RAMAIAH
Medical College

Physiological changes in a geriatric person

This document is developed by Ramaiah Medical College with technical support by Ramaiah International Centre for Public Health Innovations, Bengaluru, Karnataka

Overview: This chapter deals with the normal process of ageing, to differentiate between the normal and abnormal and how the assessment needs to be done.

Description of geriatric patient

The ageing process **('normal ageing')** represents the universal biological changes that occur with age and are unaffected by disease and environmental influences. Not all of these age-related changes have adverse clinical impacts. Elderly is classified as **Young-old** (usually 60–74 years of age); the **middle old** (usually defined as being 75–84 years old); and the **older-old or oldest-old**, a category usually encompassing those who are over 85 years of age"

A few normal changes of ageing include:

Integumentary: Skin loses tone and elasticity resulting in sagging and wrinkling.

Musculoskeletal: Lean body mass decreases due to loss and atrophy of muscle cells. Degenerative joint disease affects both axial and skeletal system. As a result, there is shortening in height and difficulty in locomotion.

Genitourinary: Reduced renal blood flow, glomerular filtration, reduced bladder elasticity, loss of sphincter tone and poor bladder control leads to polyuria, nocturia and incontinence. In women due to menopause, there is vulvovaginal dryness causing itching and urinary tract infections.

Sensory organ changes:

1. Age related changes are presbyopia, cataracts, and presbycusis.

2. Reduced sense of smell is seen in normal aging.

3.Reduced sense of taste is well-known especially in salty sense, while the changes of sweet, bitter, and sour tastes are different among individuals.

4. Deep sensation of vibration and proprioception is decreased with age as well as superficial sensation (touch, temperature, pain). As a result, impaired sensory system could induce deterioration of the activities of daily living and quality of life in the elderly.

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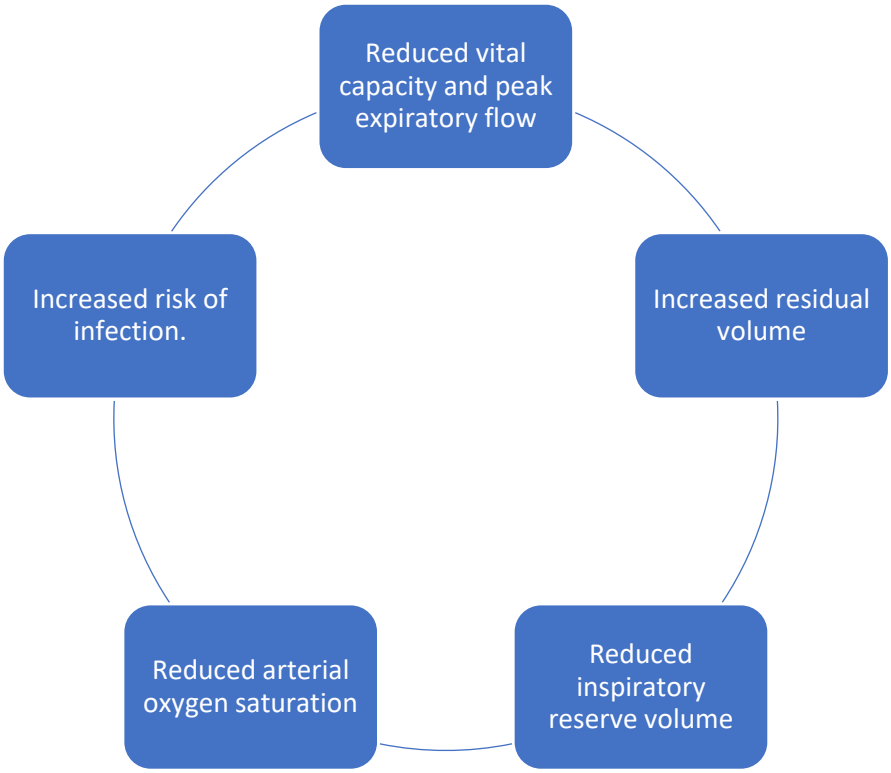
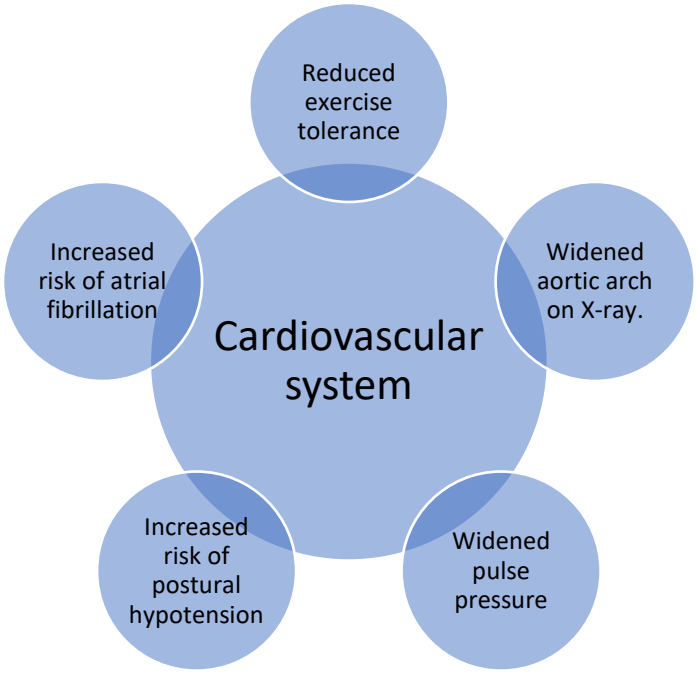
Respiratory System changes:



