

Respiratory Emergencies: “Take a breath and reassess”



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Disclosures



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Why?

Respiratory emergencies are some of the most complex calls we face and our actions can have profound positive or negative outcomes.



COPD Review

- COPD is a type of disease rather than one specific disease
 - Emphysema
 - Chronic Bronchitis
- Degree and severity differ from patient to patient.
- Often is undiagnosed, especially with patients who do not frequently see a doctor.



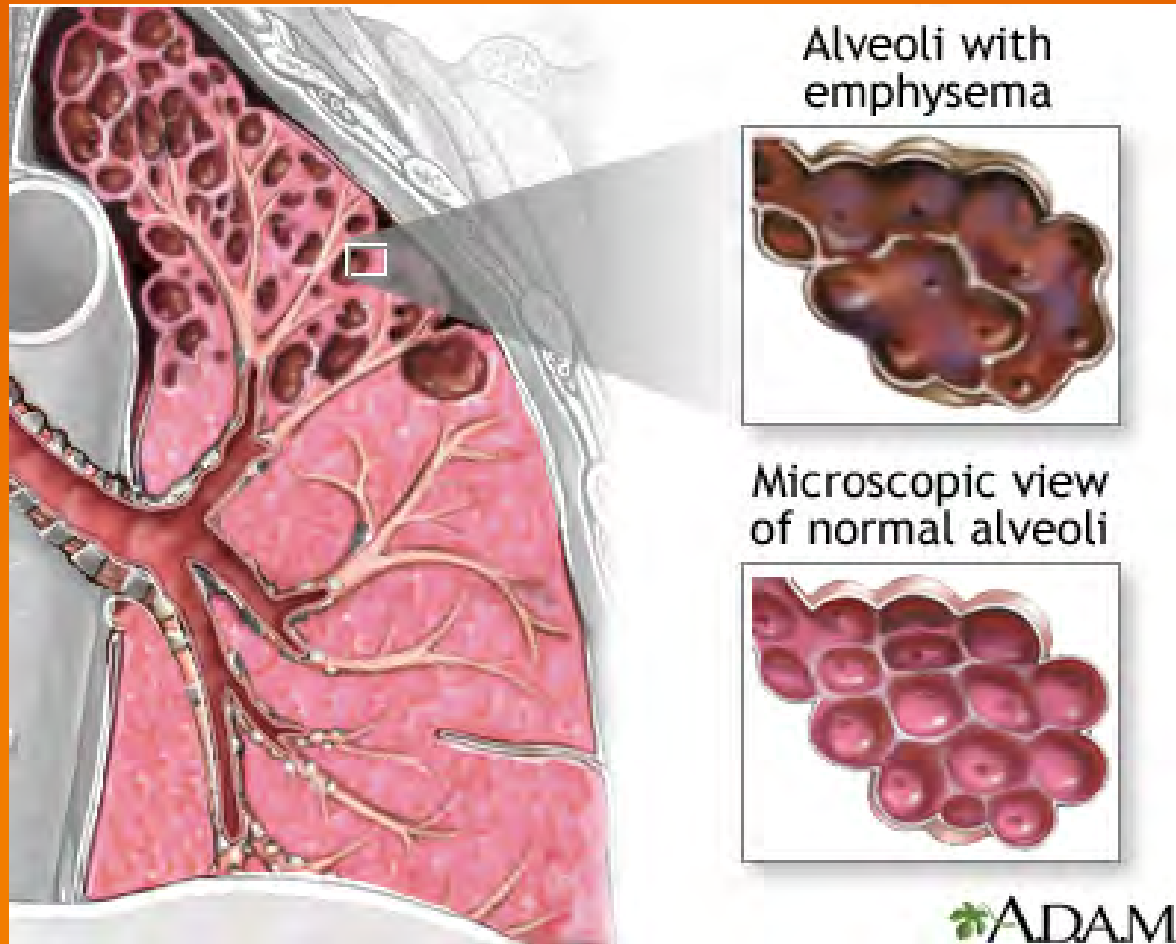
COPD Review

Emphysema

- Destruction and coalescence of alveoli.
- Thin inner walls of alveoli weaken and eventually rupture, creating large open cavities that are unable to perform air exchange.
- Air is trapped in the lungs, resulting in chronic hypoxia and hypercarbia.



COPD Review



COPD Review

Chronic Bronchitis

- Bronchitis is inflammation of the lower airway with increased mucus production.
- A person with chronic bronchitis has a mucus-producing cough most days of the month, three months of a year for two years in a row without other underlying disease to explain the cough.



