

# The main health problems of elders. Frailty and its prophylaxis.

The modern strategy of health support  
and increasing of independence of seniors

# Cardiovascular diseases

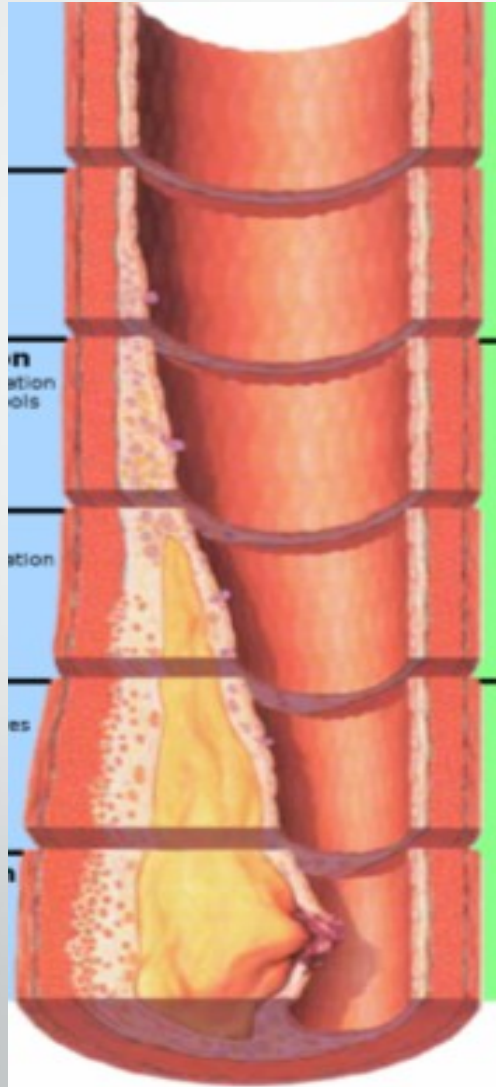
- **hypertension**
- **ischemic heart disease – acute coronary syndrome**
  - **cardiac failure**
  - **arrythmias**
- **valvular disorders**

# Vascular changes development

- 1. decade

- 3. decade

- 4. decade



- 1. decade

- 3. decade

- 4. decade

- 6. decade

- 8. decade

# Hypertension

- isolated systolic hypertension
- unstable hypertension
- compliance problems
- ischemic brain attack
- haemorrhagic brain attack
- cardiac failure

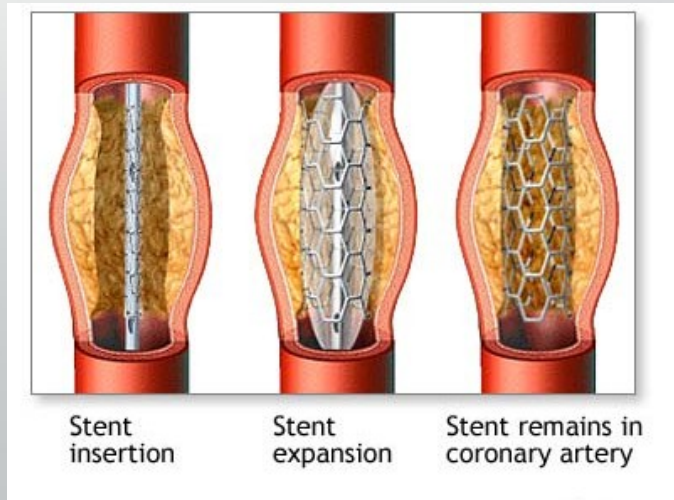
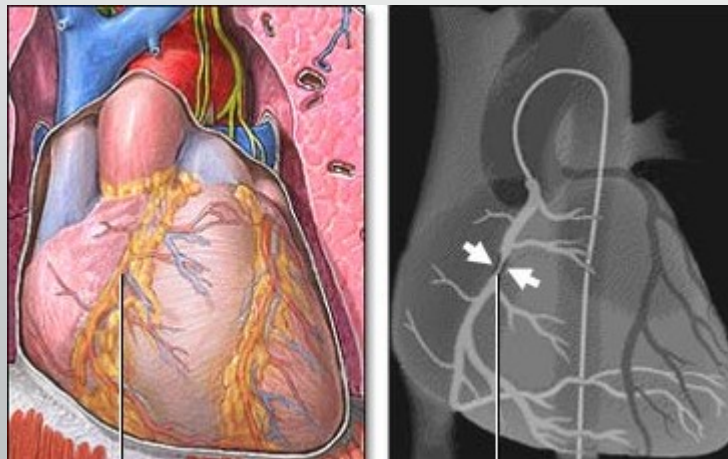
	<b>BPs</b>	<b>BPd</b>
<b>optimal</b>	<b>below 120</b>	<b>below 80</b>
<b>normal</b>	<b>below 130</b>	<b>below 85</b>
<b>normal for seniors</b>	<b>130-150</b>	<b>75-85</b>
<b>borderline</b>	<b>130-139</b>	<b>85-89</b>
<b>hypertension I</b>	<b>140-159</b>	<b>90-99</b>
<b>hypertension II</b>	<b>160-179</b>	<b>100-109</b>
<b>hypertension III</b>	<b>above 180</b>	<b>above 110</b>

