



EMS Solutions

Geriatrics



Geriatrics

- Growing population
- The “Graying of America”
- Increasing age = diminished health
- 35 million in 2000 to 70 million in 2030
- Financial aspects of geriatric population
- Independent living
- Dependent living



Pathophysiology Assessment Management

- Multi system failure
 - Disease process
 - Non specific complaints
 - Decreased ability to detect changes



Pharmacology

- Age related pharmacokinetics
 - Prolonged effects
 - More adverse reactions
- Polypharmacy
 - Many clinical illnesses
 - Interaction with OTC meds
- Compliance
 - Multi drug regimens
 - Difficulty reading / understanding directions



Mobility and Falls

- Physical effects of decreased mobility
 - Poor nutrition
 - Difficulty eliminating
 - Circulation
 - Skin integrity
- Psychological effects
 - Loss of independence
 - Loss of confidence
 - Feeling “old”



Mobility and falls cont.

- Risk factors
 - History of falls
 - Dizziness, weakness, vision
 - Medications
 - CNS depression
- Prevention
 - Use of assistance devices
 - Environmental modifications



Problems with sensation-sight

- Pathophysiology
 - Vision loss begins at 40
- Cataracts
 - Lens becomes hardened and opaque
- Glaucoma
 - Increased intraocular pressure
 - Damage to optic nerve
 - May progress to total loss



Hearing

- Not all have hearing loss
- Overall hearing decreases
- Hearing loss
 - Impairs ability to communicate
 - Aids may not restore hearing to normal



Speech

- Word retrieval
- Decreased fluency
- Slowed rate
- Change in voice quality



Problems with Incontinence and Elimination

- Incontinence never normal
- Can lead to:
 - Skin irritation
 - Skin breakdown
 - Urinary Tract Infection



Pathophysiology

- Contenance requires
 - Anatomically correct GI/GU tract
 - Competent sphincter mechanism
 - Cognitive and physical function
 - Motivation
- Effects of age
 - Decrease in bladder capacity
 - Involuntary bladder contractions
 - Decreased ability to postpone voiding
 - Medications may affect bladder / bowel control



Elimination

- Causes of difficulty in urination
 - Enlarged prostate
 - Urinary tract infection
 - Acute or chronic renal failure
- Causes of difficulty in bowel elimination
 - Diverticular disease
 - Constipation
 - Colorectal cancer



Assessment of the Elderly

- Patience is utmost
- General health
 - Social history
 - Living situation
 - Activity level
 - Medication history
 - Nutrition
 - Environmental assessment



Geriatric Assessment

- Factors complicating assessment
 - Multiple disease
 - Absent classical symptoms
 - Failure to relate symptoms
 - Sensory alterations
 - Polypharmacy



Assessment methods

- Introduce yourself
- Speak slowly, distinctly, respectfully
- Speak to the patient rather than family
- Speak face to face
- Locate hearing aids and glasses
- Turn on the lights



Management of the Elderly

- Treat like any other patient
- Special attention the body systems
- Special attention to “padding”
- Pharmacokinetics



Pulmonary Changes in the Elderly

- Decreased lung function due to
 - Chronic exposure to pollutants
 - Decreased respiratory muscle tone
 - Changes in alveolar / capillary exchange
 - Respiratory center changes
- Most common pulmonary disease in the elderly
 - Pneumonia
 - Pulmonary embolism
 - Obstructive Airway Disease



Specific Illnesses - Pneumonia

- Incidence in the elderly
- Usually bacterial
- Aspiration pneumonia (difficult swallowing)
- Decreased immune response
- Leading cause of death in elderly
- Institutional environments



Pneumonia

■ Assessment

- Fever
- Cough
- Short of breath
- Mental status changes
- Afebrile
- Tachypnea

■ Treatment

- Manage life threats
- Maintain oxygenation
- Transport for dx
- High rate of yearly hospital admissions



COPD

- Combined bronchitis & emphysema
- Diminished efficiency of breathing
- Cigarette smoking



COPD

- Assessment

- Obtain history
- Wheezing and prolonged exp phase
- Breath sounds are unreliable

- Treatment

- Manage life threats
- Maintain oxygenation
- Treat with B-2 meds



Pulmonary Embolism

- Treatment and therapy possible
- Most mortality due to difficulty in dx
- DVT
- Venous stasis from inactivity
- Tumor
- Surgery



Pulmonary Embolism

- Assessment

- Dyspnea
- Pleuritic Chest pain
- Cough
- tachypnea

- Treatment

- Airway control
- Circulation
- Pharmacology
- Psychological support
- Rapid transport