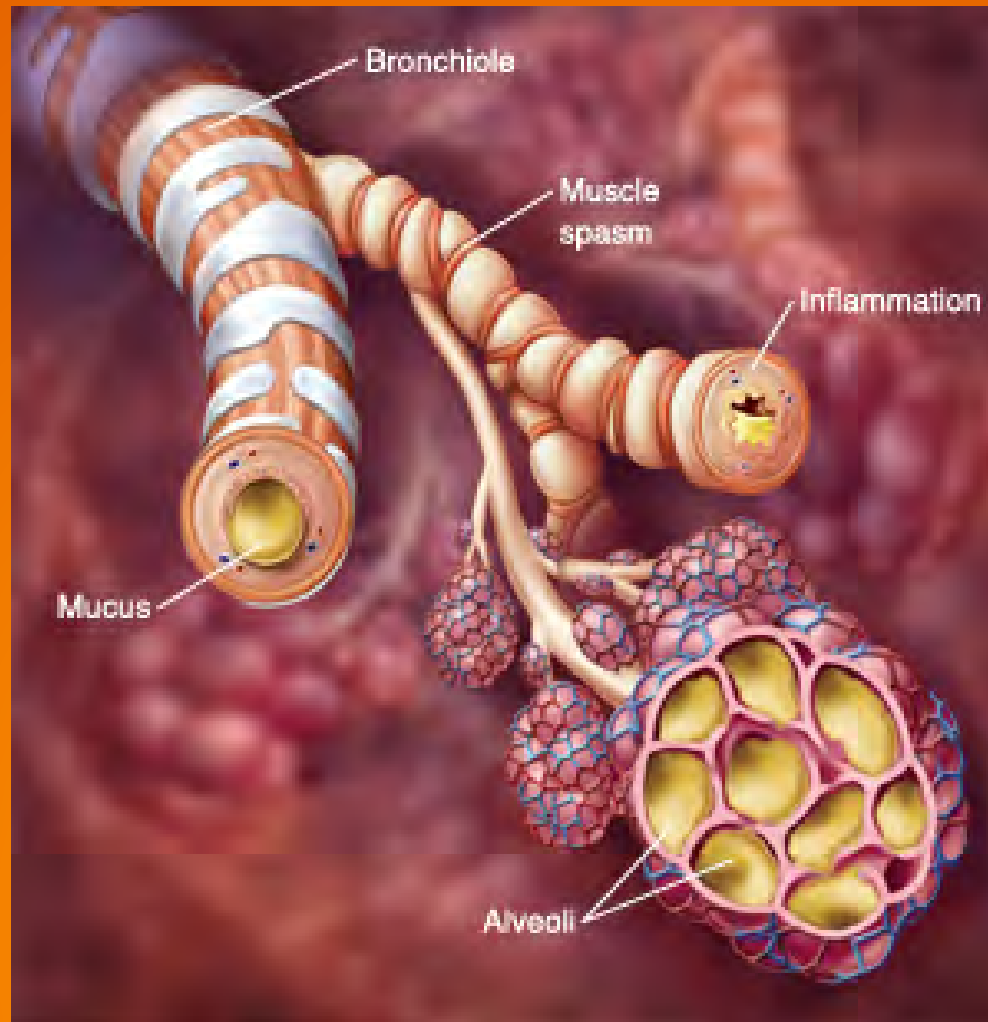
COPD Review

Chronic Bronchitis

- Linings of air passage may thicken and become scarred.
- Air flow to alveoli are hampered, causing hypoventilation of alveoli.



COPD Review



CHF Review

- CHF is a condition in which the heart's function as a pump is inadequate to meet the body's needs.
- Heart failure can involve one side of the heart or both.
- Usually caused by myocardial infarction, coronary artery disease, hypertension, heart valve disease, and cardiomyopathy