# Risks

- **unstable blood pressure values – collapsing**
- **orthostatic hypotension**
- **interaction with prostatic medications – uncontrolled BP decrease – dizziness, falls**
- **bradycardia – beta blockers**
- **serum mineral dysbalancies – arrythmias**
- **.....**

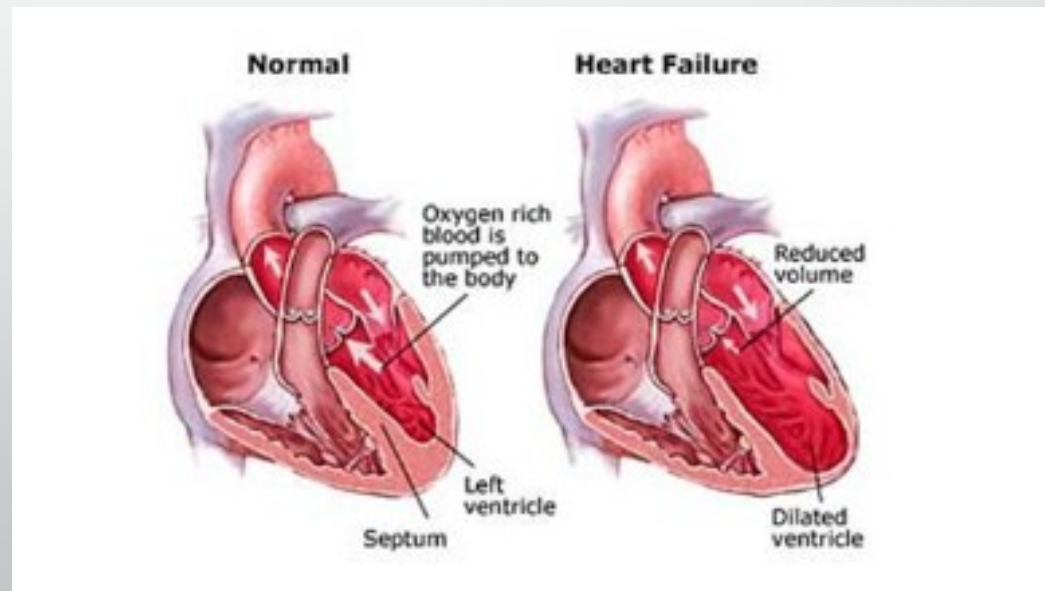
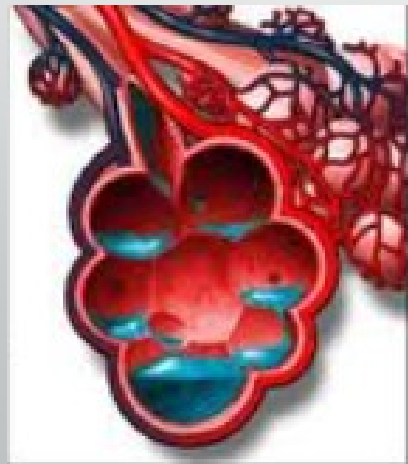
# Ischaemic heart disease

- stable angina pectoris – atypical symptomatology – dyspnea, confusion, falls, overall weakness
- acute coronary syndrome – unstable angina pectoris, myocardial infarction – decrease of cardiac output – possibility of confusion or collapse, danger of malignant arrhythmia
- PTCA – coronary angioplasty – all ages!!



