



Internal Medicine (Physical Examination)

Examination of the Chest

MUDr. Yvona Pospíšilová, FN Brno a LF MU

MUDr. Andrea Křivanová, Ph.D., FN Brno

STATUS PRAESENS

○ Examination of the CHEST

● Examination of the Chest

○ INSPECTION

- Shape of the chest
- Deformities
- Changes of the skin and the musculature and the fat deposition etc.
- Respiratory movements

○ PALPATION (tumors, painfulness of the chest etc.)

● Examination of the Lungs

○ PERCUSSION

○ AUSCULTATION

- Breath sounds
- Voice Sounds - Bronchofonie – Bronchophony (auscultation of speech)

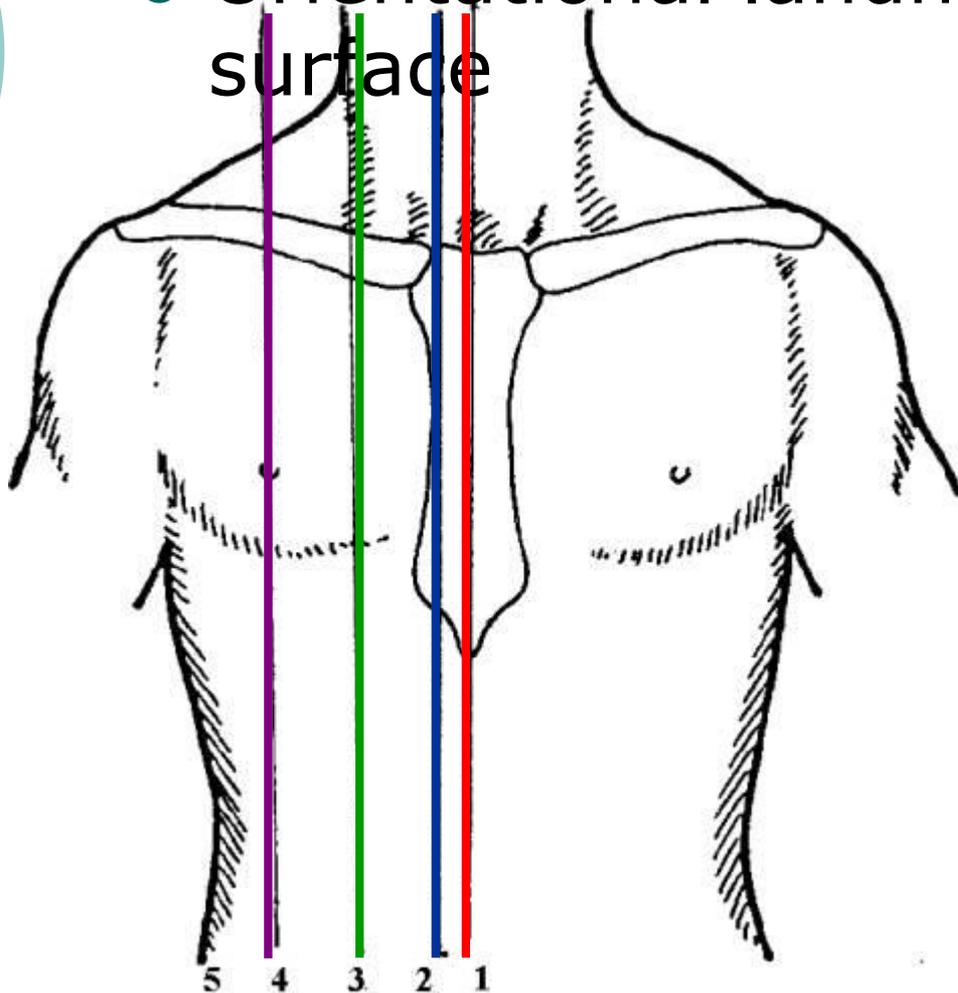
○ PALPATION – fremitus pectoralis – vocal (tactile, pectoral) fremitus