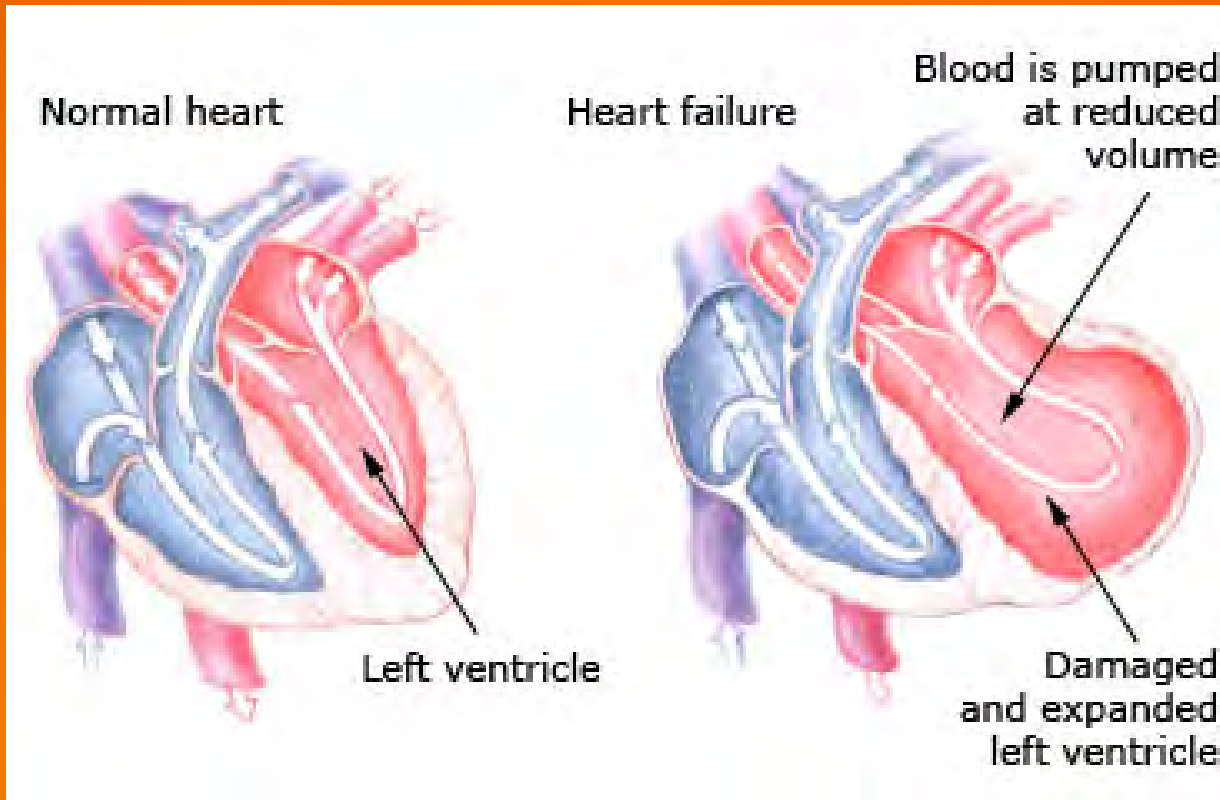


CHF Review

- CHF is a chronic condition but can have a sudden onset in the presence of an acute MI that damages the heart's ability to pump efficiently.
- Acute pulmonary edema (APE) is the exacerbation of CHF in which fluid fills lung space. We treat APE in the pre-hospital setting.



