MEDICAL CONTROL GUIDELINE: AIRWAY MANAGEMENT/MONITORING

PRINCIPLES:

1. Techniques and procedures utilized for airway management may vary based on operational environment, patient condition and the EMS personnel's level of training and expertise.

2. Basic airway maneuvers and adjuncts (suctioning, body repositioning, head-tilt chin-lift, jaw thrust, bag-valve-mask ventilation, and oral/nasal airway) in many cases effectively support ventilation to provide adequate ventilation and oxygenation.

3. Advanced airway maneuvers (endotracheal intubation, insertion of a supraglottic airway device - King LTS-D) are invasive airway adjuncts for apnea, agonal respirations, absent gag reflex and/or compromised ventilatory effort. Advanced airway tube placement must be verified and continually monitored.

4. Waveform capnography is a sensitive indicator of perfusion status as well as an effective tool to monitor airway management.

GUIDELINES:

1. If pulse oximetry is not available (BLS Unit) and the patient is in mild or moderate respiratory distress, provide oxygen (O_2) with nasal cannula at 2-6 liters per minute.

2. When available, use pulse oximetry to guide oxygen therapy. The desired oxygen saturation (SpO_2) for most non-critical patients is 94 – 98%.

3. Initiate oxygen O_2 therapy and titrate as follows:

   a. Stable patients with mild hypoxia (SpO_2 less than 94%) – start O_2 with nasal cannula at 2-6 liters per minute or basic mask at 8-10 liters per minute

   b. Patients unable to tolerate nasal cannula or basic mask – use blow-by technique using the following:

      - Adult – 10-15 liters per minute
      - Infant/Child – 6-10 liters per minute
      - Newborn – 5 liters per minute

   c. Critical patients (those with impending or actual respiratory or cardiopulmonary arrest) – **O_2 should not be withheld in any critical patient**, start O_2 using the appropriate O_2 delivery system based on the patient's condition:

      - Non-rebreather mask – 12-15 liters per minute
      - BVM with reservoir – 15 liters per minute
      - Endotracheal tube – 15 liters per minute
      - King LTS-D airway – 15 liters per minute
      - CPAP – Refer to Ref. No. 1312

   d. Special Considerations:
      - Chronic Obstructive Pulmonary Disease (COPD) – goal SpO_2 is 88 – 92%
      - Carbon Monoxide Poisoning – goal SpO_2 is 100%

- Newborns in need of positive-pressure ventilation – ventilate for 90 seconds with room air, if heart rate remains less than 100 beats per minute, start O_2 at 15 liters per minute
- Traumatic Brain Injury - goal SpO_2 is 100%

4. Continue oxygen therapy until transfer of patient care.

5. Monitor and document the SpO_2, oxygen delivery system used and the liters per minute administered.

6. If suctioning is required, pre-oxygenate prior to suctioning. Maintain sterile procedures and do not suction longer than 10 seconds per occurrence.

7. Considerations for oropharyngeal airway:
   - Unconscious
   - Absent gag reflex

8. Considerations for nasopharyngeal airway:
   - Oropharyngeal airway cannot be inserted
   - Spontaneously breathing patients who require assistance in maintaining a patent airway

9. Considerations for bag-valve-mask (BVM) ventilation:
   - Apnea or agonal respirations
   - Compromised ventilatory effort

10. Considerations for endotracheal intubation:
    - Ineffective ventilation with BVM
    - Prolonged transport time
    - Unprotected airway
    - Pediatric patients 12 years of age or older **or** height greater than the length of the pediatric resuscitation tape.

11. Considerations for rescue airway (King LTS-D)
    - Unsuccessful attempts (maximum three attempts) at endotracheal intubation
    - Suspected difficult airway based on assessment and anatomical features

12. Verify endotracheal tube or rescue airway placement. Document the methods used for placement verification which should include a combination of:
    - Capnography
    - End-tidal CO_2 detector
    - Bilateral lung sounds
    - Bilateral chest rise
    - Absent gastric sounds
    - Esophageal detector device (EDD)

13. Continuously assess ventilation status and monitor waveform capnography of all patients requiring bag-valve-mask ventilation or advanced airway placement. Report capnography reading to the base hospital and document capnography reading as follows:
    - Every five minutes during transport
    - After any patient movement
    - Upon transfer of care
    - Change in patient condition