# Cardiac failure – left ventricle

- causes – hypertension, ischemic heart disease, valvular disorders
- symptoms - dyspnoea, orthopnoea, night cough, confusion, sleeping disorders, pulmonary oedema



# Cardiac failure – right ventricle

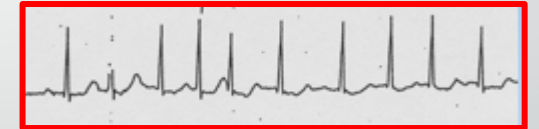
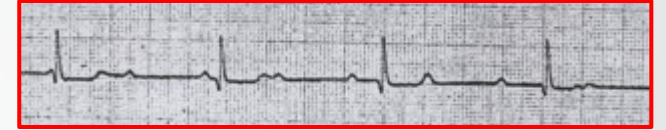
- causes – chronic obstructive pulmonary disease
- right ventricle – swellings of legs, peripheral cyanosis, ascites, anasarca, hydrothorax





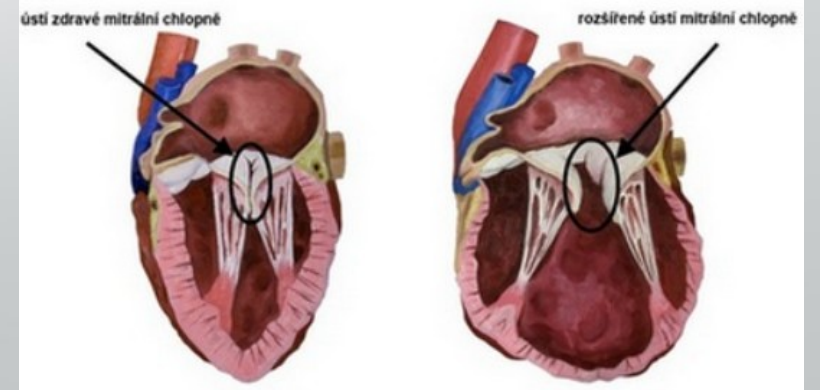
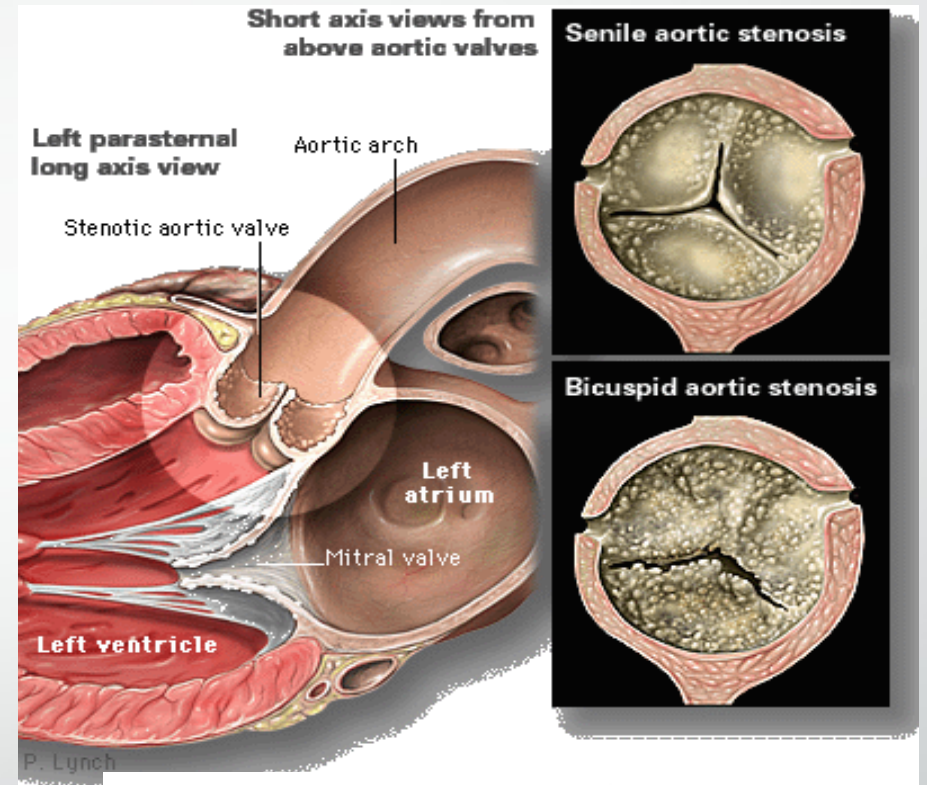
# Arrhythmias

- tachyarrhythmias, bradyarrhythmias
- instability, falls, confusion, cognitive decline, consciousness disturbances – palpitations less frequent
- the most frequent diagnosis during checking blood pressure
- atrial fibrillation – risk of ischemic brain attacks, antiaggregation, anticoagulation – warfarin, oral antikoagulants
- pacemaker, cardioverter implantation – all ages!!