Cardiovascular system changes:



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Gastrointestinal System changes:

- Constipation - GERD: Gastro-esophageal reflux disease. - Acid-Peptic disorder.	- Atrophic gastritis and altered hepatic drug metabolism

Endocrine system changes:

- Increased risk of impaired glucose tolerance
- Increased risk of osteoporosis.

Central Nervous System changes:

- Increased risk of delirium.
- Presbycusis / high- tone hearing loss
- Presbyopia / abnormal near vision
- Cataract
- Muscle weakness & wasting
- Reduced position & vibration sense
- Increased risk of falls

Assessment of older adults:

An accurate list for accurately assessing the history for older adults need to be comprehensive and include the following elements:

1) Health history
2) Physical assessment
3) Psychological Assessment
4) Social and spiritual assessment

Assessment of function:

The list below presents some of the most popular scales used globally for measuring the assessment of functions in geriatric population:

1) Braden Scale
2) Fall risk scale
3) ADL (Activities of Daily Living)
4) IADL (Instrumental Activities of Daily Living)

A detailed explanation/format of the popular scales is given below.

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BRADEN SCALE – For Predicting Pressure Sore Risk

SEVERE RISK: Total score < or = 9 **HIGH RISK**: Total score 10-12 **MODERATE RISK**: Total score 13-14 **MILD RISK**: Total score 15-18				**DATE OF ASSESSMENT**			
RISK FACTOR	**SCORE/DESCRIPTION**				**1**	**2**	**3**	**4**
SENSORY PERCEPTION Ability to respond meaningfully to pressure-related discomfort	**1. COMPLETELY LIMITED** – Unresponsive (does not moan, flinch, or grasp) to painful stimuli, due to diminished level of consciousness or sedation, **OR** limited ability to feel pain over most of body surface.	**2. VERY LIMITED** – Responds only to painful stimuli. Cannot communicate discomfort except by moaning or restlessness, **OR** has a sensory impairment which limits the ability to feel pain or discomfort over ½ of body.	**3. SLIGHTLY LIMITED** – Responds to verbal commands but cannot always communicate discomfort or need to be turned, **OR** has some sensory impairment which limits ability to feel pain or discomfort in 1 or 2 extremities.	4. **NO IMPAIRMENT** – Responds to verbal commands. Has no sensory deficit which would limit ability to feel or voice pain or discomfort.				
MOISTURE Degree to which skin is exposed to moisture	1. **CONSTANTLY MOIST**– Skin is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time patient is moved or turned.	2. **OFTEN MOIST** – Skin is often but not always moist. Linen must be changed at least once a shift.	3. **OCCASIONALLY MOIST** – Skin is occasionally moist, requiring an extra linen change approximately once a day.	4. **RARELY MOIST** – Skin is usually dry; linen only requires changing at routine intervals.				
ACTIVITY Degree of physical activity	1. **BEDFAST** – Confined to bed.	2. **CHAIRFAST** – Ability to walk severely limited or nonexistent. Cannot bear own weight and/or must be assisted into chair or wheelchair.	3. **WALKS OCCASIONALLY** – Walks occasionally during day, but for very short distances, with or without assistance. Spends majority of each shift in bed or chair.	4. **WALKS FREQUENTLY**– Walks outside the room at least twice a day and inside room at least once every 2 hours during waking hours.				
MOBILITY Ability to change and control body position	1. **COMPLETELY IMMOBILE** – Does not make even slight changes in body or extremity position without assistance.	2. **VERY LIMITED** – Makes occasional slight changes in body or extremity position but unable to make frequent or significant changes independently.	3. **SLIGHTLY LIMITED** – Makes frequent though slight changes in body or extremity position independently.	4. **NO LIMITATIONS** – Makes major and frequent changes in position without assistance.				