CHF Review



CHF Review

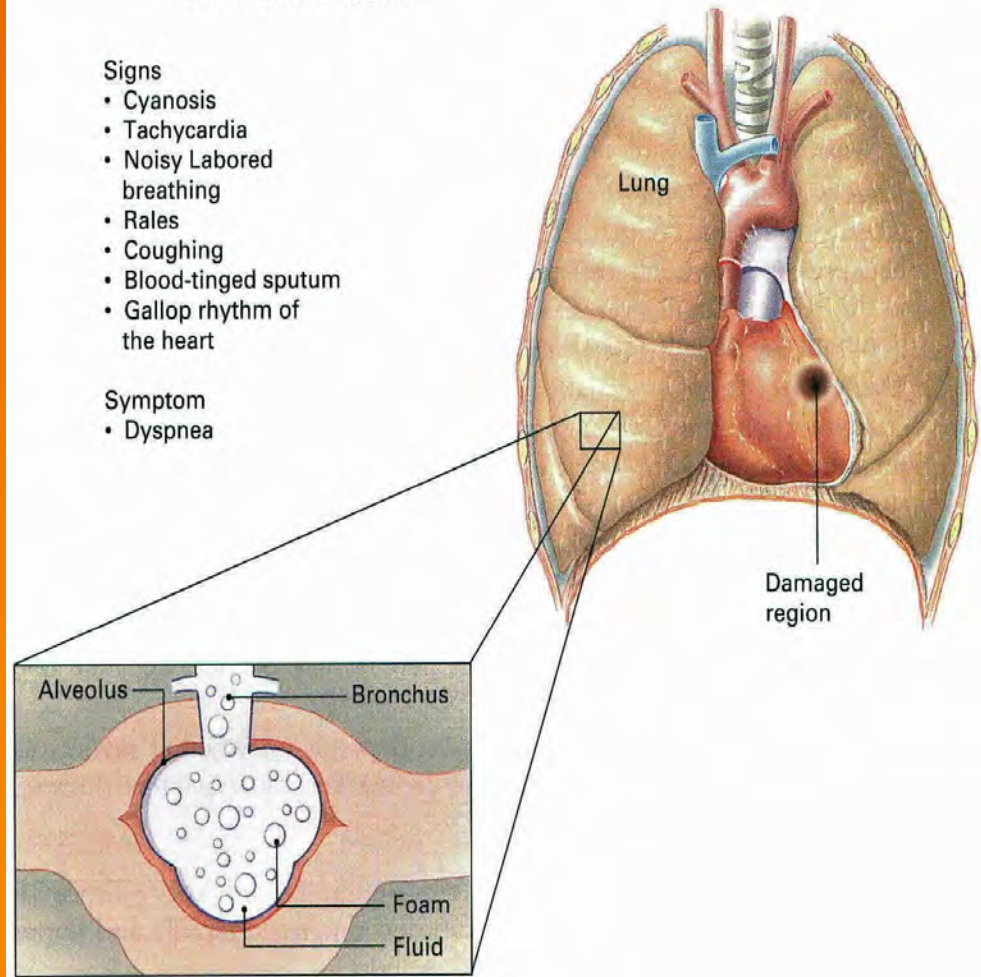
LEFT HEART FAILURE

Signs

- Cyanosis
- Tachycardia
- Noisy Labored breathing
- Rales
- Coughing
- Blood-tinged sputum
- Gallop rhythm of the heart

Symptom

- Dyspnea

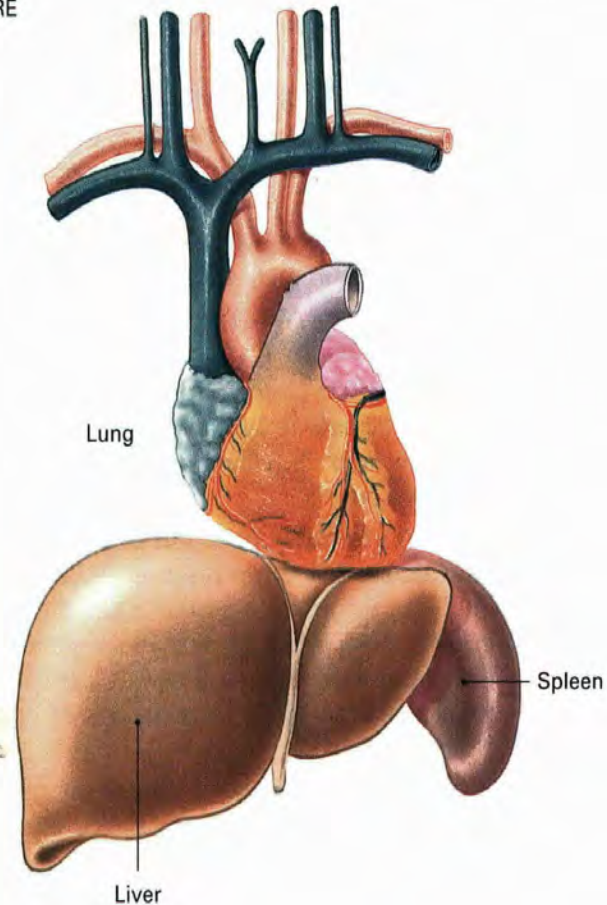


CHF Review

SIGNS OF RIGHT HEART FAILURE

Signs

- Tachycardia
- Neck veins engorging and pulsating
- Edema of body and lower extremities
- Engorged liver and spleen
- Abdominal distention (ascites)