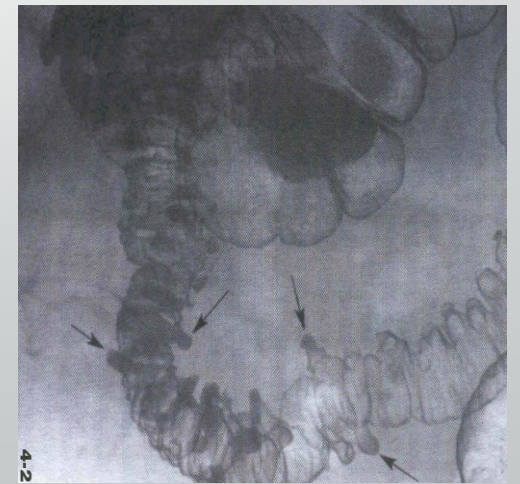
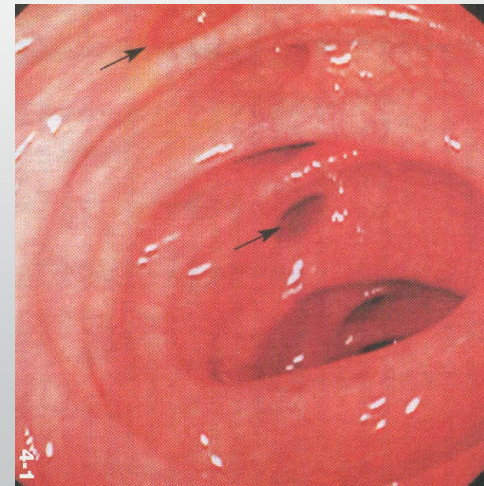
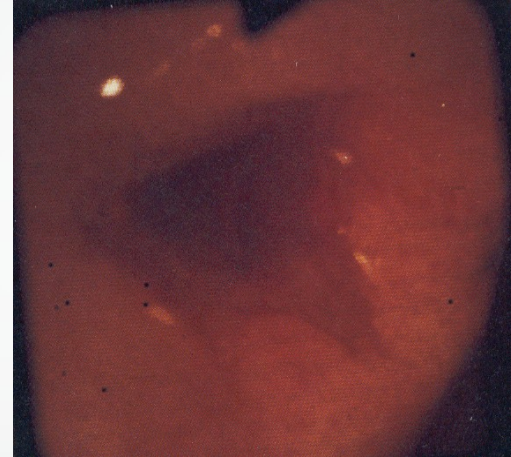
# Valvular disorders

- aortic stenosis – short unconsciousness, vertigo
- mitral insufficiency – dyspnea, tendency to pulmonary oedema



# Gastrointestinal diseases

- loss of teeth, xerostomia
- swallowing difficulties
- gastroesophageal reflux
- senile gastric ulcers
- maldigestion, malabsorption
- ischaemic colitis, vascular ileus
- diverticulosis



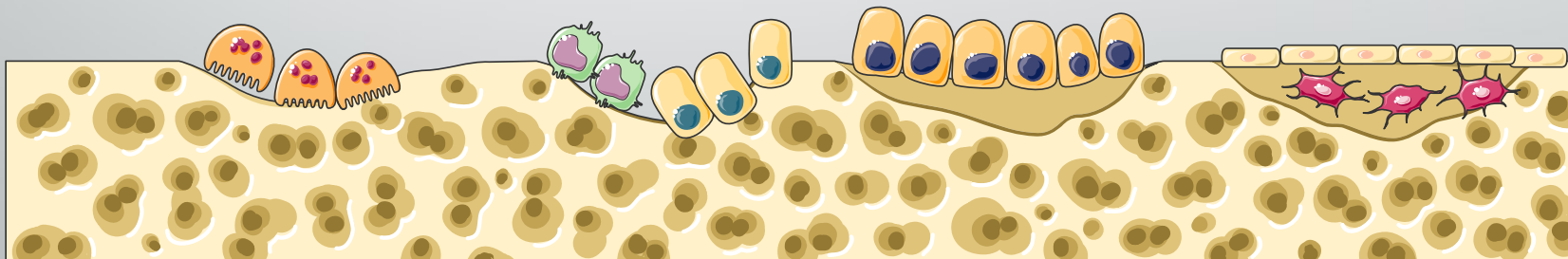
# Diseases of locomotor system – osteochoondrosis, spondylarthrosis

- limited reparation of cartilago
- osteochoondrosis – Alzheimer dementia of cartilago
- coxarthrosis, gonarthrosis – long life body overweight, burden
- spondylosis, spondylarthrosis
- up to 70% of seniors – NSAIDs OTC
- pain, immobility, falls, depression