● Examination of the Heart

● Examination of the Breasts

Examination of the CHEST

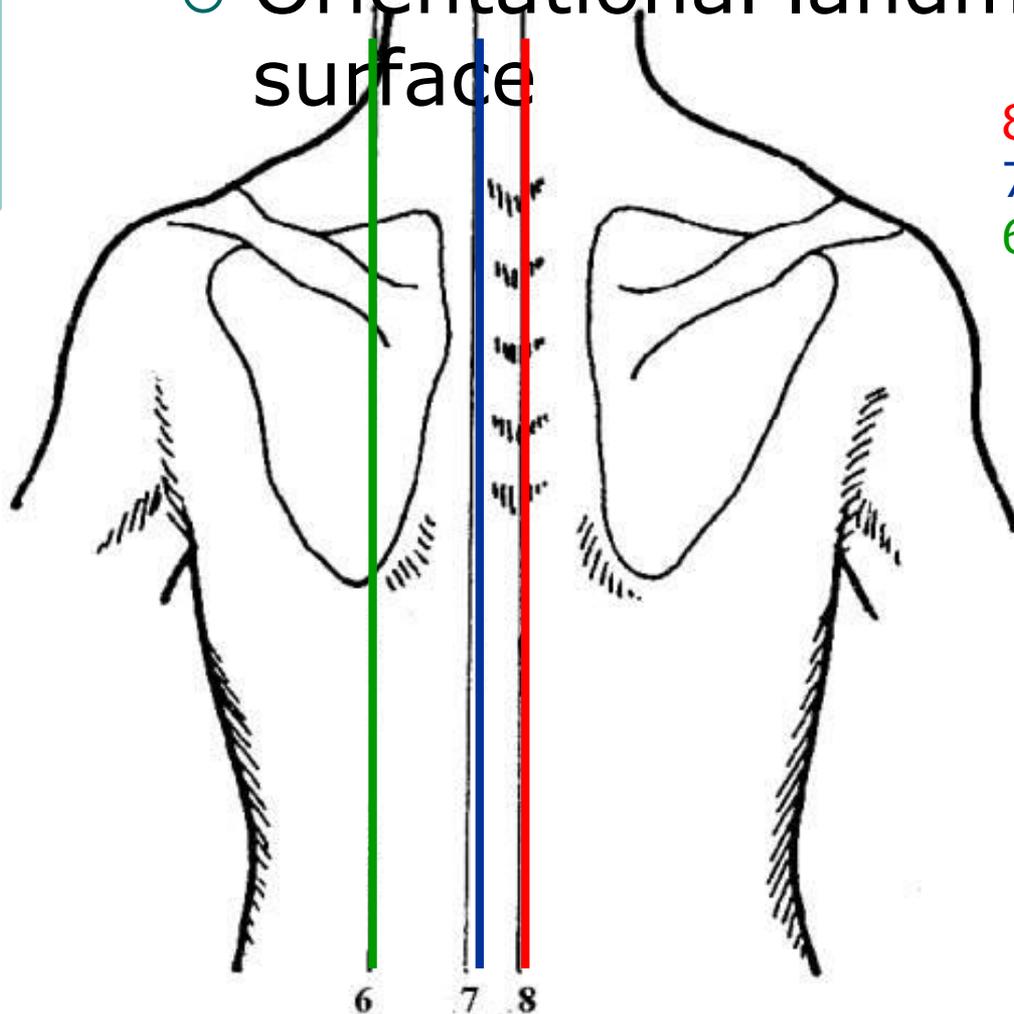
- Orientational landmarks – anterior surface



1. - anterior midline
2. - sternal lines
3. - parasternal lines
4. - midclavicular lines

Examination of the CHEST

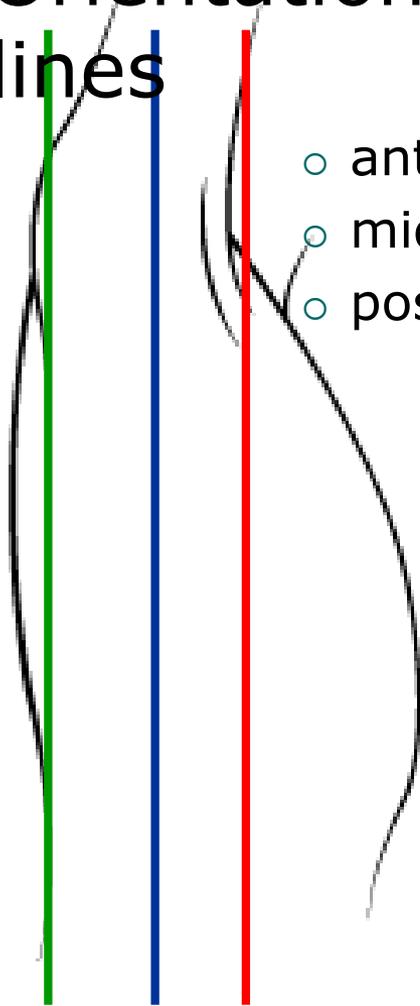
- Orientational landmarks – posterior surface