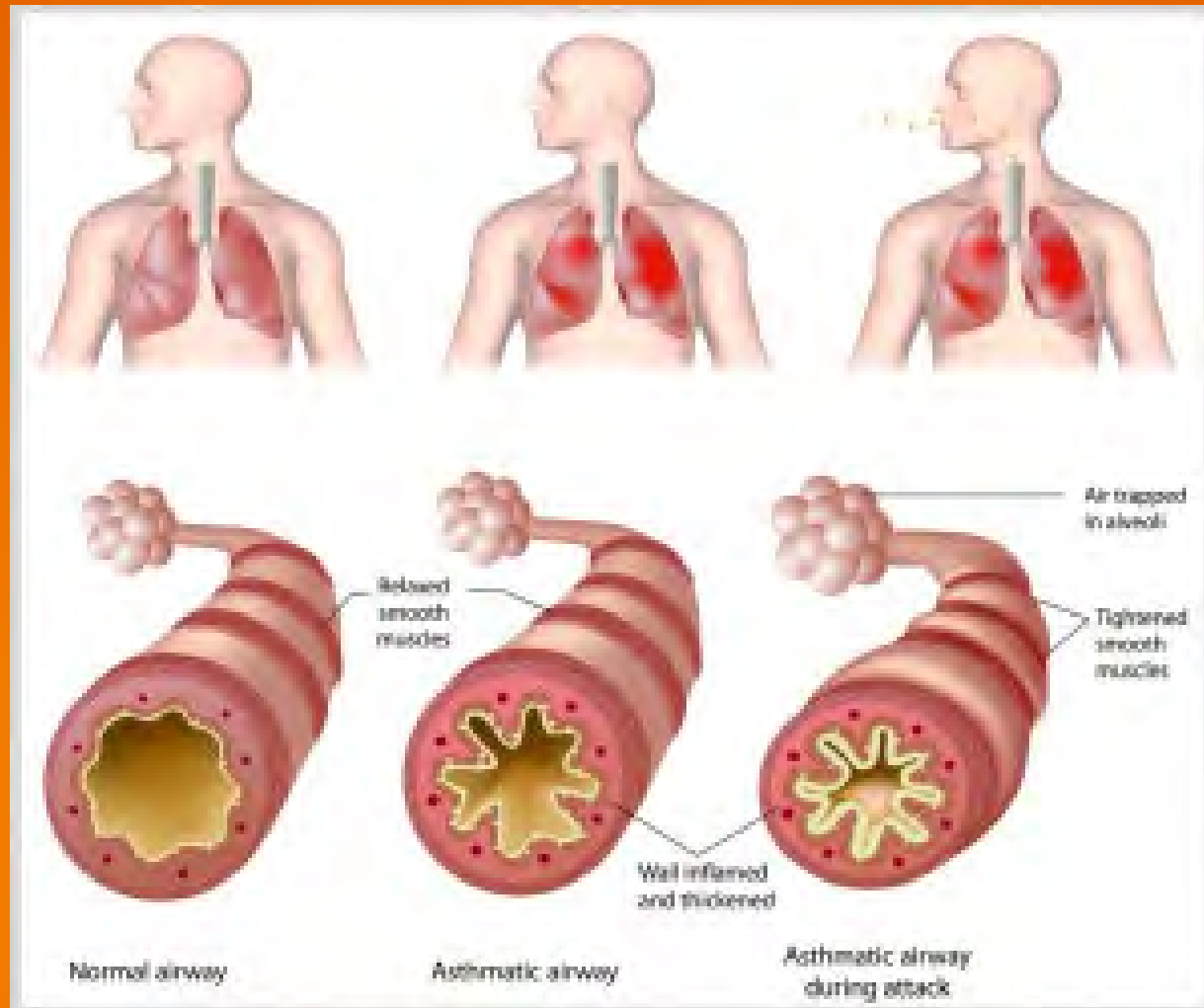


Asthma Review

- Asthma is an inflammatory condition in which airways swell and produce excess mucus
- Autoimmune but may be caused by external triggers



Asthma Review



Infections Review

- Respiratory infections can cause a variety of symptoms that result in breathing problems
- Most commonly, excess mucus and associated swelling block airways



Other Causes

- Anaphylaxis
- Cancer
- Pulmonary embolism (blood clot in the lungs)
- Cardiac causes



Where do we even start?



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Where do we even start?



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But...



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Look-Listen-Feel

- Not just for CPR!



Look

- How does your patient look?
- “Doorway assessment”



Look

Tripod Position



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Tripod Position

- Increases ability to use accessory muscles to aid in respiration
- Indicator of respiratory distress



Tripod Position

- COPD
- Asthma
- APE/CHF
- Cardiac
- Infections



Look

Respiratory Rate



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Look

Respiratory Rate

- Too fast? (Tachypneic)
- Too slow?
- Just right?



Tachypnea

- COPD
- Asthma
- APE/CHF
- Infection
- Brain Injury
- Exertion
- Hyperglycemia



Look

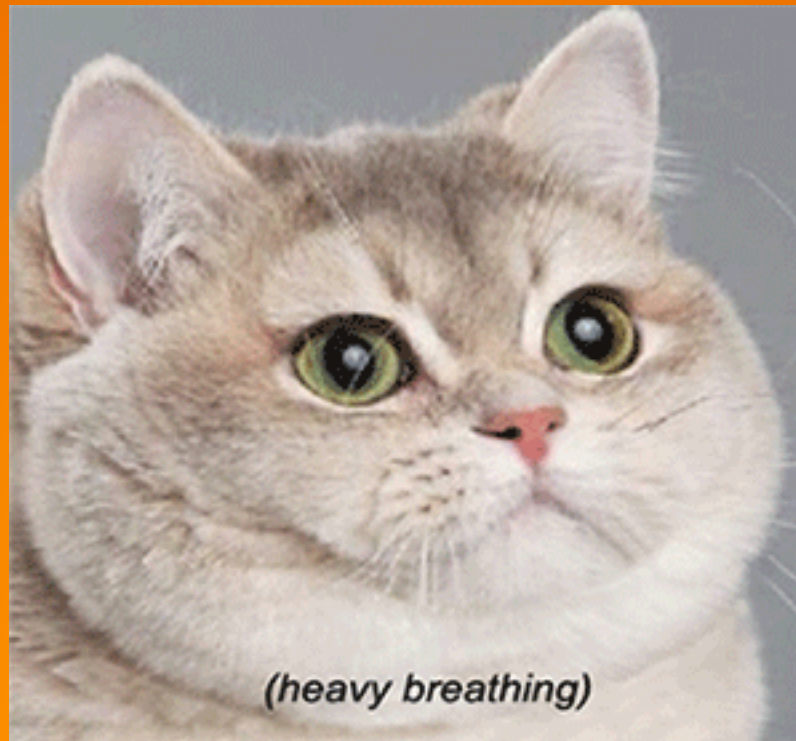
Too Slow

- Imminent failure?
- Brain Injury
- Medications



Look

Respiratory Effort



Look

Respiratory Effort

- Normal?
- Labored?
- Fatigued?
- Shallow?