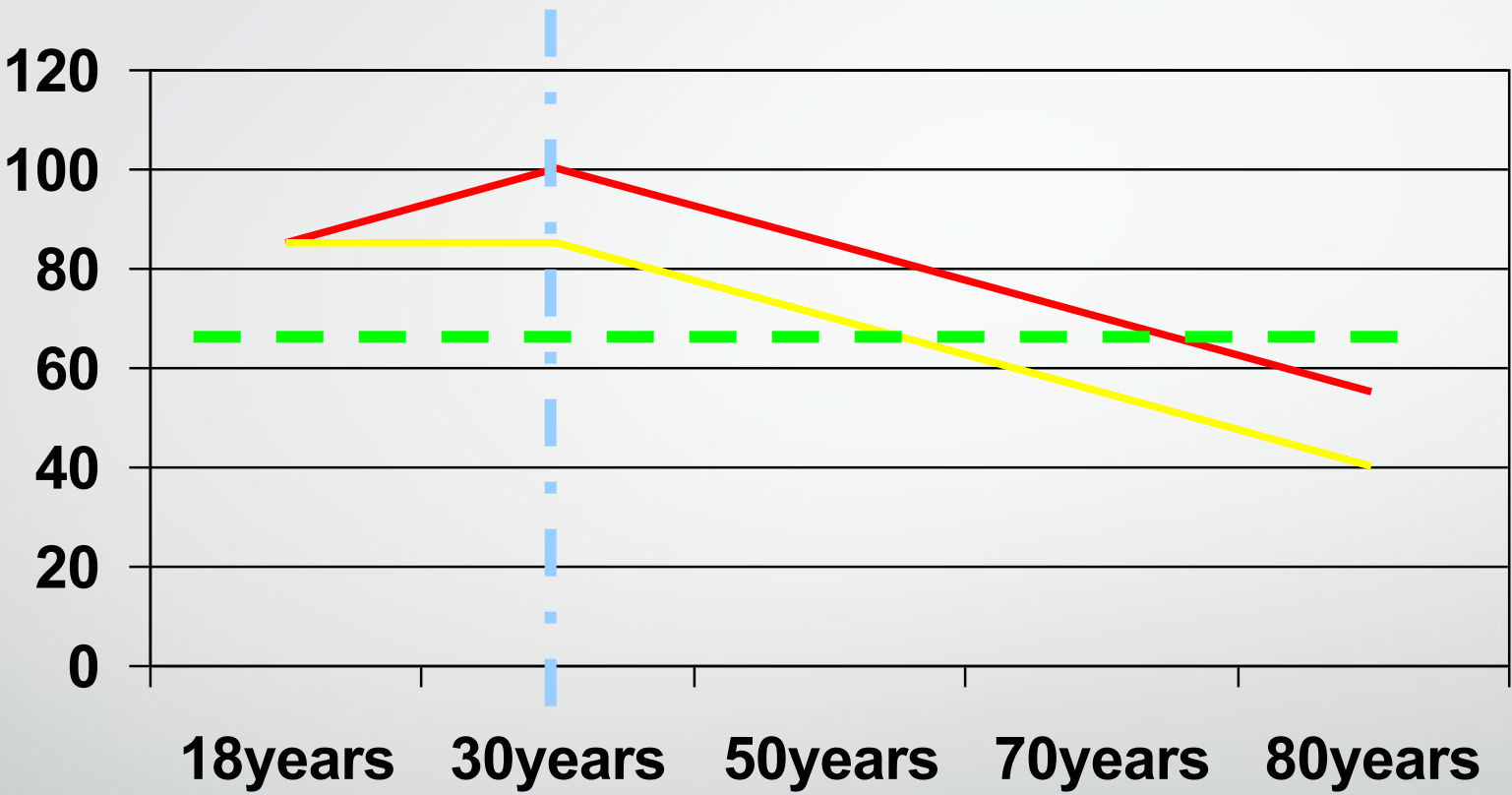


# Bone remodeling

- ❑ peak bone mass – up to 30 years of age only
- ❑ permanent controlled bone osteoclasts resorption followed by creation of new bone by osteoblasts – cycle duration 3-4 months
- ❑ bone remodeling units
- ❑ 30% of remodeling runs in compact bone, 70% in spongy bone

