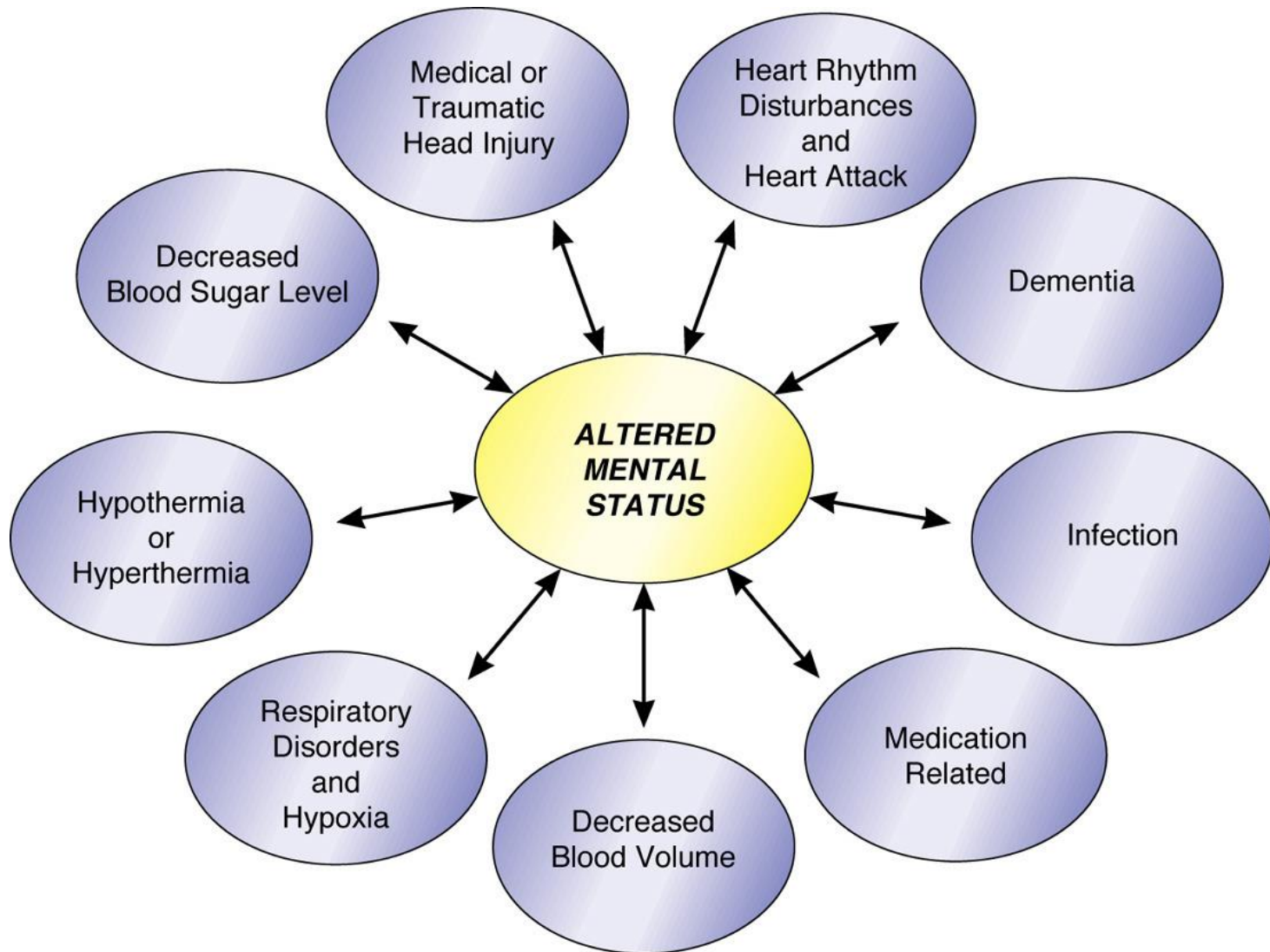


- The paramedic must move closer to the patient and talk clearly and slightly louder to a patient who is hearing impaired
- This doesn't mean every patient is hearing impaired



- Try speaking into a stethoscope with the hearing-impaired if they do not have their hearing aid





- 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.

