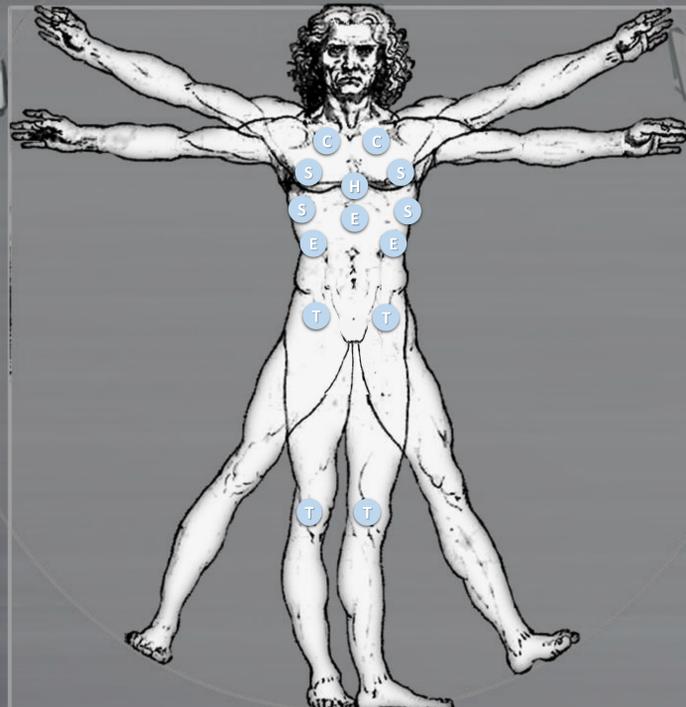
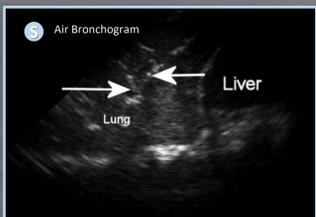
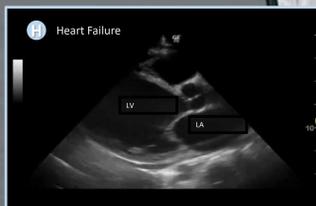
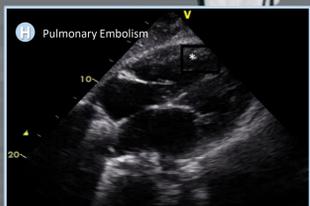
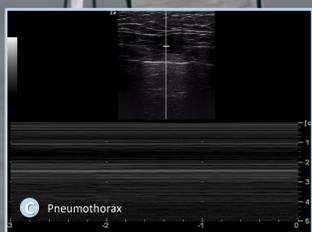


# CHEST

## Sonographic Approach to Dyspneic Patients in Emergency Department

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The Clue	Anatomical landmarks	Pathological findings
<b>C</b> Collapsed Lungs	<b>Mid-clavicular line on each hemithorax:</b> Highest dependent part of chest (2,3 ICS in supine position)	<b>Pneumothorax:</b> absent lung sliding
<b>H</b> Heart	<ul style="list-style-type: none"> <li><b>Parasternal long &amp; short axis:</b> Lt parasternal start at 2<sup>nd</sup> ICS</li> <li><b>Apical:</b> Start 5<sup>th</sup> ICS anterior axillary line</li> <li><b>Subcostal:</b> Below sternum</li> </ul>	<p><b>Pulmonary embolism:</b> RV strain. Abnormal RV is equal or more in size to LV</p> <p><b>Cardiogenic shock:</b> normal LV should contract by 1/3 of its diameter. EF can be estimated by eyeballing.</p> <p><b>Pericardial tamponade:</b> hypochoic fluid collection around the heart.</p> <p>If positive look for : <b>Obstructive and cardiogenic shocks:</b> IVC &gt; 2.5cm, collapsing less than 50%</p>
<b>E</b> Effusions	<b>Right and Left pleural spaces:</b> Above the diaphragm	<b>Pleural effusion:</b> loss of mirror image of liver/spleen at Rt/Lt diaphragmatic areas
<b>S</b> Sepsis	Map out the thorax to apply the probe in 4 different windows on each hemithorax.	<p><b>Pneumonia:</b> Hypochoic or Heterogeneous echo texture of the lungs parenchyma of varying size &amp; shape</p> <ul style="list-style-type: none"> <li>- Pleural effusion</li> <li>- Air bronchograms</li> <li>- Hepatization of lung tissue</li> </ul>
<b>T</b> Thromboembolism	<ul style="list-style-type: none"> <li><b>Femoral vein:</b> Rt and Lt inguinal area</li> <li><b>Popliteal vein:</b> Popliteal fossa</li> <li><b>Parasternal long &amp; short axis:</b> Lt parasternal start at 2<sup>nd</sup> ICS</li> </ul>	<p><b>DVT:</b> non compressible veins, direct clot visualization</p> <p><b>Pulmonary embolism:</b> RV strain. Abnormal RV is equal or more in size to LV</p>

### Introduction:

Dyspnea is a common complaint presenting to the Emergency Department worldwide. It is a challenging symptom as it conceals a broad differential diagnosis including many which are life-threatening etiologies. Without a proper and swift identification of the cause, the condition of the patient can deteriorate aggressively. Such interventions should be done as soon as possible in order to achieve a better outcome.

### Our Purpose:

Patients' care and flow can be enhanced by the use of structured mnemonics. We propose the use of "CHEST" mnemonic to facilitate the approach to the undifferentiated dyspneic adult patient presenting to the Emergency Department by using bedside ultrasound. Proper application "CHEST" mnemonic can lead to abrupt narrowing down of the life-threatening causes.

### "CHEST" Mnemonic Tools and Components:

The "CHEST" mnemonic uses the ultrasound machine as a quick, bedside, feasible, cost effective assessment tool with no radiation that can be harmful to rule out many of life-threatening causes in a dyspneic patient (pneumothorax, acute pulmonary edema, heart failure, pericardial tamponade, pleural effusion, pneumonia, pulmonary embolism and deep vein thrombosis).

### "CHEST" Mnemonics Advantage and Lucky Users:

Emergency Physician can use the "CHEST" mnemonic in different areas of the Emergency Department to guide patients' management. With implementation, it can aid in upgrading/downgrading the level of care and observation, spot patients who need immediate intervention and recommend further imaging to reach the final diagnosis. The "CHEST" is an important tool to aid a dyspneic patient's management outside the Emergency Department jurisdictions as well it can be used efficiently in the fields of Critical Care, Anesthesia, Internal Medicine, Cardiology, Respiratory and EMS Units.

### "CHEST" Mnemonic Performance:

As a newly invented mnemonic, there are no studies to validate its utility yet. Despite that, each diagnosis mentioned in the "CHEST" mnemonic have well established studies that are highly sensitive and specific.

### Future Plans and Recommendations:

- Study the performance of CHEST mnemonic as a whole tool.
- Educate the novice students about the mnemonic and its application.
- Study the feasibility of the CHEST mnemonic on the pediatric and neonatal group.

#### References:

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