Look

Normal Respiratory Effort

- Just not severe yet?
- Cardiac



Labored Respiratory Effort

- COPD
- Asthma
- APE/CHF
- Infection



Fatigued Respiratory Effort

- Imminent failure



Look

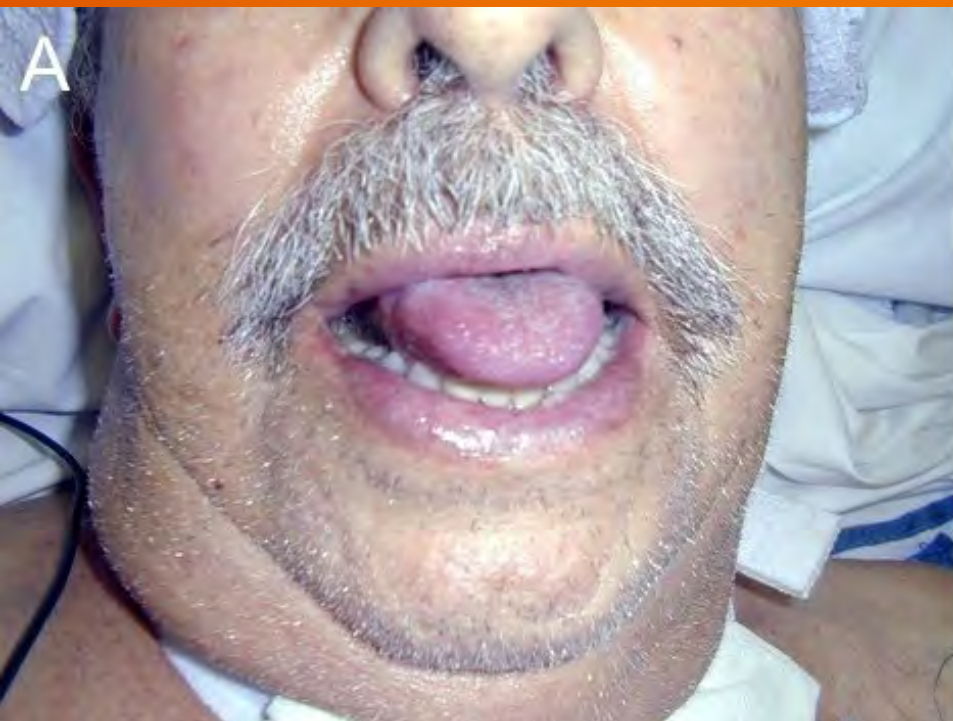
Shallow

- Variety of causes



Look

Color



Look

Cyanotic

- Hypoxia



Look

Color



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Look

Flushed

- Consider exertion, anaphylaxis, etc.



