**MED 1 3rd SHIFTING: PULMONARY SYMPTOMS**

### DYSPNEA

**Subjective experience of breathing discomfort that consists of qualitatively distinct sensations that vary in intensity; a symptom, can only be perceived only by the person experiencing it and must be distinguished from the signs of increased work of breathing.**

Dyspnea

**Consequences of interactions b/w the efferent, or outgoing, motor output from the brain to the ventilator muscles (feed-forward) and the afferent, or incoming, sensory input from receptors throughout the body as well as the integrative processing of this information that we infer must be occurring in the brain.**

Respiratory sensations

**If the feed-forward and feedback messages do not match, what happens?**

Error signal is generated and the intensity of dyspnea increases

**What disorder of the respiratory system is associated with increased work of breathing or the sense of an increased effort to breath?**

Disorders of the ventilatory pump – most commonly, increased airway resistance/stiffness (decreased compliance)

**Greater effort is required, even though the mechanics of the respiratory system are normal. Why?**

Muscles are weak or fatigued

**What activate the chemoreceptors in the carotid bodies and medulla?**

Hypoxemia
Acute Hypercapnia
Acidemia

**What is the difference in the sensation caused by chemoreceptor and mechanoreceptor?**

Chemoreceptor: sensation of air hunger
Mechanoreceptor: sensation of chest tightness

**What stimulates the mechanoreceptors in the lungs?**

Brochial gasses

**Difference between pulmonary vascular and pulmonary arterial receptors?**

Receptors – sensation of interstitial edema
Pulmonary vascular receptors – activated by acute changes in pulmonary artery pressure

**Associated with the sensation of increased work of breathing, an ability to get a deep breath, or an unsatisfying breath?**

Hyperinflation

**Receptors located in skeletal muscle, and are believed to be activated by changes in the local biochemical milieu of the tissue active during exercise and, when stimulated, contribute to breathing discomfort?**

Metaboreceptors

**The discrepancy or mismatch between the feed-forward message to the ventilatory muscles and the feedback from receptors that monitor the response of the ventilator pump increase _____ of dyspnea.**

Intensity

**Acute anxiety or fear may increase the _____ of dyspnea either by altering the interpretation of sensory data or by leading to patterns of breathing that heighten physiologic abnormalities in the respiratory system.**

Severity

**Dyspnea assessment begins with what?**

Determination of the quality of the discomfort

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**Table 47e-1 Association of Qualitative Descriptors, Clinical Characteristics, and Pathophysiologic Mechanisms of Shortness of Breath**

<table>
<thead>
<tr>
<th>Descriptor</th>
<th>Clinical Examples</th>
<th>Pathophysiology</th>
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<tbody>
<tr>
<td>Chest tightness or constriction</td>
<td>Asthma, CHF</td>
<td>Broncho constriction</td>
</tr>
<tr>
<td>Increased work or effort of breathing</td>
<td>COPD, asthma, neuromuscular dse, chest wall restriction</td>
<td>Airway obstruction, neuromuscular dse</td>
</tr>
<tr>
<td>“Air hunger”, need to breathe, urge to breathe</td>
<td>CHF, PE, COPD, Asthma, Pulmonary fibrosis</td>
<td>Increased drive to breathe</td>
</tr>
<tr>
<td>Inability to get a deep breath, unsatisfying breath</td>
<td>Moderate to severe asthma and COPD, pulmonary fibrosis, chest wall dse</td>
<td>Hyperinflation and restricted tidal volume</td>
</tr>
<tr>
<td>Heavy breathing, rapid breathing, breathing more</td>
<td>Sedentary status in healthy individual or patient with cardiopulmonary dse</td>
<td>Deconditioning</td>
</tr>
</tbody>
</table>

**Ways/tools to measure dyspnea**

- Modified Borg scale/ Visual Analogue Scale – at rest/ immediately ft. exercise
- Recall of a reproducible physical task, such as climbing the stairs at home
- Baseline Dyspnea Index and the Chronic Respiratory Diseas

**Laboratory studies have demonstrated that _____ evokes a breathing more**

- Hypoxemia
- Acute Hypercapnia

**Most common obstructive lung diseases characterized by expiratory airflow obstruction, which typically leads to dynamic hyperinflation of the lungs and chest wall**

- Asthma and COPD

**Patients with mod. To severe dses have both increased _____ + _____ on the ventilator muscles and experience inc. work of breathing**

- Patients with _____ report sense of tightness, w/c can exist even when lung function is still within the normal range; commonly tachypneic; this condition leads to hyperinflation and reduced respiratory system compliance and also limits tidal volume.

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- Acute Bronchoconstriction

**Much more common than hypercapnia as a consequence of the different ways in w/c O2 and CO2 bind to Hgb**

- Hypoxemia

**Diseases of the chest wall associated with increased effort**

- Cond. That stiffen the chest wall – Kyphoscoliosis