Cardiology in the Elderly

- Normal & Abnormal changes
 - Arteries become increasingly rigid
 - Decreased peripheral resistance
 - Reduced blood flow to organs
 - Increased blood pressure
 - Widened pulse pressure
 - Heart muscle stiffens
 - Increased postural hypotension
 - Increased arteriosclerosis
 - hypertrophy



Assessment findings

■ History

- Cardiovascular fitness
- Changes in exercise tolerance
- Recent diet change
- Medications
- Smoking
- Breathing difficulties
- Palpitations, flutter, skipped beats

■ Physical

- Heart size increases
- Hypertension
- Orthostatic hypotension
- Dependent edema
- BP in both arms
- Pulses in all extremities
- Carotid bruits
- Dehydration



Management

- Airway and circulation
- Pharmacology
 - Less mean body mass
 - Low fluid reserve
 - Slow metabolism
 - Decreased renal & hepatic function (elimination)
- Transport consideration
- Psychological support



Myocardial Infarction

■ Epidemiology

- Higher incidence in elderly
- Mortality double after age 70
- Greater complication rate
- Physical exertion

■ Assessment

- Chest pain less common
- Higher incidence of “silent MI”
- Dyspnea is most common sign
- Any non-specific complaints of upper trunk



Heart Failure

- Epidemiology

- More frequent in elderly
- Large incidence of non-cardiac causes

- Assessment

- 1st symptom of LHF is fatigue
- 2 pillow orthopnea
- Dyspnea on exertion
- Dependent edema due to RHF
- Anorexia, ascites



Dysrhythmias

■ Epidemiology

- Most common cause is hypertensive heart disease
- PVCs in most adult over 80
- Caused by decreased myocardial blood flow
- Electrolyte imbalances
- A-fib is the most common
- Can lead to falls and syncope

■ Assessment

- Specific for the elderly patient
- Syncope
- Tia & Cva



Hypertension

- Epidemiology

- Increases with atherosclerosis
- BP > 160/95 doubles mortality in men
- Can lead to organ loss (kidney, blindness)
- Increased risk factor with age, diabetes, obesity

- Assessment

- Epistaxis
- Slow tremors
- Nausea and vomiting



Neurology

- Normal and abnormal changes
 - Cognition requires perceptual organs that are decreased
 - Cognitive function is not affected by age
 - Slight changes in the following are normal:
 - Difficulty with recent memory
 - Psychomotor slowing
 - Forgetfulness
 - Decrease in reaction time



Neurology cont.

■ Assessment

- Best if conducted over time
- Focus on perception, thought process, communication
- Assess for:
 - Weakness
 - Chronic fatigue
 - Changes in sleep
 - Syncope or near syncope

■ Management

- Supportive care
- Pharmacology



Specific Illnesses

Delirium

Dementia

Alzheimer's

Parkinson's



Delirium

- Reduced ability to maintain attention to external stimuli & to appropriately shift attention to new stimuli
- Disorganized thought
- Confusion developed over a short period of time
- Fluctuating level of confusion
- Potentially reversible if caught early



Delirium

- Pathophysiology

- Tumor
- Metabolic disorder
- Fever
- Drug reaction
- Alcohol intoxication/
withdrawal

- Assessment findings

- Acute onset of anxiety
- Unable to focus
- Unable to think logically
- Memory intact



Dementia

- Loss of intellectual abilities
- 1/2 nursing home patients with a form of dementia
- Patient becomes dependent on others
- Generally considered irreversible



Dementia

- Pathophysiology

- Progressive loss of function
- Many causes
 - Strokes
 - Alzheimer's
 - Genetic or viral factors

- Assessment

- Progressive disorientation
- Shortened attention
- Aphasia
- Hallucinations
- Severely limits ability to communicate



Alzheimer's

- Progressive disease of the brain characterized by impairment of memory and at least one other thinking function
- Possibly from increased production of protein beta-amyloid that leads to nerve death
- Not a normal part of aging



Alzheimer's

■ Pathophysiology

- Loss of mental and physical functions
- 10% over 65 and 50% over 85 have a form of Alzheimer's
- Expected to affect 14million by 2050
- Possible genetic cause

■ Assessment

- Deficit in memory, judgment and thinking
- Death of nerve cells over years
- Progressive illness
- Supportive care



Parkinson's Disease

- A disorder of part of certain nerve cells in a part of the brain that produces dopamine (neuro transmitter)
- Dopamine levels drop
- Brain signals directing movement become abnormal



Parkinson's Disease

■ Pathophysiology

- Cause unknown
- Loss of 80% or more of dopamine transmitters
- Loss of dopamine results in uncontrollable firing of stimuli for movement

■ Assessment

- Shaking (tremors)
- Stiff muscles
- Slow movements
- Stooped posture
- Fixed facial expression
- Speech problems
- Problems with balance / walking
- Decline in intellect