Geriatrics

SYSTEM PATHOPHYSIOLOGY IN THE ELDERLY

CHANGES IN THE BODY SYSTEMS OF THE ELDERLY

Neurological System

- Brain changes with age.
- Clinical depression common.
- Altered mental status common.

Cardiovascular System

- Hypertension common.
- Changes in heart rate and rhythm.

Gastrointestinal System

- Constipation common.
- Deterioration of structures in mouth common.
- General decline in efficiency of liver.
- Impaired swallowing.
- Malnutrition as result of deterioration of small intestine.

Musculoskeletal System

- Osteoporosis common.
- Osteoarthritis common.



Respiratory System

- Cough power is diminished.
- Increased tendency for infection.
- Less air and less exchange of gases due to general decline.

Renal System

- Drug toxicity problems common.
- General decline in efficiency.

Skin

- Perspires less.
- Tears more easily.
- Heals slowly.

Immune System

- Fever often absent.
- Lessened ability to fight disease.

Table 43-4 COMMON AGE-RELATED SYSTEMIC CHANGES

Body System	Changes with Age	Clinical Importance
Respiratory	Loss of strength and coordination in respiratory muscles Cough and gag reflex reduced	Increased likelihood of respiratory failure
Cardiovascular	Loss of elasticity and hardening of arteries Changes in heart rate, rhythm, efficiency	Hypertension common Greater likelihood of strokes, heart attacks Great likelihood of bleeding from minor trauma
Neurological	Brain tissue shrinks Loss of memory Clinical depression common Altered mental status common Impaired balance	Delay in appearance of symptoms with head injury Difficulty in patient assessment Increased likelihood of falls
Endocrine	Lowered estrogen production (women) Decline in insulin sensitivity Increase in insulin resistance	Increased likelihood of fractures (bone loss) and heart disease Diabetes mellitus common with greater possibility of hyperglycemia
Gastrointestinal	Diminished digestive functions	Constipation common Greater likelihood of malnutrition
Thermoregulatory	Reduced sweating Decreased shivering	Environmental emergencies more common
Integumentary (Skin)	Thins and becomes more fragile	More subject to tears and sores Bruising more common Heals more slowly
Musculoskeletal	Loss of bone strength (osteoporosis) Loss of joint flexibility and strength (osteoarthritis)	Greater likelihood of fractures Slower healing Increased likelihood of falls
Renal	Loss of kidney size and function	Increased problems with drug toxicity
Genitourinary	Loss of bladder function	Increased urination/incontinence Increased urinary tract infection
Immune	Diminished immune response	More susceptible to infections Impaired immune response to vaccines
Hematological	Decrease in blood volume and/or RBCs	Slower recuperation from illness/injury Greater risk of trauma-related complications

- Decreased chest wall compliance
- Loss of lung elasticity
- Increased air trapping due to collapse of smaller airways
- Reduced strength and endurance of the respiratory muscles

- Conduction system of the heart degenerates
 - Dysrhythmias and varying degrees of heart block
- Muscle degeneration
 - Decreased contractility and cardiac output

- Provide high-concentration supplemental oxygen
- Start an IV for medication administration
- Inquire about age related dosages
- Monitor vital signs and rhythm
- Acquire a 12 lead ECG
- Remain calm, professional, and empathetic

- Do not assume that an elderly person possesses less cognitive skill
- Slight changes that might be expected include:
 - Difficulty with recent memory
 - Psychomotor slowing
 - Forgetfulness
 - Decreased reaction times

- Many endocrine emergencies encountered in the field present as altered mental status
 - Especially with insulin-related disorders.