Look

Appropriate

- Not a good indicator



Look

Diaphoresis



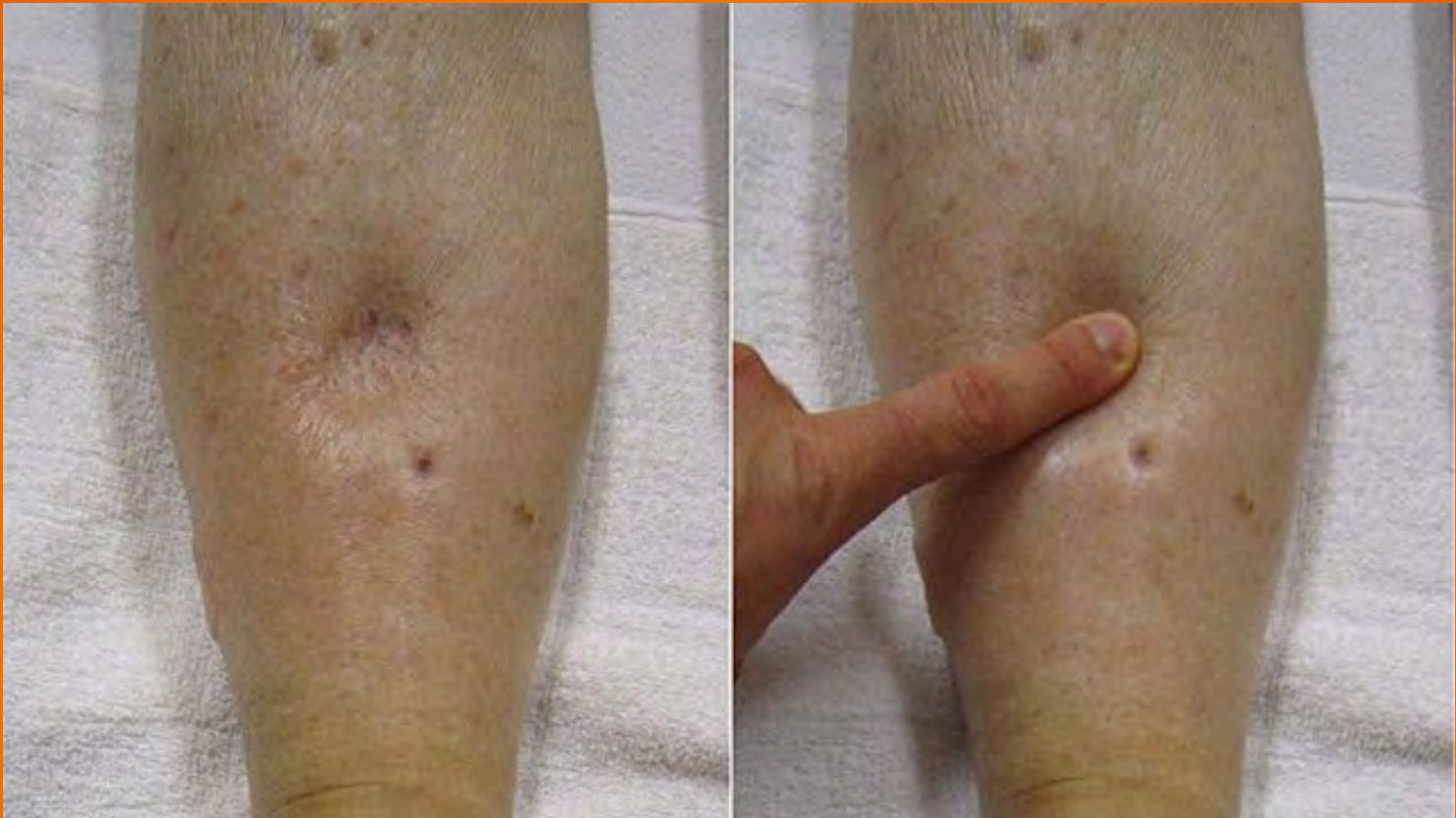
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Diaphoresis

- APE/CHF
- Cardiac
- COPD/Asthma
- Infections (w/ fever)



Edema



Look

Edema

- APE/CHF
- Cardiac



Look

Environmental



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Look

Environmental



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Look

Environmental



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Look

Environmental



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Look

Environmental



Listen



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Listen

Lung sounds

- Clear
- Diminished
- Wheezes
- Rales/Crackles
- Rhonchi
- Stridor



Listen

Clear

- Non-diagnostic



Diminished

- Reduced air flow to part of the lung(s)
- May be a result of multiple disease processes



Wheezes

- Indicate airway constriction
- Expiratory (most common) are the result of distal constrictions
- Expiratory wheezes indicate a 50% decrease in peak expiratory flow



Wheezes

- Inspiratory/expiratory from more proximal (severe) constriction
- Inspiratory alone generally extrathoracic



Listen

Wheezes

- COPD
- Asthma
- Infection
- Tumors



Listen

Rales/Crackles

- Inspiratory bubbling, popping, or clicking that results from air opening spaces that were closed by fluids



Rales/Crackles

- Acute Pulmonary Edema (APE) as a result of Congestive Heart Failure (CHF)



Listen

Rhonchi

- “Internal snoring” which is a result of airway blockages (usually mucus)



Listen

Rhonchi

- Infections



Listen

Stridor

- Inspiratory whistle from an airway obstruction, usually in the trachea



Listen

Stridor

- Foreign body



Listen



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Listen

Cough

- Characteristics of a cough can also provide indicators of what is happening



Listen

Cough

- “Productive” or wet cough
- Dry cough
- Croup
- Whooping



Listen

Cough

- Onset
- Timeframe
- Severity
- Progression
- Sputum



Feel

How does your patient feel?



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Feel

- OPQRSTI questions



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Feel

Onset

- How did it start?



Provokes

- Does anything make it better or worse?
- Do you sleep sitting up or lying down?
- Does it get worse when you lie down?
- Does it get worse with exertion?



Feel

Quality?

- Does it feel like it's harder to breathe in or breathe out?



Regularity?

- What is your baseline?



Severity?

- Did it start this bad or has it gotten better/worse?
- Has it ever been worse?
- What did they do?



Feel

Time?

- When did it start?



