

**I. CHF in need of CPAP and intubation**

**II. Target Audience: EMT-P's**

**III. Learning Objectives or Assessment Objectives**

A. Primary –

- Assessment of patient with shortness of breath
- Medical treatment of patients with CHF
- Skills assessment of CPAP
- Skills assessment of endotracheal intubation

B. Secondary – detailed technical goals, behavioral goals, didactic points

- Clinical questions to differentiate CHF vs. asthma vs. COPD vs. PE

C. Critical Actions Checklist

- Assessment of patient with shortness of breath
  - Accurately determine respiratory rate, pulse oximetry, and lung sounds
  - Differentiate rales from normal breath sounds
- Clinical questions to differentiate CHF vs. asthma vs. COPD vs. PE
  - Determine past medical history including past MI and past CHF.
  - Determine negative ROS for asthma, PE or COPD
- Medical treatment of patients with CHF
  - Apply oxygen 100%
  - Give nitroglycerin
  - Give lasix
- Skills assessment of CPAP
  - Accurately determine need for and apply CPAP to patient
- Skills assessment of endotracheal intubation
  - Accurately determine need for and successfully intubate patient.
- Communication
  - Communication with base station allows emergency personnel to have respiratory therapy, intubation equipment and other medications ready at the time of arrival.

**IV. Environment**

A. Lab Set Up

- Home, Ambulance, ED or Sim lab

B. Manikin Set Up

- METI ECS

- No Moulage (peripheral edema?)

C. Props

- 2 way walkie talkie (simjockey at other end to voice “base station”)
- 2 IV set ups
- bag valve mask
- Non rebreather
- Nasal prongs
- nasal and oral airways
- Straight and curved blades of various sizes
- ET tubes of various sizes
- Stylet ? (may damage manikin but more realistic)
- LMA’s
- Intubating drugs (versed)
- Saline
- Nitroglycerin
- Aspirin
- Lasix
- Albuterol
- Rhythm strip (atrial fibrillation)
- EKG (atrial fibrillation)

D. Distracters

- Music of fire horn (EMT)

V. **Actors**

A. Roles – paramedic, paramedic team

- Sim Jockey plays role of patient and base station. If student gets in trouble, base station can call student (EMT)

VI. **Case Narrative (describes what the learner will experience)**

A. Scenario Background Given to Participants

- Radio call/CC: Shortness of breath
- PMH: MI and CHF
- No history of COPD, blood clots, travel, cancer or asthma
- Meds: Lasix daily (forgot today), Nitroglycerin for chest pain, Aspirin daily, Atenolol
- Family/Social History: none available

B. Scenario Conditions Initially

- History by radio call: 65 year old man with shortness of breath for 1 hour. Patient is in his home in bed.

- Patient initial exam:
    - Tachypnic man
    - Patient able to speak in short sentences
    - RR 40
    - SaO<sub>2</sub> 88% on room air.
  - Patient physiology
    - Hypoxia
    - Tachypnea
    - Volume overloaded
    - When asked, monitor shows atrial fibrillation (new)
- C. Scenario Branch Points
- See Excel sheet

## VII. Instructor Notes

- A. Tips to keep scenario flowing in lab and via computer
- B. Tips to direct actors
- C. Scenario Programming
- “Standard Man”
    - see SimJockey Tasks
  - Potential complications
    - Intubating too early
    - Esophageal intubation

## VIII. Debriefing Plan

- A. Method of debriefing:
- Group, with video replay
  - Groups of 2 in sim lab. Use in conjunction with other intubation scenarios or have 2<sup>nd</sup> student intubate after scenario ends
- B. Actual debriefing materials:
- Review of critical actions / critical errors handout.
- C. Rules for the debriefing
- 2 paramedics went first with no classmates watching
  - then 2 more went with the class watching
  - debrief took place with video replay of these 2 performances.

- Remaining paramedics took part in other scenarios, all under the large heading of “airway management”
- At end of scenario, whoever did not intubate had to remove the ET tube and successfully intubate with simjockey or confederate supervision.

D. Questions to facilitate the debriefing

- CHF is often called a symptom rather than a diagnosis. Why is that?
- What other conditions present with pulmonary edema?

Etiologies of pulmonary edema may be placed in the following 6 categories:

- Pulmonary edema secondary to altered capillary permeability—includes acute respiratory deficiency syndrome (ARDS), infectious causes, inhaled toxins, circulating exogenous toxins, vasoactive substances, disseminated intravascular coagulopathy (DIC), immunologic processes reactions, uremia, near drowning, and other aspirations.
- Pulmonary edema secondary to increased pulmonary capillary pressure—comprises cardiac causes and noncardiac causes, including pulmonary venous thrombosis, stenosis or veno-occlusive disease, and volume overload.
- Pulmonary edema secondary to decreased oncotic pressure found with hypoalbuminemia
- Pulmonary edema secondary to lymphatic insufficiency
- Pulmonary edema secondary to large negative pleural pressure with increased end expiratory volume
- Pulmonary edema secondary to mixed or unknown mechanisms including high altitude pulmonary edema (HAPE), neurogenic pulmonary edema, heroin or other overdoses, pulmonary embolism, eclampsia, postcardioversion, postanesthetic, postextubation, and post-cardiopulmonary bypass
  - What causes the hypoxia of CHF? (V/Q mismatch due to shunt)
  - Why does nitroglycerin help CHF? How long does it take to work?
  - Why does lasix help CHF? How long does it take to work? Why is it called ‘lasix’?
  - Define the terms ‘orthopnea’, ‘paroxysmal nocturnal dyspnea’, and ‘dyspnea on exertion’
  - How does CPAP work? What does it stand for? How is it different from BiPAP?
  - What are the indications for CPAP?
  - For what patients with CPAP not work? (COPD patients have hypercapnea, so need bipap or intubation)
  - Why is CPAP often called a ‘bridging device’?
  - What are the indications for intubation?
  - Why does intubation often ‘fix’ patients with CHF?
  - What does the term ‘afterload reduction’ mean?

**IX. Pilot Testing and Revisions**

- A. Numbers of participants
  - 15 paramedics in groups of 2
- B. Performance expectations, anticipated management mistakes
- C. Evaluation form for participants

**X. Resources**

- A. <http://www.emedicine.com/emerg/topic108.htm>

**XI. Helpful pics**