Endocrinology

- Diabetes
- Thyroid Disease



Diabetes

- Approx 20% of older adults have diabetes
- Almost 40% have impaired glucose function
- Most commonly type 1 (insulin dependent)
- Neuropathy
- Visual acuity loss

Diabetic Ulcers & Neuropathy





Thyroid Disease

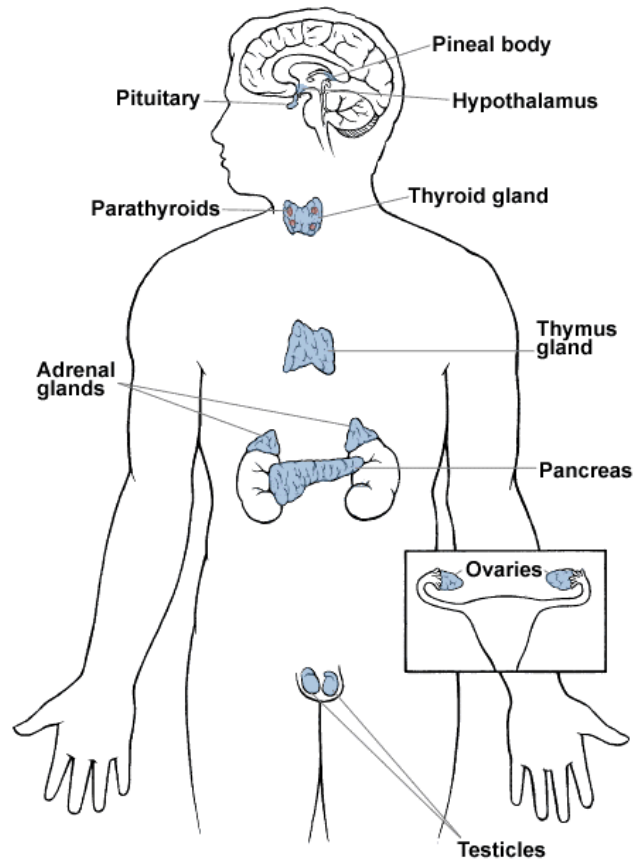
- Abnormal thyroid function
- Hypothyroid
 - Insufficient hormone production
 - Lower energy levels
 - Myxedema coma if not treated
 - Rare but fatal



Thyroid ds. cont

- Hyperthyroid
 - Overproduction of thyroid hormone
 - Graves disease
 - Can cause cancerous growths in thyroid
 - Symptoms:
 - Nervousness, rapid heart rate, excessive sweating, fatigue, weight loss

Glands





Thyroid Storm

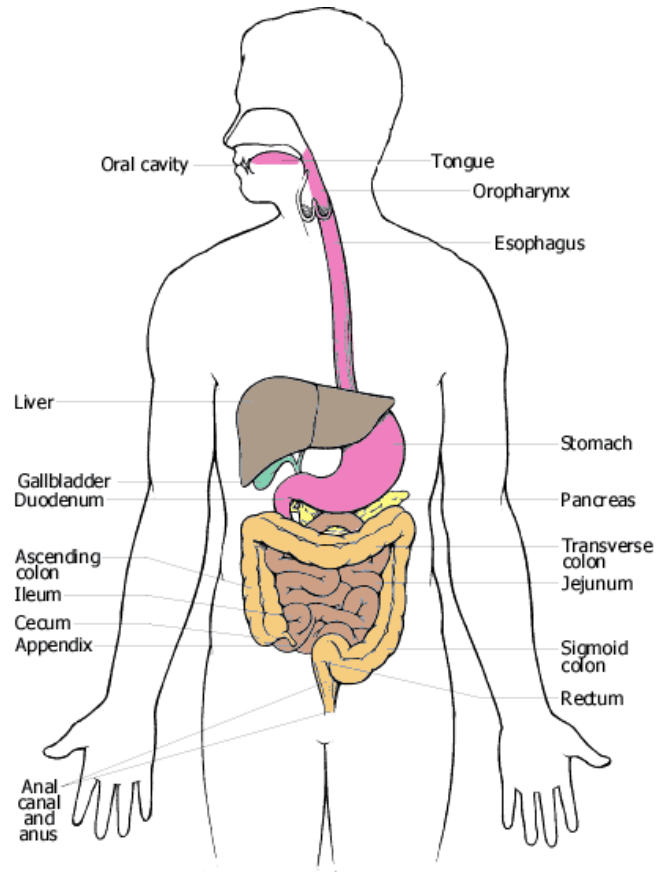
- An acute, life threatening thyroid induced hypermetabolic state
- S/S:
 - Fever
 - Tachycardia
 - Neurologic abnormalities
 - Hypertension
 - Hypotension
 - Shock



