TREATMENT:

A. Treat per Universal Patient Care.
B. Follow appropriate Airway Management or Cardiac Dysrhythmia protocol if indicated.
C. Treat patient's clinical impression as follows:

1. Upper Airway

a) <u>Croup & Epiglottitis</u> –

a. Transport in position of comfort, Airway Management protocol as needed
b. If stridor persists at rest, consider **Epinephrine 1:1,000 3 ml nebulized**.
c. Consider corticosteroid administration: **Dexamethasone 10 mg** or **Methylprednisolone 125 mg** if IV/IO established.

b) **<u>Anaphylaxis</u>** – Treat per Anaphylaxis and Allergic Reaction protocol.
c) **<u>Foreign Body</u>** – Obstructed airway procedures. Remove object using direct laryngoscopy if complete obstruction.
d) **<u>Complete Obstruction</u>** – If you cannot effectively BVM ventilate the patient and the patient is deteriorating, consider cricothyrotomy.

2. <u>Pulmonary Edema/ CHF</u>

a) Sit patient upright.
b) *Consider CPAP* {e.g. unable to speak more than 1-2 words, low O2 saturation (<90%), respiratory rate > 25}; start CPAP if available.
c) If BP > 100 mmHg systolic:
   a. **Nitroglycerine 0.4 mg SL**, repeat every 3-5 minutes;
      Consider **Nitroglycerine 5 mcg/min IV/IO drip**, titrating to effect. **<u>Do not administer nitroglycerine without OLMC approval if pt has taken Viagra® (Sildenafil), Levitra® (Vardenafil) or other similar drugs in the last 24 hours, or Cialis® (Tadalafil) within the last 48 hours</u>**.
   b. **Morphine 2-5 mg IV/IO**.
d) If BP < 100 mmHg systolic, treat possible cardiogenic shock per Shock protocol. **Levophed IV/IO**; stop NTG Drip/Spray until BP > 100 systolic.

3. <u>COPD</u>

a) **DuoNeb** (Albuterol 2.5 mg & Atrovent 0.5 mg) via nebulizer.
b) Repeat with **DuoNeb x 2** or **Albuterol 2.5 mg only via nebulizer** every 10 minutes. Discontinue if pt. develops chest pain or increased tachycardia.
c) Consider **Dexamethasone (10 mg)** or **Methylprednisolone (125 mg) IV/IO or IM** for moderate to severe respiratory distress.
d) Consider CPAP if available with ongoing nebulization.
   If pt. deteriorates or continuous nebulizer treatment is needed contact OLMC for advice.

4. **Asthma**
    1. **DuoNeb** via nebulizer- (Albuterol 2.5 mg & Atrovent 0.5 mg).
    2. Repeat with **DuoNeb x2** or **Albuterol only via nebulizer**- (Albuterol 2.5 mg).
    3. If patient is deteriorating and < 40 years old consider **Epinephrine 1:1,000. Adult: 0.5 mg IM**; may repeat every 10 min up to 3 doses. Contact OLMC for additional doses, patients > 40 years old and/or if a past medical history of CAD.
    a. With diminished perfusion or shock symptoms, consider:
        i. **1:100,000 Epinephrine 0.5 mg slow IV/IO.** Make 1:100,000 by diluting 1 mg 1:1,000 in a 100cc bag of NS or LR. Give 50cc. May repeat every 5 minutes to maintain BP of 90 mmHg systolic. Treat per Shock protocol.
    4. If transport time is long and asthma is severe, contact OLMC for consideration of **Magnesium Sulfate** (usual dose is 1-2 grams diluted to 10cc in NS IV/IO). Administer slowly. (Contraindicated in the hypotensive pt.).
    5. Consider **Dexamethasone (10 mg)** or **Methylprednisolone (125 mg) IV/IO or IM** for moderate to severe respiratory distress.
    6. Consider CPAP if available with ongoing nebulization.

If continuous nebulizer treatment is needed during transport (which may be necessary in some pediatric patients) contact OLMC for advice.