- Complications in the GI system can be life threatening
- Use shock protocols as necessary
- Not all fluid loss occurs outside the body

- The elderly are at a higher risk of
 - Secondary infection
 - Skin tumours
 - Drug induced eruptions
 - Fungal or viral infections

- Many extremity injuries should be splinted as found because of changes in the bone and joint structure in the elderly

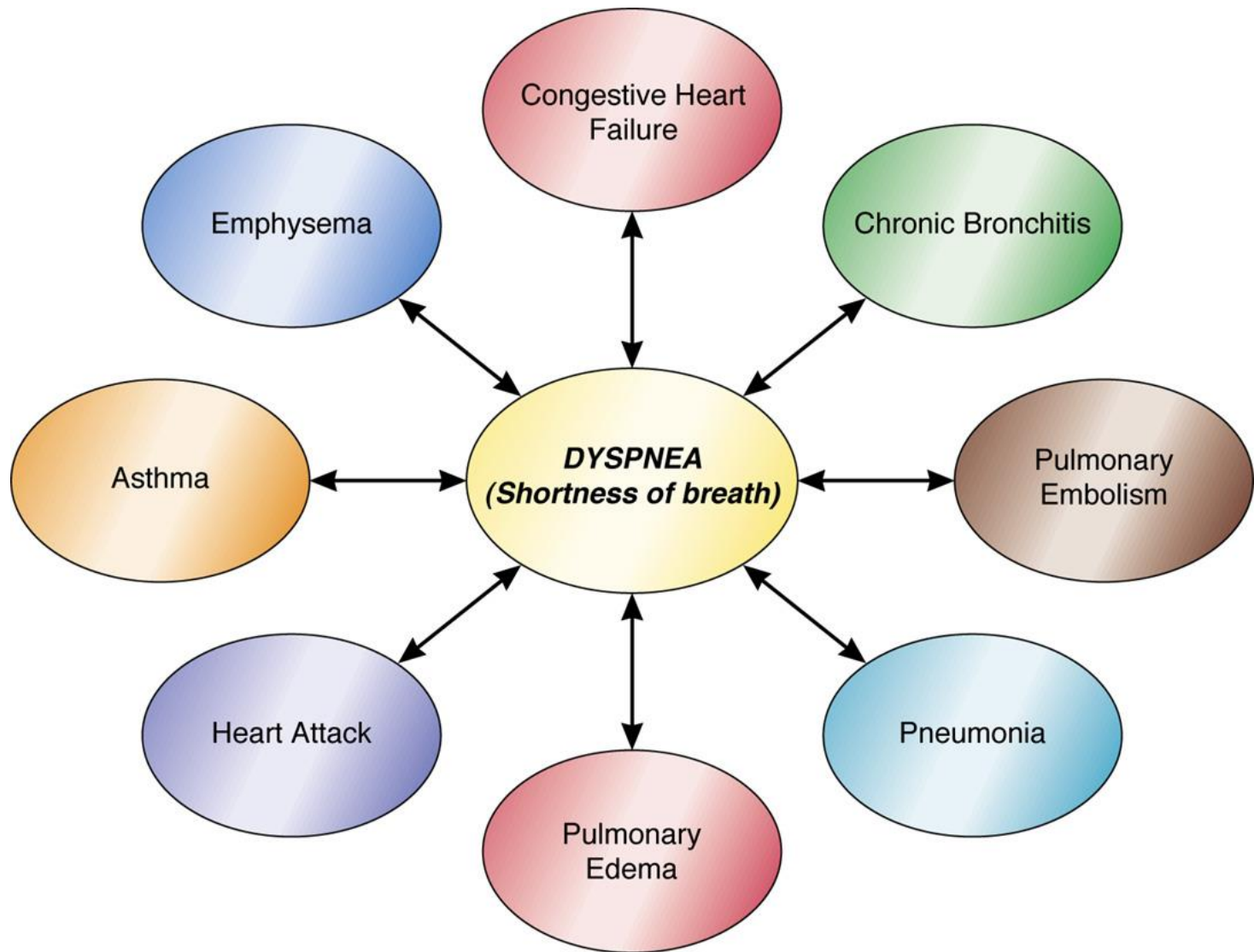
- Prehospital treatment is directed toward
 - Adequate oxygenation
 - Fluid status
 - Monitoring output
 - Pain control

- The function of T cells declines
- Less able to notify the immune system of invasion by antigens.
- Aging impairs the immune response to vaccines

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COMMON MEDICAL PROBLEMS IN THE ELDERLY

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



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

- 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.