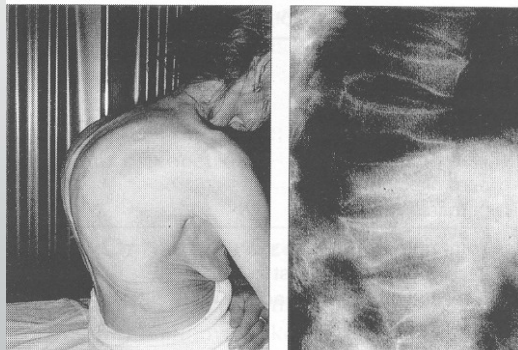
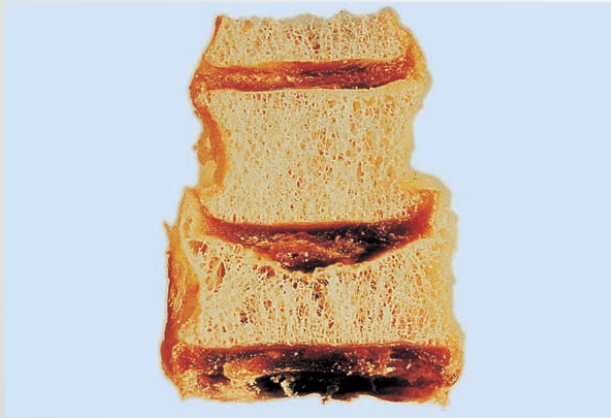


# Peak bone mass – up to 30 years of age



— peak bone mass sufficient  
— peak bone mass insufficient

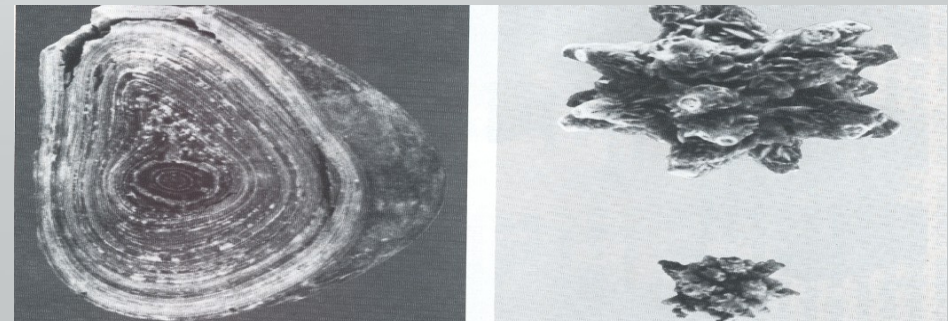
# Diseases of locomotor system - osteoporosis



- ❖ postmenopausal osteoporosis – vertebral fracture
- ❖  $\frac{1}{2}$  women with physiological menopause
- ❖  $\frac{2}{3}$  women with artificial menopause
- ❖ senile osteoporosis – hip fracture
- ❖  $\frac{1}{2}$  of women
- ❖  $\frac{1}{3}$  of men

# Urogenital diseases in elderly

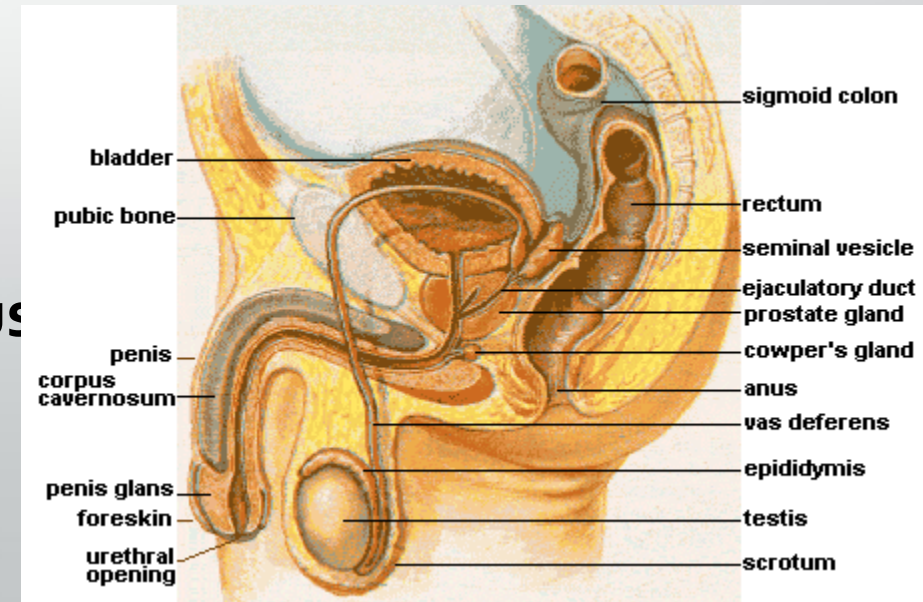
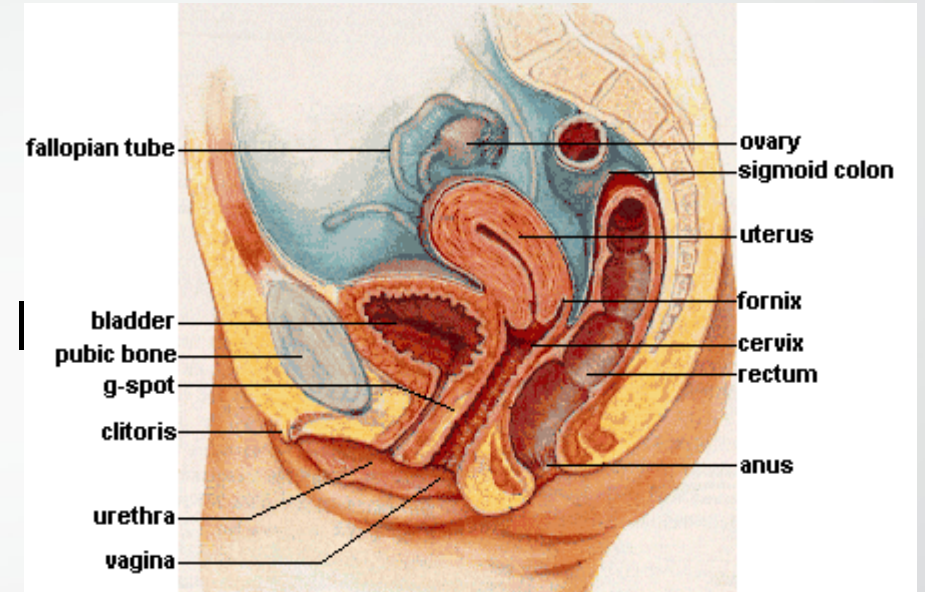
- UTI – urogenital tractus infections with atypical symptoms
- repeated – permanent subclinical dehydration
  - decreased defence of urinary mucosa
  - slower flow of urine
  - microbial colonization of bladder and urethra
  - permanent catheterization
  - high concentration of urine, lithiasis