NUTRITION Usual food intake pattern [1]NPO: Nothing by mouth. [2]IV: Intravenously. [3]TPN: Total parenteral nutrition.	**1. VERY POOR** – Never eats a complete meal. Rarely eats more than 1/3 of any food offered. Eats 2 servings or less of protein (meat or dairy products) per day. Takes fluids poorly. Does not take a liquid dietary supplement, **OR** is NPO[1] and/or maintained on clear liquids or IV[2] for more than 5 days.	**2. PROBABLY INADEQUATE** – Rarely eats a complete meal and generally eats only about ½ of any food offered. Protein intake includes only 3 servings of meat or dairy products per day. Occasionally will take a dietary supplement **OR** receives less than optimum amount of liquid diet or tube feeding.	**3. ADEQUATE** – Eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy products) each day. Occasionally refuses a meal, but will usually take a supplement if offered, **OR** is on a tube feeding or TPN[3] regimen, which probably meets most of nutritional needs.	4. **EXCELLENT** – Eats most of every meal. Never refuses a meal. Usually eats a total of 4 or more servings of meat and dairy products. Occasionally eats between meals. Does not require supplementation.				
FRICTION AND SHEAR	1. **PROBLEM**- Requires moderate to maximum assistance in moving. Complete lifting without sliding against sheets is impossible. Frequently slides down in bed or chair, requiring frequent repositioning with maximum assistance. Spasticity, contractures, or agitation leads to almost constant friction.	2. **POTENTIAL PROBLEM**– Moves feebly or requires minimum assistance. During a move, skin probably slides to some extent against sheets, chair, restraints, or other devices. Maintains relatively good position in chair or bed most of the time but occasionally slides down.	3. **NO APPARENT PROBLEM** – Moves in bed and in chair independently and has sufficient muscle strength to lift up completely during move. Maintains good position in bed or chair at all times.					
TOTAL SCORE	**Total score of 12 or less represents HIGH RISK**							

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Morse Fall Risk Assessment

This is a widely used, validated scale for measuring risk of fall among elderly

Morse Fall Risk Assessment		
Risk Factor	**Scale**	**Score**
History of Falls	Yes	25
	No	0
Secondary Diagnosis	Yes	15
	No	0
Ambulatory Aid	Furniture	30
	Crutches / Cane / Walker	15
	None / Bed Rest / Wheelchair / Nurse	0
IV / Heparin Lock	Yes	20
	No	0
Gait / Transferring	Impaired	20
	Weak	10
	Normal / Bed Rest / Immobile	0
Mental Status	Forgets Limitations	15
	Oriented to Own Ability	0

To obtain the Morse Fall Score add the score from each category.

Morse Fall Score*	
High Risk	45 and higher
Moderate Risk	25 - 44
Low Risk	0 - 24

Activities of Daily Living are basic activities necessary for living independently. There are 5 basic categories:

a. Personal hygiene – bathing/showering, grooming, nail care, and oral care.
b. Dressing – being able to dress and undress oneself.
c. Eating – the ability to feed oneself
d. Maintaining continence – ability to use a restroom. This includes the ability to get on and off the toilet and cleaning oneself.
e. Transferring/Mobility- being able to stand from a sitting position, as well as get in and out of bed. It also includes the ability to walk from one place to another.

Instrumental Activities of Daily Living include those activities that require more complex thinking skills,

- Transportation and shopping: Ability to procure groceries, attend events. Managing transportation, either via driving or by organizing other means of transport.
- Managing finances: This includes the ability to pay bills and managing financial assets.
- Shopping and meal preparation, i.e., everything required to get a meal on the table. It also covers shopping for clothing and other items required for daily life.
- Housecleaning and home maintenance: Cleaning the kitchen after eating, maintaining living areas reasonably clean and tidy, and keeping up with home maintenance.
- Managing communication with others: The ability to manage telephone and mail.
- Managing medications: Ability to obtain medications and taking them as directed.

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