Oxygen Administration

Assuring adequate patient oxygenation is a fundamental responsibility of EMS providers at all levels. Supplemental oxygen, when clinically indicated and through the proper delivery system, can have an important impact on patient outcome.

Indications

1. Real or suspected hypoxia
2. Patients in respiratory or cardiac arrest
3. Respiratory distress
4. Stroke, seizures, or altered mental status when pulse oximetry is unavailable or when oxygen saturation is less than 94%
5. Chest pain and acute coronary syndrome patients less than 90%.
6. General trauma (more than isolated trauma). Regardless of pulse oximeter reading, all patients with significant trauma should receive oxygen administration.
7. Shock
8. Suspected carbon monoxide and/or cyanide poisoning (including smoke inhalation) regardless of pulse oximetry value
9. Complicated childbirth
10. Patients who normally use supplemental oxygen as part of their routine care
11. Any condition in which pulse oximetry (when available) is <94%.

Contraindications

1. There are no absolute contraindications to oxygen administration.
2. In general, supplemental oxygen should be guided by pulse oximetry (when available) to maintain oxygen saturations ≥94%
    a. Acute Coronary Syndrome patients maintain ≥90%
3. Patients with COPD may develop a hypoxic drive to breathe. High concentrations of oxygen may suppress their respiratory drive. Oxygen should still be administered when clinically indicated. Providers should monitor for respiratory depression and assist ventilations when indicated.

Procedure

1. Assure the patient has an adequate airway or establish an airway in accordance with the **7.9 Airway Management-Procedure Protocol** and whenever possible the patient's head should be elevated up to 30 degrees**.**
2. In spontaneously breathing patients administer supplemental oxygen by appropriate means.
    A. Nasal cannula at 2-6 LPM: This is appropriate for most patients with mild to moderate hypoxia and minimal or no respiratory distress. Most patients tolerate nasal cannulas.
    B. Non-rebreather (NRB) mask at 10-15 LPM (adjust flow rate to keep reservoir bag inflated). A NRB should be used on all spontaneously breathing patients with moderate to severe respiratory distress and all patients with suspected carbon monoxide and/or cyanide poisoning (e.g., smoke inhalation).
    C. If continuous positive airway pressure (per **7.5 CPAP-Procedure Protocol**)

is utilized, using a nasal cannula to supplement oxygenation while a patient is on CPAP is acceptable, if seal remains adequate.

3. In patients not breathing or breathing inadequately
    A. Use a bag-valve-mask with two rescuers when available to provide ventilations with oxygen connected at 15 LPM. See **7.9 Airway Management-Procedure Protocol.**
        i. Maintain face seal with one rescuer with two hand technique.
        ii. Utilize second rescuer to ventilate every six seconds.
    B. Passive oxygenation via nasal cannula may be used to augment bag-valve-mask ventilations before advanced airway placement.
4. Augment rapid but ineffective respiration with BVM and/or CPAP as applicable.
5. Pediatric “blow-by” oxygen is an ineffective means of delivering supplemental oxygen to pediatric patients and should be avoided when possible. Pediatric nasal cannulas are well tolerated by most children. When using, blow-by technique, keep mask as close to face as possible and use high flow (e.g., ~15 LPM).
6. When caring for patients with stomas, use pediatric size masks.