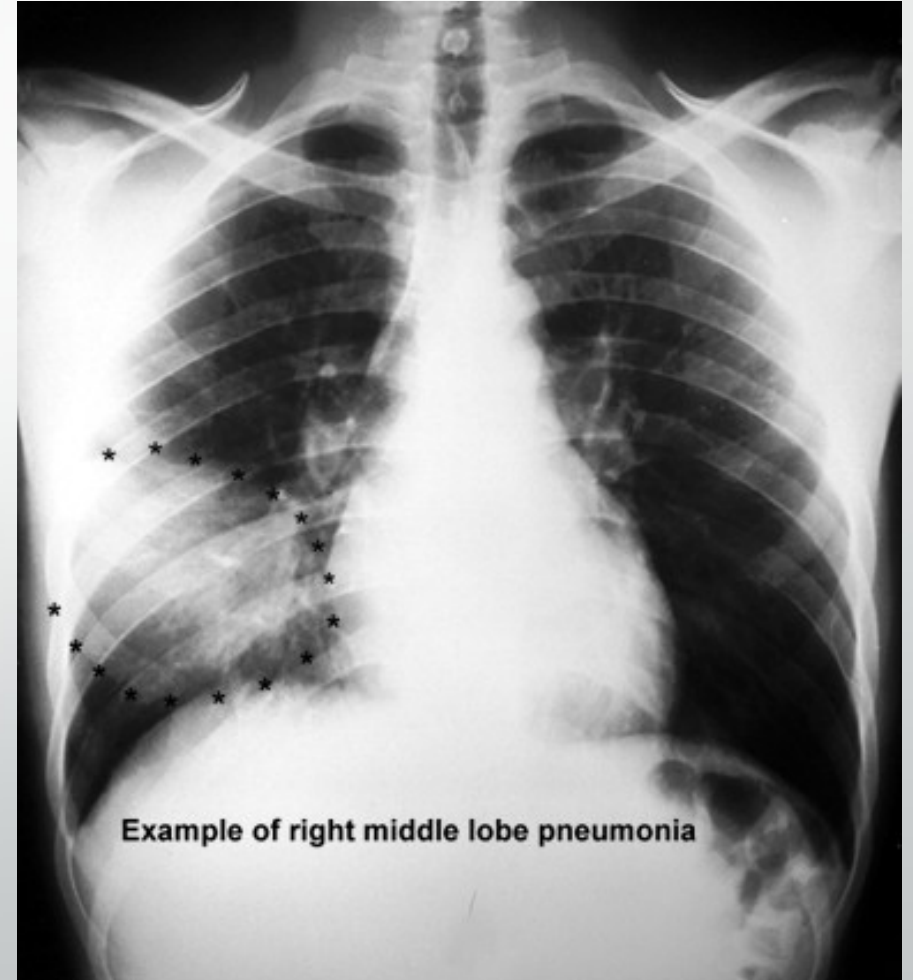
# Incontinentia

- stress incontinentia – in women, cough, |
  - weak muscles of pelvic bottom
  - shorter urethra
  - less effective constriction
- urgent incontinentia – in men
  - prostatic hyperplasia
  - permanently higher tonus of detrusor
- mixed incontinentia – in 40% of elderly