Gastroenterology

- Malnutrition
- Gi hemorrhage
- Bowel obstruction

GI System





Toxicology

- Decreased kidney function slows elimination
- Increased likelihood of CNS side effects
- Altered GI absorption
- Decreased liver blood flow



Lidocaine Toxicity

- Main elimination through hepatic 90%
- Toxicity mainly affects cardiovascular and CNS
- Elimination delayed in patients with CHF and Liver cirrhosis
- Toxicity can cause
 - Hypotension
 - AV block



Other toxicology concerns

- Beta blockers
- Antihypertensives
- Diuretics
- Digitalis
- Psychotropics
- Antidepressants
- Substance abuse
- Alcohol abuse
- Drug abuse



Environmental Considerations

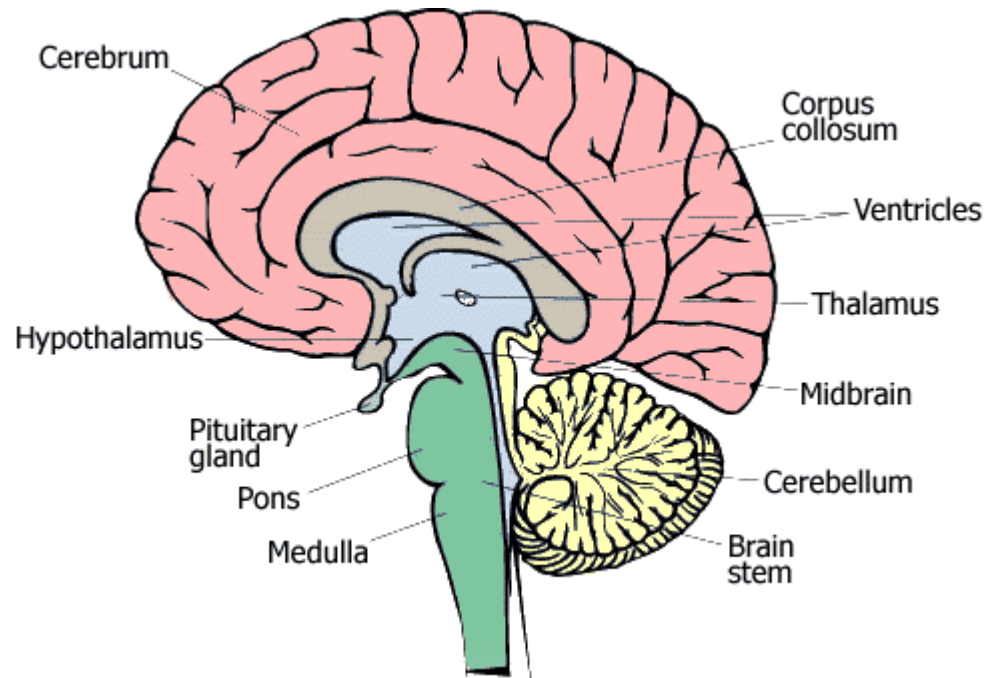
■ Hypothermia

- Do not know they are cold
- Thermogenesis is decreased
- Underactive thyroids
- Diabetics
- Certain medications
 - Antidepressants
 - Anxiety
 - nausea

■ Hyperthermia

- Decreased sensation
- Hot living areas
- Overdressing
- Poor circulation, decreased ability to thermoregulate
- Medications that inhibit perspiration (diuretics)

Thermoregulation





Integumentary Changes

- Brittle skin
- Skin tears
- Pressure ulcers
 - Skin squeezed between bone and external surface
 - Secondary infections can cause death



Depression / Suicide

- Depression affects 6 million age 65 and older
- Long term illness, poor prognosis, loss of independence
- Feeling of burdance
- More likely to commit suicide than younger people
- Adults > 65 account for 19% of all suicide deaths
- Depressed adult have 50% higher healthcare costs
- Diagnosis often missed



Musculoskeletal Changes

■ Osteoarthritis

- Degenerative joint Ds
- Most common arthritis
- Breakdown of joint cartilage
- Affects hands and weight-bearing joints
- Not inevitable part of aging
- Weight, injury, accidents are causes

■ Osteoporosis

- Bones become thin to the point of weakness
- Cause not known
- Linked to decreased production of estrogen and testosterone
- Predisposing is low bone mass at early age



Trauma in the elderly

- Orthopedic Injuries
 - Osteoporosis
 - Higher incidence of falls
- Burns
 - Decreased reaction time
 - Decreased senses
- Head Injury
 - Higher incidence of falls
 - Brains shrink
 - Connective tissue rupture easily
 - Medication effect



Questions???