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Vital Signs

- Pulse
- Blood Pressure
- Respiratory Rate
- SpO₂
- Temperature
- ETCO₂



Vital Signs

Pulse

- Normal range
- Tachycardic
- Bradycardic
- Regular/Irregular



Vital Signs

Blood Pressure

- Normal range
- Hypertensive
- Hypotensive



Vital Signs

Respiratory Rate

- Normal
- Tachypneic
- Slow



Vital Signs

Respiratory Effort

- Normal
- Shallow
- Labored
- Fatigued



Vital Signs

SpO₂

~~“Treat the patient not the monitor”~~



Vital Signs

SpO₂

- Valuable part of your assessment!
- WHEN USED CORRECTLY



Vital Signs

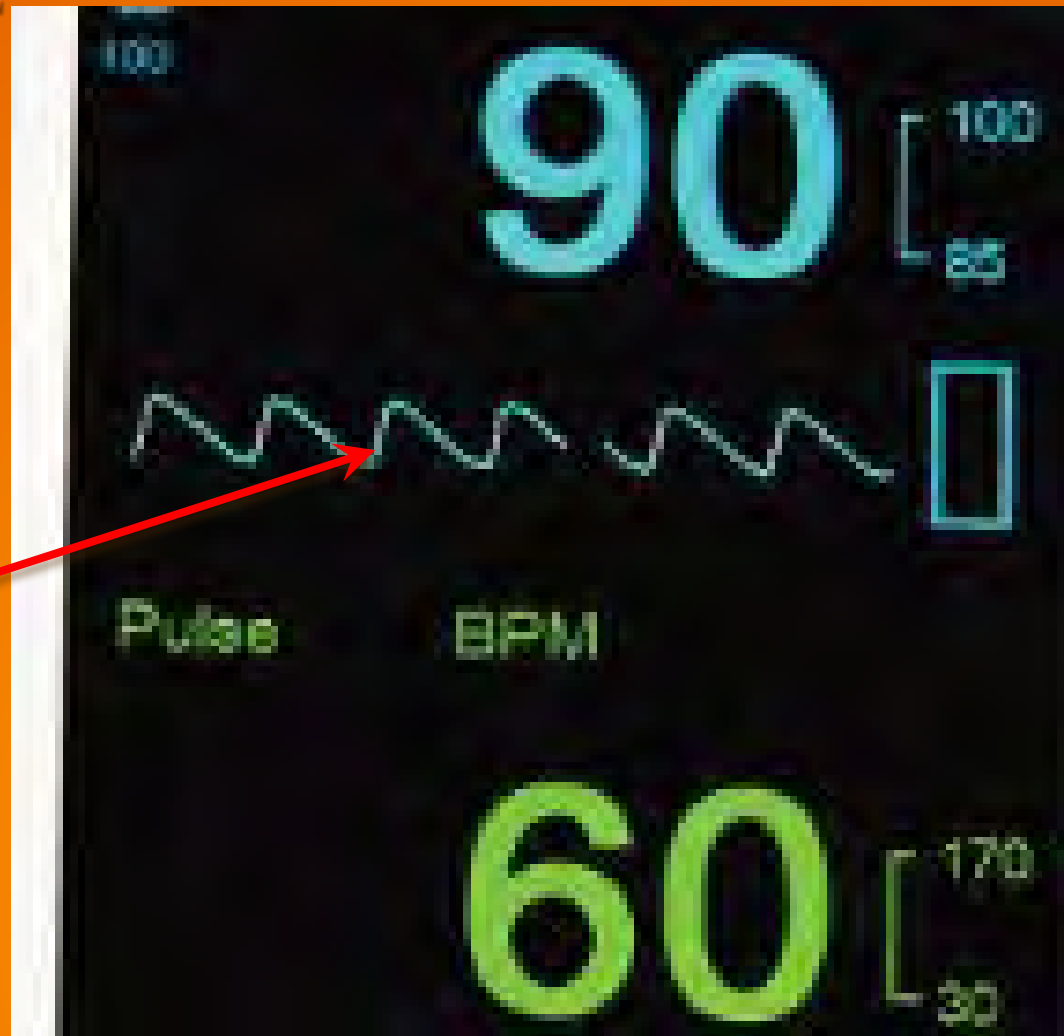
SpO₂



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Vital Signs

SpO₂



Vital Signs

Temperature

- Normothermic
- Hyperthermic
- Hypothermic



Vital Signs

End-Tidal CO₂

- Measure of carbon dioxide exhaled
- +/- 10% correlation to CO₂ in the blood



Vital Signs

End-Tidal CO₂



Vital Signs

End-Tidal CO₂

- Not just a number

Figure 7: Capnography waveform trending down in shock



Figure 8: Capnography waveform indicating hypoxia due to asthma



Figure 9: Capnography waveform indicating hypoxia due to mechanical obstruction



Figure 10: Capnography waveform illustrating emphysema or leaking alveoli in pneumothorax



Figure 11: Capnography waveform indicating poor lung compliance, also seen in obese and pregnant patients



Questions

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