# Respiratory diseases

- chronic obstructive pulmonary disease, cor pulmonale
- lung stiffness, decrease of vital capacity
- worse function of ciliary epithel – mucus retention – pneumoni
- aspiration risk



# Metabolic diseases

➤ metabolic syndrome

☐ hypertension

☐ diabetes mellitus

☐ hyperlipidaemia

☐ truncal obesity

☐ hyperuricaemia



- cardiac failure
- atherosclerosis acceleration
- increase of insulin resistance
- cognitive decline acceleration
- loss of independency
- worsening of locomotor problems



# **Interdisciplinary syndromes – geriatric giants**

**instability**

**cognitive decline**

**immobilisation**

**incontinency, skin integrity loss**

# Interdisciplinary syndromes

## ➤ somatic

- eating, drinking disorders
- thermoregulation disturbances

## ➤ psychical

- depression
- behavior disturbance , maladaptation

## ➤ social

- loss of independency
- social isolation
- family dysfunction, elderly abuse



# Instability and falls

- ❖ backbone disorders
- ❖ vascular origine
- ❖ heart diseases
- ❖ brain damage
- ❖ external influences



# Immobility

- caused by trauma
- serious osteoporosis with fractures
- caused by brain attacks
- ancle diseases
- chronic internal diseases

**imobilisation syndrome – unfavourable cascade leading to death**



# Incontinency

- **allways to solve - urology,  
gynecology**

⇒ **nursing issue**

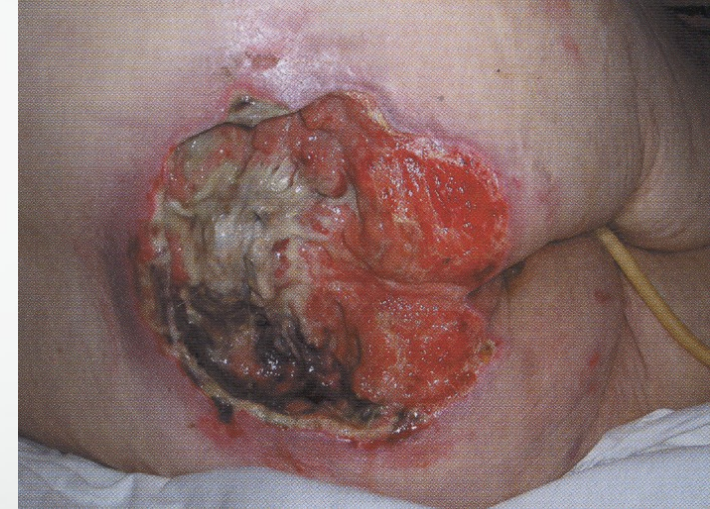
⇒ **social issue**

⇒ **economical issue**



# Skin integrity disorders

- **sore ulcers, leg ulcers**
- **slower skin renovation**
- **decreased skin barrier function**
- **slower wound healing**
- **decreased immunological reaction**
- **less effective thermoregulation**
- **lower mechanical resistance**



# Frailty – aging biomarker

- common geriatric syndrome that embodies an elevated risk of catastrophic declines in health and function
- increases incrementally with advancing age
- connected with weakness, slowing, decreased energy, lower activity, and unintended weight loss – **if 3 or more are present, the risk of death is high**
- increased vulnerability to stressors (e.g. extremes of heat and cold, infection, injury, or even changes in medication)
- components – sarcopenia, osteoporosis, muscle weakness
- **not only fragility of bones**

# Risk factors for frailty

- chronic diseases
- cardiovascular disease
- diabetes mellitus
- chronic kidney disease
- depression
- cognitive impairment
- environment-related factors  
such as life space and  
neighborhood characteristics
- physiologic impairments
- activation of inflammation  
and coagulation systems,
- anemia
- atherosclerosis
- autonomic dysfunction
- hormonal abnormalities
- obesity
- hypovitaminosis D in men

# Prevention of frailty

- treatment and close follow up of chronic diseases
- vitamin D serum levels above 50-75 nmol/l maintenance
- management of chronic inflammation
- management of coagulation disorders
- stable compensation of diabetes mellitus
- metabolic syndrome management
- promotion of physical activity as a prevention of sarcopenia, osteoporosis and muscle weakness



**Thank you for your attention**