- 8. – posterior midline
- 7. – paravertebral lines
- 6. – scapular lines

Examination of the CHEST

○ Orientational landmarks – axillary lines



- anterior lines – přední axilární čára
- midaxillary lines – střední axilární čára
- posterior lines – zadní axilární čára



Examination of the CHEST- inspection

Inspection

- Shape of the CHest
- Deformities
- Changes of the skin and of the other parts of the chest
- Respiratory movements

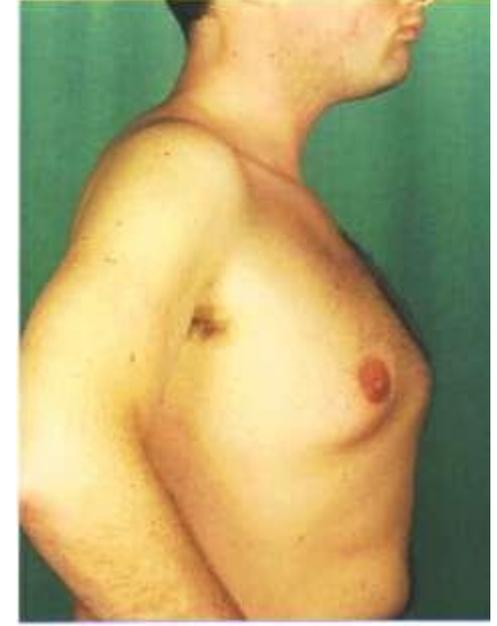
Examination of the CHEST- inspection

- Shape of the chest
 - Normal habitus - normostenic
 - **pyknic** – obese person
 - **asthenic** – slender person



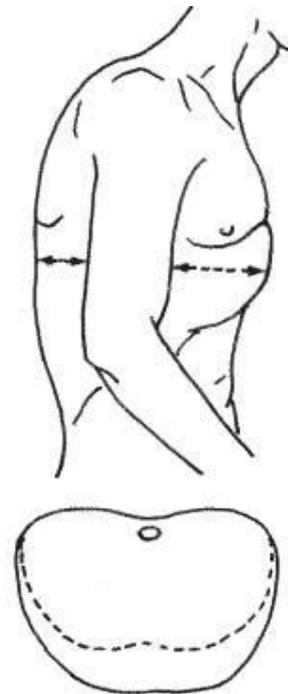
Examination of the CHEST- inspection

- Shape of the chest
 - PATOLOGIES
 - **Funnel breast** – pectus excavatum
 - **Pigeon breast** – pectus carinatum (lack of vit. D, rachitis)



