Respiratory Emergencies:
“Take a breath and reassess”

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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.
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.
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.
Chronic Bronchitis

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

- Bronchiola
- Muscle spasm
- Inflammation
- Mucus
- Alveoli
• 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 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.
Normal heart

Heart failure

Blood is pumped at reduced volume

Left ventricle

Damaged and expanded left ventricle
LEFT HEART FAILURE

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

Symptom
- Dyspnea

Alveolus
Bronchus
Foam
Fluid

Lung

Damaged region
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
Respiratory infections can cause a variety of symptoms that result in breathing problems.

Most commonly, excess mucus and associated swelling block airways.
• Anaphylaxis
• Cancer
• Pulmonary embolism (blood clot in the lungs)
• Cardiac causes
Where do we even start?
Where do we even start?
But...
• Not just for CPR!
• How does your patient look?
• “Doorway assessment”
Tripod Position
Tripod Position

• Increases ability to use accessory muscles to aid in respiration
• Indicator of respiratory distress
Tripod Position

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

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

- COPD
- Asthma
- APE/CHF
- Infection
- Brain Injury
- Exertion
- Hyperglycemia
Too Slow
- Imminent failure?
- Brain Injury
- Medications
Respiratory Effort

(heavy breathing)
Respiratory Effort

- Normal?
- Labored?
- Fatigued?
- Shallow?
Normal Respiratory Effort

- Just not severe yet?
- Cardiac
Labored Respiratory Effort

- COPD
- Asthma
- APE/CHF
- Infection
Fatigued Respiratory Effort

• Imminent failure
Shallow

- Variety of causes
Color

Look

A

B

[Image 591x460 to 702x504]
[Image 71x380 to 190x450]
[Image 0x108 to 720x377]
Cyanotic
• Hypoxia
Color
Flushed

• Consider exertion, anaphylaxis, etc.
Look

Appropriate

• Not a good indicator
Diaphoresis
Diaphoresis

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

- APE/CHF
- Cardiac
Environmental
Environmental
Environmental
Look

Environmental
Environmental
Lung sounds
• Clear
• Diminished
• Wheezes
• Rales/Crackles
• Rhonchi
• Stridor
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
Wheeze

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

- COPD
- Asthma
- Infection
- Tumors
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)
Rhonchi

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

- Infections
Stridor

- Inspiratory whistle from an airway obstruction, usually in the trachea
Stridor
• Foreign body
Listen
Cough

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

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

• Onset
• Timeframe
• Severity
• Progression
• Sputum
How does your patient feel?
• OPQRSTI questions
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?
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?
Time?

- When did it start?
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
Respiratory Rate

- Normal
- Tachypneic
- Slow
Respiratory Effort
- Normal
- Shallow
- Labored
- Fatigued
SpO$_2$

“Treat the patient not the monitor”
SpO₂

- Valuable part of your assessment!
- WHEN USED CORRECTLY
Vital Signs

SpO₂
SpO₂

Vital Signs

90
Pulse  BPM
60
Vital Signs

Temperature
- Normothermic
- Hyperthermic
- Hypothermic
End-Tidal CO₂

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

End-Tidal CO₂
End-Tidal CO₂

• Not just a number
Questions

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