- Diabetes mellitus
- Thyroid disorders

- GI Hemorrhage
- Bowel Obstruction
- Mesenteric Infarct

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

- Osteoarthritis
- Osteoporosis

- Hypothermia
- Hyperthermia

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

- 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

- Organic brain syndrome
- Depression
- Dependent personality
- Paranoid disorders

Geriatrics

TRAUMA IN THE ELDERLY

- 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

- 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



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

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

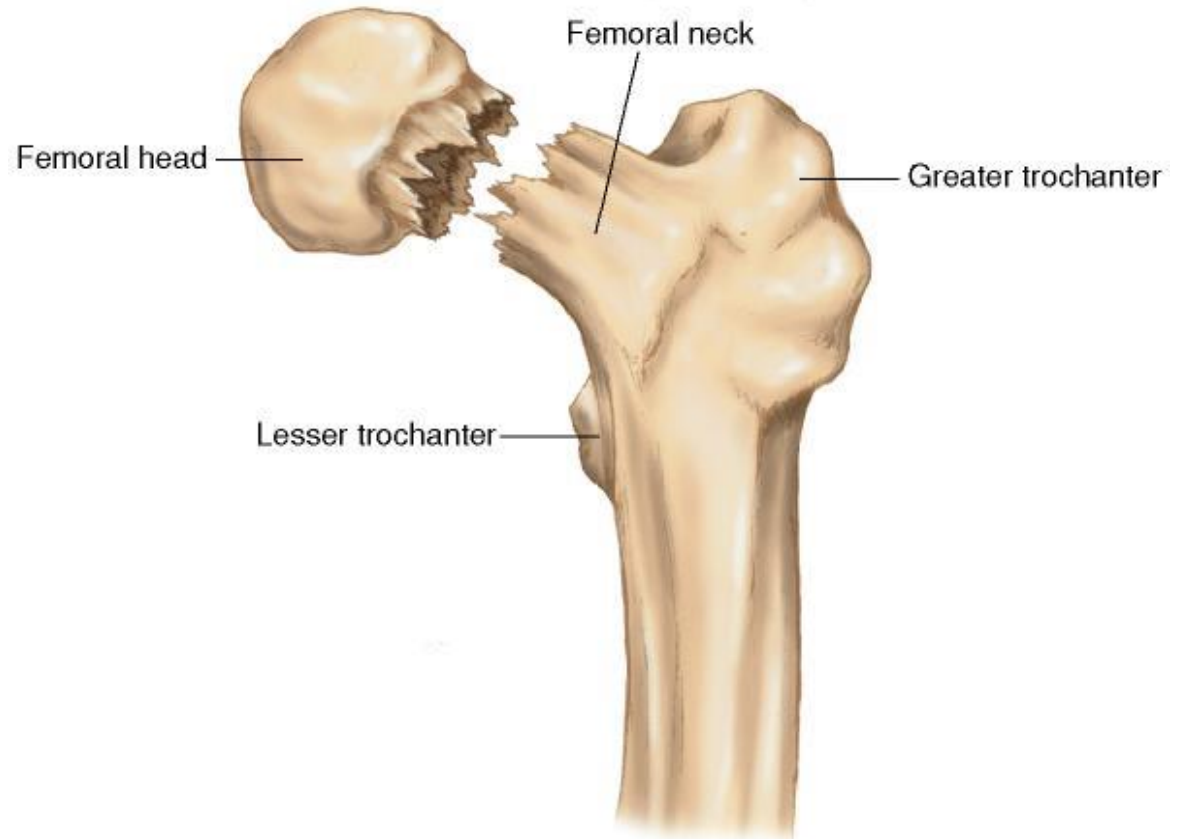
- In an elderly patient with curvature of the spine, place padding behind the neck when immobilizing the patient to a spine board
- Additional padding such as rolled blankets or towels behind the head may be needed to keep the head in a neutral, in-line position
- Secure the patient's head with a head immobilizer device.





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

- Subcapital femoral neck fracture, common in the elderly



- 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

- Epidemiology
- General pathophysiology, assessment and management
- System pathophysiology
- Common medical problems
- Trauma