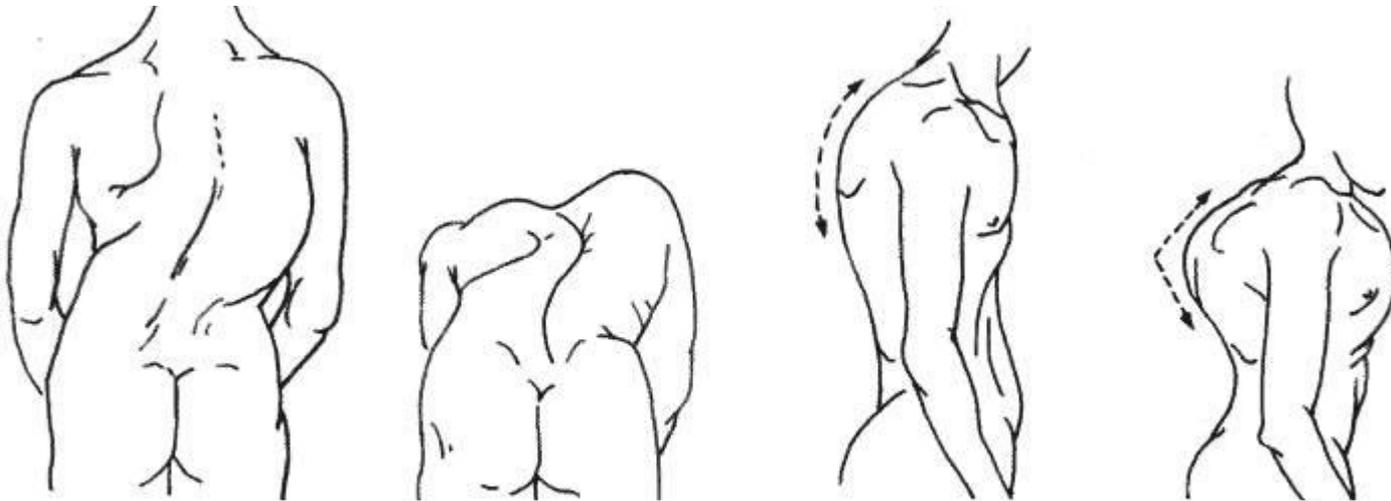
Examination of the CHEST- inspection

- Shape of the chest
 - PATOLOGIES
 - **Barrel chest** (in emphysema, consequence of chronic obstructive pulmonary disease)



Examination of the CHEST- inspection

- Shape of the chest
 - PATOLOGIES
 - **kyphoscoliosis** – backward and lateral curvature of the spine





Examination of the CHEST- inspection

- Chest deformities

- **retractio hemitoracis** – pull on one side of the chest due to fibrotic and adhesive changes
-
- **enlargement of the chest** — great amount of air or fluid in the pleural cavity

Examination of the Lungs

- Examination of the Lungs
 - Percussion
 - Auscultation
 - Breath sounds
 - Voice Sounds - Bronchophonie – Bronchophony (auscultation of speech)
 - Palpation (fremitus pectoralis-vocal fremitus)



PERCUSSION

- Direct (finger on chest)
- Indirect (finger on finger)

- By comparison (to compare symmetrical areas on both sides of the chest)
- Topographic (to establish the border of the change of the sound)

Changes in percussion sounds over the Lungs

- **Sonorous, resonant, clear**
 - over normal lungs
- **Dull to flat**
 - over consolidated, dense lung tissue, which loses its air content (infiltration, fluid, tumor, inflammation)
- **Hypersonorous, hyperresonant**
 - over lungs more expanded and filled with air (emphysema, pneumothorax)

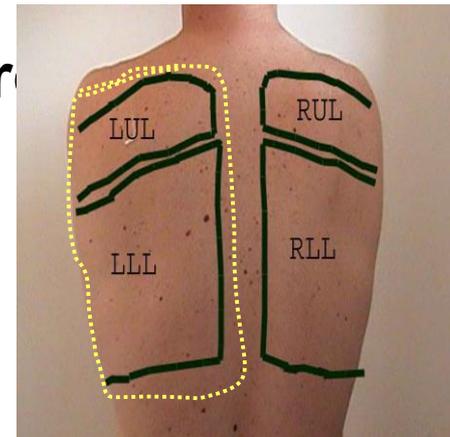
Examination of the Lungs - Percussion

- Topographic (to establish the border of something by change of the sound)

Decreased border of the lung

- **On both sides** – emphysema
- **On one side** - pneumothorax

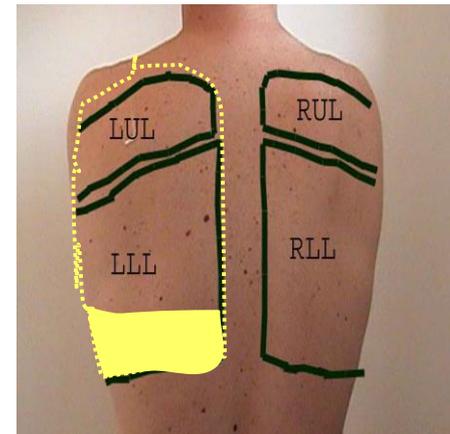
– ur



– pleur

Increased border of the lung

- **On both sides** – (fluid in abdomen - ascites, obesity)
- **On one side** – effusion in the pleural cavity - fluidothorax



