

**Case Study:** An 84 year old female is sitting on the edge of the bed in obvious respiratory distress, 2 word dyspnea, intercostal in-drawing, uncontrollable tremors, intermittent chest discomfort with cough over a few days, slight abdominal distension, pitting edema to left ankle, decreased air entry bilaterally with fine crackles on the left and expiratory wheezes on the right. Patient states no appetite yesterday but otherwise feeling chilled when going to bed. Awoke with shortness of breath, took puffers with no relief.

**Medical History:** MI, A-fib, angina, COPD, hyperlipidemia, hypertension, lobectomy of middle lobe of right lung, hypothyroidism

**Medications:** Amiodarone, Eltroxin, Spiriva, Advair, Crestor, Ventolin, Nitro, ASA, Atrovent

**Vitals:** HR=102, irregular, weak, RR=38, regular, laboured, BP=148/78, SPO2=84% room air, Temp=40.2 Tympanic, GCS=15 (lethargic, fatigued), 12 lead ECG shows A-fib

**What is your differential diagnosis of this patient's presentation?**

### Asthma

Inflammation and narrowing of the airways from allergens

**Symptoms:** chest tightness, shortness of breath, cough (worse at night or early morning)

**Signs:** expiratory wheezes, reduced air entry, prolonged expiratory phase of respiration

**Paramedic Treatment:** O2, salbutamol via MDI spacer, epinephrine (prn), supportive care, transport

### Pneumonia

Inflammation of the alveoli from an infection causing filling with fluid or pus

**Symptoms:** productive cough, fever, chills, chest pain when breathing or coughing, shortness of breath with normal daily activities

**Signs:** localized crackles or bronchial breath signs

**Paramedic Treatment:** O2, supportive care, transport, may treat with salbutamol via MDI spacer if signs of bronchospasm

**\*\*\*Avoid nebulized medications and CPAP\*\*\***

### Congestive Heart Failure

**Right-sided failure** – the heart can't pump enough blood to the lungs for oxygenation

**Left-sided failure** – the heart can't pump enough oxygenated blood to the rest of the body

**Symptoms include:** shortness of breath after routine, fatigue, peripheral edema, cough (worse at night or when lying flat)

**Signs:** bilateral crackles, may have wheezes but not prolonged expiration, often hypertensive, may have peripheral edema

**Paramedic Treatment:** O2, Nitro, CPAP, supportive care, transport sitting upright **\*\*\*Avoid treating with salbutamol, increases heart rate and worsens cardiac output\*\*\***

### Chronic Obstructive Pulmonary Disease

**Chronic Bronchitis** – inflammation of the airways, increased mucous production

**Emphysema** – decreased elasticity of the alveoli, damage to alveolar walls

**Symptoms:** chronic, productive cough, wheezes, chest tightness, shortness of breath

**Signs:** expiratory wheezes, coarse crackles, reduced air entry, prolonged expiratory phase of respiration

**Paramedic Treatment:** O2, salbutamol via MDI spacer, CPAP, supportive care, transport

**This case is not easy.** The possible diagnoses might include COPD, CHF, pulmonary embolus, cardiac ischemia and pneumonia. This patient may have one that is the main cause for the worsening or it may be a combination. Keep the differential diagnosis wide to ensure you consider all causes. Ensure that you also involve clues that may be found in the home (OTC meds, environmental conditions), as well as the insight and history of family/friends on scene to round out your information gathering.

With the patient presenting with a new, productive cough; shortness of breath; fever, chills and tremors; one-sided crackles; decreased appetite; lethargy; intermittent chest pain with coughing and breathing; and the presence of bronchoconstriction (wheezes, intercostal in-drawing, dyspnea), the most appropriate treatment plan for this patient would be based on the patient exhibiting symptoms of pneumonia with exacerbation of her COPD. The patient may also have worsening heart failure however it may not be the most prominent problem today.

**The treatment plan should include:**

- **Oxygen**
- **Salbutamol via MDI spacer**
- **Supportive care**
- **Transport**

A patient's response to treatment may sometimes prompt a change in management. For example, sometimes patients with CHF and COPD appear to be in respiratory distress due to COPD, but worsen with salbutamol and crackles become more evident. If this is the case, you may need to consider nitro for management of CHF.

**\*\*\*Changes in the treatment plan need to be well documented so that the critical thinking and reasoning for the change is clear.\*\*\***

**\*\*\*A thorough assessment of findings is paramount in making a sound working diagnosis and treatment plan.\*\*\***

**Have a safe holiday season!**