Breath Sounds

Auscultation

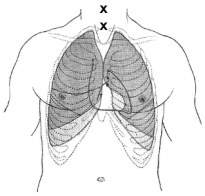
- = listening for sounds produced in the body
- over chest – to ID normal & abnormal lung sounds
- all BS made by turbulent flow in the airways
- useful in making initial Dx & evaluating effects of Rx

Breath Sounds

- 4 characteristics
  - pitch (vibration frequency)
  - amplitude or intensity (loudness)
  - distinctive characteristics
  - duration of inspiration compared to expiration

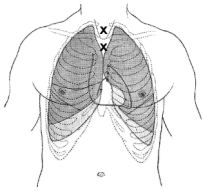
Terminology

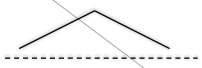
- Tracheal
  - normal sound heard over trachea
  - loud tubular quality
  - high-pitched
  - expiration equal to or slightly longer than inspiration



Terminology

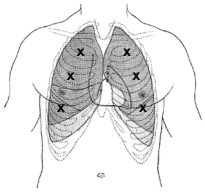
- Bronchovesicular
  - similar to tracheal BS
  - heard over upper ½ of sternum & between scapulae
  - not as loud
  - slightly lower in pitch
  - equal inspiration & expiration

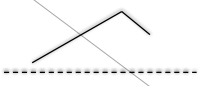




Terminology

- Vesicular BS
  - normal sound heard over lung parenchyma
  - soft, muffled
  - low in pitch & intensity
  - difficult to hear
  - heard best during inspiration, minimally during expiration





Terminology

- Respiratory disease may alter intensity of BS =
- *Absent* in extreme cases
- If intensity increases =
- expiration equals inspiration
  - =

Terminology

- Adventitious BS
  - abnormal
  - classified as continuous
    -
  - discontinuous
    - intermittent, short duration

Terminology

- Rales
  - discontinuous
  - popularity of term has declined
  - now use -
  - also called -
- Wheezes
  - continuous
  - musical
  - due to

Terminology

- Rhonchi
  - low-pitched
  - continuous
  - confusing, also being abandoned
- Stridor
  - heard
  - continuous
  - due to
  - loud, high pitched
  - can sometimes be heard without stethoscope

Terminology

- when abnormal BS heard, note
  - type
  - location
  - timing
    - .
    - .
    - .

Adventitious BS

- Bronchial BS heard in lung parenchyma
  - occurs when lung increases in density (consolidated)
    - .
    - .

Adventitious BS

- Diminished BS
  - decreased intensity
  - shallow breathing
  - obstructed airways
    -
  - pneumothorax
  - pleural effusion
  - obesity

Adventitious BS

- Wheeze
  - = vibration of wall of narrowed airway as high velocity air passes through
  - causes
    -
    -
    -
  - tighter the compression → higher the pitch
  - note characteristics
    -
    -
    -

Adventitious BS

- Wheezing may be
  - polyphonic
    - limited to expiration
    - notes begin and end simultaneously
    - indicate obstruction of
  - monophonic
    - single or multiple, each 1 indicating obstruction of a bronchus
    - notes begin and end at differents time and may overlap
    - single monophonic =

Adventitious BS

- Stridor
  - similar to wheezing
  - due to upper airway obstruction
  - usually heard only during inspiration
  - cause
    -
    -
  - life-threatening
    -
    -

Adventitious BS

- Crackles - fine
  - collapsed airways "pop" open during inspiration
  - early inspiratory crackles
    - bronchioles & larger, more proximal close during expiration
    - "pop" occurs early in inspiration
    - not silenced by cough or change in position
    -
    - more severe airway obstruction than late inspiratory crackles

Adventitious BS

- Crackles - fine
  - collapsed peripheral alveoli & airways "pop" open during inspiration
  - late inspiratory crackles
    - peripheral alveoli & airways close during expiration
    - "pop" occurs early in inspiration
    - occur late in inspiration
    - more common in
    - may clear with changes in posture
    -

Adventitious BS

- Crackles - coarse crackles
  - caused by air movement through secretions or fluid in airways
  - heard during inspiration & expiration
  - often clear if patient coughs or is suctioned
  - used to be called

Adventitious BS

- Don't be fooled!!

Adventitious BS

- Pleural friction rub
  - creaking or grating
  - pleural surfaces are inflamed and rough edges are rubbing together during breathing
  - heard only during inspiration or during both phases
  - similar to coarse crackles but are not affected by coughing
  - hard to identify

Adventitious BS

- Subcutaneous emphysema
  - air from pulmonary air leak collects in subcutaneous tissues
  - can be localized or spread as far as legs
  - produce crackling sound and sensation when palpated

Heart Sounds

- Heart anatomy
  - lies between lungs in mediastinum so that right ventricle is more anterior than left ventricle
  - upper portion contain atria - "base" of heart
    - lies directly beneath upper middle sternum
  - lower portion contain ventricles - "apex" of heart
    - points downward and left to point near midclavicular line and beneath margin of sternum and 5th rib

Heart Sounds

- Separate findings into six categories
  - 1st & 2nd Heart Sounds
  - 3rd & 4th Heart Sounds
  - Clicks & Snaps
  - Murmurs
  - Rubs

Heart Sounds

- 1st and 2nd heart sounds
  - typically described as a "lub-dub"
  - "lub" (S_1)
    - results from closure of the tricuspid and mitral valves
    - low-pitched, relatively long sound
    - represents the beginning of ventricular systole
  - "dub" (S_2)
    - marks the beginning of ventricular diastole
    - produced by closure of the aortic and pulmonic semilunar vanes when the intraventricular pressure begins to fall
    - heard as a sharp snap
  - a brief pause occurs after the 2nd heart sound when the heart is beating at a normal rate - pattern that one hears is: "lub-dub" pause, "lub-dub" pause, and so on

Heart Sounds

- Loud S_2
  - due to more forceful closure of
  - increased intensity of S_2 common finding in

Heart Sounds

- 3rd and 4th heart sounds
  - ventricular wall vibrations
  - sign of heart disease in patients > 40 yo
  - S_3
    - usually indicates a ventricular abnormality
    - heard
  - S_4
    - heard
    - indicates diminished vent. wall compliance with increased resistance to filling
    - syst. hypertension, ischemic heart disease, aortic stenosis, acute mitral valve regurgitation

Heart Sounds

- Murmurs
  - due to an incompetent AV valve or stenotic semilunar valve
  - produce high-pitched swooshing sound

SYSTOLIC	***DIASTOLIC***
incompetent AV valve - allow backflow of blood into atria during systole	stenotic AV valve - obstructs blood flow from atrium during diastole
stenotic pulmonic valve - obstructs blood flow during systole	incompetent pulmonic valve - allows backflow of blood into ventricle immediately after systole

Heart Sounds

- http://www.blaufuss.org/