Examination of the Lungs - Percussion

- Topographic (to establish the border)
 - border of the diaphragma excursion in inspirium and expirium
 - norm. – 4-6 cm

Decreased excursion of diaphragma

On both sides – fluid in abdomen
- ascites, obesitas, emphysema

• **On one side** – fluidothorax,
pneumothorax



Examination of the Lungs - Auscultation

Auscultation:

- By comparison (to compare symmetrical areas on both sides of the chest)
 - breathing
 - voice sounds - bronchophony



Examination of the Lungs - Auscultation

- direct – by placing one's ear directly on the chest wall
- indirect – by stethoscope

Breath sounds

Main



Vesicular breathing

Normal lungs

fff-f (INSP:EXP = 3:1)



Weakened
(decreased)
vesicular
breathing

Obesita, fluid or air in
the cavity,
emphysema,



Increased
vesicular
breathing

Inflamation of small
bronchies



...with prolonged
expiration

Obstruction of small
bronchies

ff-ff (INSP:EXP = 1:1)

Adventitious breath sounds - RALES

adventitious

Crackles (moist



rales

accentuated

unaccentuated

Wheezes,
whistles (dry
rales)
crepitations



Pleural friction
rub

Liquid material in bronchi and lungs

**Inflammation of the
lungs**

Sound „near“

Sound „far“

Left heart failure

**Thick or viscous exudate +
spasm of bronchi (asthma
bronchiale)**

**Crackling rales in the beginning and the
end of pneumonia**

**Friction of the inflammed
pleural layers**

Examination of the Lungs - palpation

- **Fremitus pectoralis – vocal fremitus**
 - Perception of vibration of the chest caused by talking of the patient – we compared the both sides

Decreased – on one side

- **fluid or air in the pleural cavity**
 - fluidothorax, pneumothorax

Increased – on one side

- **inflammation or tumor – consolidation of the lung tissue**

Syndrome of bronchial obstruction, asthma bronchiale

PERCUSION	Normal or hyperresonant
AUSCULTATION	Vesicular breathing with a prolonged expiration
Auscultation – adventitious sounds - rales	Presence of dry rales, wheezes, whistles, sometimes crackles (moist rales), changeing with cought
BRONCHO-PHONY	Normal or sligtly decreased
FREMITUS PECTORALIS	Normal or sligtly decreased

Syndrome of lung consolidation, pneumonia

PERCUSION	Dull or flat
AUSCULTATION	Vesicular breathing, sometimes redused
Auscultation – adventitious sounds – rales	Moist accentuated rales, sometimes initial and final crepitation, sometimes pleural friction rub
BRONCHO-PHONY	Increased
FREMITUS pectoralis	Increased

Syndrom of left heart failure

PERCUSION	dull or flat in the base of the lungs	při
AUSCULTATION	Vesicular breathing, sometimes reduced In the base	
Auscultation – adventitious sounds – rales	Moist unaccentuated rales, Not changing with cough	
BRONCHO- PHONY	Normal	
FREMITUS PECTORALIS	Normal	

Syndrome of pleuritis sicca

PERCUSSION	Slightly dull and painfull
AUSCULTATION	Vesicular breathing
Auscultation – adventitious sounds – rales	Pleural friction rub
BRONCHO- PHONY	Normal
FREMITUS PECTORALIS	Normal

Syndrome of fluid in the pleural cavity

(fluidothorax – hydrothorax, hemothorax, chylothorax)

PERCUSSION	Dull or flat
AUSCULTATION	Decreased vesicular breathing or no breathing at all
Auscultation – adventitious sounds – rales	
BRONCHOPHONY	Decreased
FREMITUS PECTORALIS	Decreased

Syndrome of air of pleural cavity (pneumothorax)

PERCUSSION	Hyperresonant
AUSCULTATION	None
Auscultation – adventitious sounds – rales	None
BRONCHO- PHONY	Decreased
FREMITUS PECTORALIS	Decreased