The Approach to the Unstable Patient: Participant Curriculum

Module: Pulmonary

- Assess airway, breathing, and circulation with particular focus on the following: work of breathing, oxygenation, ventilation, airway reflexes
- Determine the relative stability of the patient based on initial assessment (stable, progressing to unstable, or unstable).
- Explain how to obtain assistance if the patient is unstable
- Interpret laboratory tests: arterial blood gas
- Interpret radiological tests: chest x-ray
- Define respiratory insufficiency
- Describe 3 ways to manage compromised respiratory function: supplementing with O2, assisting breathing, and controlling airway in patients with respiratory distress
  - List different treatment modalities in each category
- Apply intubation criteria to one specific clinical condition
- Deliver bag-mask ventilation effectively
- Identify and implement initial treatment for one specific pulmonary condition: (e.g., COPD exacerbation, pneumonia)

Approach to Any Unstable Patient:

1. Primary ABCD Survey For Unstable (but not coding) Patient (60 seconds):
   a. Identify yourself as care team leader
      i. “I am Dr. Smith and I am on the service taking care of the patient.”
   b. Airway:
      i. Is the patient able to speak/respond?
         1. Ask “Are you okay?” or “How are you feeling?”
      ii. Is the patient able to protect/maintain the patency of his/her airway?
      iii. If patient is unresponsive, check pulse – if no pulse, proceed to controlled ventilation/ACLS pathway
   c. Breathing:
      i. Is the patient spontaneously breathing?
      ii. Does the patient have increased work of breathing (WOB)?
         1. Assess work of breathing: tachypnea, tachycardia, diaphoresis, accessory muscle use (look at neck)
         2. Ask “Do you feel short of breath” or “Is it hard for you to breathe?”
      iii. Assess adequacy of breathing – oxygenation and ventilation:
1. Look at patient color: lips, palms, conjunctiva
2. Does the patient need supplementation, assistance, or control of breathing — ie. face mask, bag mask/CPAP, intubation.

d. Circulation:
   i. Check pulse (radial plus one – dorsalis pedis, femoral, etc)
   ii. Auscultate heart and lungs
   iii. Review recent vital signs from nursing record

e. Diagnosis (Initial Assessment— this is a big overview statement):
   i. Ex: Patient is a 60 y.o. AAF who is acutely hypotensive and reporting shortness of breath. Airway patent, breathing labored, pulse is present, but weak, neurologically appropriate.

2. Initial Actions/Treatments (120 seconds):
   a. Assign following tasks to team members: residents, nurses, pharmacy, etc.
      i. Don’t just say, “somebody place a pulse ox.” Assign a specific person to the task and make sure they heard you.
   b. If patient is unable to respond, go to ACLS code algorithm.
   c. If able to respond, but difficulty breathing, altered mental status, palpitations, or change in hemodynamic status reported (and if not in place):
      i. Place pulse oximeter
      ii. Place blood pressure cuff and cycle q 3 minutes
      iii. If SaO₂ < 95% or increased WOB, place nasal cannula or face mask O₂. Start at 15L/min and titrate down for SaO₂ of 100%
      iv. If anticipating giving intravenous (IV) medication, obtain or confirm IV access via peripheral vein.
      v. Place on cardiac monitor (EKG).

3. Secondary ABCD’s (120 seconds):
   a. Airway:
      i. Does patient still have patent airway/able to respond?
      ii. Does the patient require assistance in maintaining a patent airway?
   b. Breathing:
      i. Any changes in WOB or respiratory status?
      ii. Improvement? Continued poor function? Need for therapy?
      iii. How would you further assess respiratory needs?
   c. Circulation:
      i. Does the patient still have a pulse?
      ii. Identify rhythm from cardiac monitor (defibrillator on code cart) and/or obtain 12-lead EKG for further evaluation
      iii. Is the patient still in an adequately perfusing rhythm?
         1. Continue BP measurements every 3 minutes, or more often if necessary.
2. Is patient still responsive, indicating adequate cerebral blood flow?

d. Diagnosis to direct treatment: What is going on? What are the options? Is the patient requiring treatment, but stable, or are they hemodynamically unstable? How invasive/acute is the treatment that is needed? What are your goals?
   i. Understand treatment goals based on diagnosis: Atrial fibrillation vs. ventricular tachycardia vs. shock, respiratory distress, obstructed airway, etc.

4. Further Actions/Treatments (60 seconds to initiate treatment):
   a. See below for treatment for specific diagnoses.

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<tr>
<th>Primary ABC's</th>
<th>Initial Actions/Treatments</th>
<th>Secondary ABC's</th>
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Timeline for Primary and Secondary surveys, initial actions and treatments, and definitive diagnosis with appropriate treatment course outlined.

**Acute Respiratory Insufficiency: Intubation Criteria**


  - **Oxygenation**
    - \( \text{PaO}_2 < 55 \) on ABG after adding max supplemental oxygen by facemask
    - \( \text{PaO}_2/\text{FiO}_2 \) (as a decimal) \( \leq 200 \)
    - A-a gradient > 350 on \( \text{FiO}_2 \) 100%
    - Acute drop in \( \text{SaO}_2 < 85\% \) that does not respond to supplemental oxygen

  - **Ventilation**
    - \( \text{PaCO}_2 > 56 \) AND pH<7.25
    - Worsening \( \text{PaCO}_2 \) and pH in serial ABG's

  - **Mechanics**
    - Assess work of breathing (WOB)
      - Labored, sternal notch/subcostal retractions, flail chest, etc
    - RR > 34 or RR > 30 after 2 hours of CPAP, O\(_2\), and therapy
    - RR < 8, unarousable and \( \text{SaO}_2 < 93\% \) - check pupils, supplement, reversal agents (narcan, flumazenil)

  - **Cognition**
    - GCS 12-14 with deranged oxygenation/ventilation/mechanics, consider intubation
    - GCS < 11 with deranged oxygenation/ventilation/mechanics = intubation
**Differential Diagnosis:**

- Difficulty Breathing: Increased Work of Breathing, Normal \( \text{SaO}_2 \)
  - Tachypnea, No stridor, Acidosis likely
    - Severe Anemia, Sepsis, Malignant Hyperthermia, Thyrotoxicosis (acidosis mild or absent)
  - Stridor present
    - Upper Airway Obstruction with Tachypnea
      - Anaphylaxis/tongue swelling, Foreign Body
    - Upper Airway Obstruction without Tachypnea
      - Obstructive Sleep Apnea, Opioid Narcosis, Stroke (CVA) – loss of airway control

- Increased WOB, Low Oxygen Saturation, Tachypnea
  - Hypoxemia - Causes are classified into 5 groups:
    - Low \( \text{FiO}_2 \)
      - High altitude, Anesthesia Machine Malfunction, gas lines switched
    - Alveolar hypoventilation
      - Asthma attack (i.e. COPD exacerbation), Anaphylaxis with bronchoconstriction, Foreign Body (peanut, coin, marble, etc), Iatrogenic (wrong ventilator settings)
    - Impairment of diffusion across blood-gas membrane
      - Pulmonary Edema (cardiogenic, non-cardiogenic), Pneumonia, Membrane disorders/fibrosis
    - Shunt (perfused, not ventilated lung; \( \text{SaO}_2 \) does not change with added oxygen)
      - Embolus (via release of mediators – clot produces dead space), Foreign Body, Pneumothorax, Effusion, Atelectasis
    - Ventilation-perfusion inequality (increased dead space)
      - Low cardiac output, Pulmonary Embolus