PEDIATRIC PATIENTS:

A. Upper Airway - Foreign Body/Croup/Epiglottitis/Anaphylaxis

1. Treat anaphylaxis and foreign body obstruction per adult guidelines.
2. In patients 6 months to 6 years of age with audible stridor at rest, give **3 ml Epinephrine 1:1,000 via nebulizer**. Contact OLMC for additional dosing.
3. Consider corticosteroid administration: **Dexamethasone 0.6 mg/kg** or **Methylprednisolone 2 mg/kg** if IV/IO/IM established not to exceed adult dosaging.
4. The usual cause of respiratory arrest in children with croup, epiglottitis or laryngeal edema is exhaustion, not complete obstruction. If the child with suspected upper airway compromise deteriorates, you may still be able to ventilate with a BVM. Only attempt intubation if you cannot effectively ventilate with BVM.
5. If complete obstruction is present and you cannot effectively BVM ventilate the patient and the patient is deteriorating, consider needle cricothyrotomy.

B. Lower Airway – Asthma/Bronchiolitis/Pneumonia

1. For Bronchiolitis, consider nasal lavage with saline flush/humidified oxygen and suctioning of the nares for improved oxygenation.
2. All: Give **DuoNeb and Albuterol** as indicated per adult guidelines.
3. If patient is deteriorating give **1:1,000 Epinephrine 0.01 mg/kg IM** every 15 minutes (max single dose 0.3 mg) up to 3 doses. Contact OLMC for additional doses.
    a. With diminished perfusion or shock symptoms, consider:
        i. **1:100,000 Epinephrine 0.01 mg/kg slow IV/IO.** Make 1:100,000 by diluting 1 mg of 1:1,000 in 100cc bag of NS or LR. May repeat prn every 5 minutes.

4. Consider corticosteroid administration: **Dexamethasone 0.6 mg/kg** or **Methylprednisolone 2 mg/kg IV/IO/IM** for moderate to severe distress.
5. If patient has Moderate to Severe asthma based on Severity Assessment Guide and is not improving with treatment contact medical control.
6. If transport time is long and asthma is severe, contact OLMC for consideration of **Magnesium Sulfate** (usual dose is 50 mg/kg diluted to 10cc in NS IV/IO). Administer slowly over 20 minutes. (Contraindicated in the hypotensive pt.).

C. CNS Respiratory Problem

1. Treat underlying cause if known (eg drug overdose or toxin)
2. Supportive care as needed for traumatic or medical causes of coma

NOTES & PRECAUTIONS:

A. In addition to specific interventions for respiratory distress, aggressive airway management, including early intubation, is appropriate for the patient who does not respond to treatment or is rapidly deteriorating.

B. The best indicator for the cause of respiratory distress is past history. If a person has had COPD or CHF in the past, it is likely the person has the same condition again.

C. In cases of tachypnea it is essential to consider all causes such as pulmonary embolus, hypoxia, cardiac causes, infection and trauma. Hyperventilation may be a response to an underlying medical problem and should only be considered after these other causes have been excluded. Do not treat hyperventilation by rebreathing CO2. Reassurance and oxygen via mask are appropriate.

KEY CONSIDERATIONS:

Speed of onset, recent illness/infection, fever, chills or productive cough, medications and allergies, distended neck veins, peripheral edema, lung sounds, medical history (including asthma, CHF, COPD, pneumonia)

ASTHMA SEVERITY ASSESSMENT GUIDE			
	MILD	**MODERATE**	**SEVERE**
Short of breath	Walking	Talking	At rest
Able to speak	In sentences	In phrases	In words
Heart rate	< 100	100 - 120	> 120
Respiratory rate	Elevated	Elevated	> 30
Lung sounds	End expiratory wheezes	Full expiratory wheezes	Wheezes both phases or absent
Accessory muscle use	Not usually	Common	Usually
Alertness	Possibly agitated	Usually agitated	Usually agitated
ETCO2	20 - 30	30 - 40	>50