I. Subject:

Oxygen Therapy Protocol

II. Purpose:

To optimally oxygenate patients, the respiratory care practitioner will utilize the following protocol to evaluate, treat and monitor appropriate oxygen administration for all non-mechanically ventilated patients.

III. Patient Type:

All patients determined to meet oxygen therapy indicated as outlined in this protocol.

IV. Clinical Area:

All patient care areas.

V. Equipment Needed:

Pulse oximeter

VI. Lab Data Needed:

Recent ABG’s and chest X-Ray

VII. Overview:

Oxygen Therapy  Assess patient   Select appropriate oxygen  Re-evaluate
order received  oxygenation  therapy modality and FIO2

VIII. Protocol:

The following guidelines will be followed in determining the indications for oxygen therapy and for selection of appropriate oxygen therapy delivery devices.

A. Indications for oxygen therapy include:

1. Documented hypoxemia- PaO2 < 65 mmHg or SpO2 < 92% in adults, or PaO2 < 50 mmHg or SpO2 < 88% in neonates.

2. An acute care situation associated with suspected tissue hypoxia (e.g. pulmonary edema, drug overdose, or carbon monoxide poisoning).

3. Clinical signs or symptoms of tissue hypoxia (e.g. tachycardia, tachypnea, dyspnea, cyanosis, diaphoresis, confusion or chest pain).

5. Other medical emergency situations may include:

   a. Acute pulmonary disorders including-
      i. adult respiratory distress syndrome
      ii. acute pulmonary embolism
      iii. aspiration pneumonitis
      iv. near drowning
      v. acute asthma
      vi. acute exacerbation of COPD
      vii. acute pneumonia
      viii. acute bronchiolitis
      ix. newborn respiratory distress syndrome

   b. Other medical/surgical emergencies include:
      i. acute congestive heart failure
      ii. drug overdose
      iii. head and blunt chest trauma
      iv. hepatic failure
      v. acute pancreatitis
      vi. shock
      vii. post-seizure

B. Guidelines for selection of appropriate oxygen delivery devices:

1. High flow versus low flow oxygen therapy systems.

   a. High flow systems will provide adequate flow of oxygen to meet/exceed patients inspired flow rate needs.

   b. Low flow systems will only provide flow of oxygen to supplement the patient's inspired flow rate needs.

   c. Criteria for use of a Low Flow System:
      i. VT: 300-700 ml
      ii. respiratory rate < 25 bpm
      iii. regular ventilatory pattern
      iv. FIO2 < .45
d. Criteria for use of a High Flow System:
   i. FIO2 > .45
   ii. VT < 300 ml
   iii. Evidence of alveolar hypoventilation with CO2 retention

e. Respiratory rate > 25 bpm

2. Types of Low Flow Devices:
   a. Cannula
      i. Delivers FIO2 approximately 24% to 45%
      ii. Most appropriate initial device for COPD patients
   b. Simple Oxygen Mask
      i. Delivers FIO2 .40 to .60
   c. Partial Rebreather Mask
      i. Delivers FIO2 .50-.80

3. Types of High Flow Devices:
   a. Non rebreather mask
      i. Delivers FIO2 .85-.95+
   b. Venturi Mask
      i. Delivers FIO2 .24-.50

4. Humidification:
   a. All low flow oxygen administration devices will require supplemental bubble humidifiers if flow exceeds 3 l/min.

C. Titration of FIO2:
   1. Observe oxygen saturation SpO2 > 92% (desired level may be higher or lower—see section on Special Considerations).
   2. Observe absence of clinical signs of symptoms of hypoxia.
3. As long as SpO2 is ≥ 92%, FIO2 may be decreased by 0.05-0.10.

4. Continue to decrease FIO2 in 0.05-0.10 increments allowing 15-30 minutes for stabilization, until a stable SpO2 measurement ≥ 92% is achieved.

5. FIO2 decreases to be made Q8 hour or sooner if so ordered by physician.

6. The patient may have their oxygen discontinued upon completion of this protocol if the following criteria are met:
   a. Able to maintain SpO2 ≥ 92% on room air.
   b. Stable vital signs.

7. Document of changes and physician notification of D/C.

D. Assessment of Outcome:

1. Absence of clinical signs of symptoms of hypoxia.
   a. SpO2 is ≥ 92% or PaO2 ≥ 65 in adults, SpO2 ≥ 88% or PaO2 ≥ 50 in neonates.
   b. Respiratory rate ≤ 30.
   c. Heart rate ≤ 120 BPM.
   d. Mucosal color pink.
   e. Patients sensorium normal to improved.

2. Absence of acute episode associated with tissue hypoxia.
   a. Pulmonary edema resolved.
   b. Carboxyhemoglobin within normal limits.
   c. Improved Chest X-Ray.

IX. Special Considerations:

A. In patients with documented or suspected chronic CO2 retention, the acceptable range for oxygen saturation SpO2 is 88%-92%.
B. In patients with acute myocardial decompensation (CHF, acute myocardial) oxygen delivery should be titrated to achieve SpO2 > 94%.

X. Guidelines/Warnings:

Monitor patients vital signs and evaluate patients clinical status. Do not continue titration process if patient develops-

1. A pulse > 120 bpm, or if adjustment of FIO2 results in pulse increase of 20 bpm.
2. Significant EKG change, e.g. onset of arrhythmias or ischemic morphology.
3. A change in sensorium occurs, e.g. confusion, lethargy, etc.
4. A respiratory rate > 30
5. Clinical signs and symptoms of hypoxia.

*Note- If patient is not tolerating FIO2 titration process, return patient to previous FIO2 setting, reassess patient, and continue as tolerated. If FIO2 > .50 is required, contact physician.

XI. Clinical Responsibilities:

A. Initiation of oxygen therapy will be performed following assessment of indications and upon the written order of a physician. Oxygen therapy may be initiated by respiratory therapy or nursing personnel as part of an approved treatment protocol or in the case of a clinical emergency in which hypoxia is suspected.

B. Changes in FIO2 will be adjusted by respiratory care practitioner or other qualified nursing service personnel.

C. All oxygen titrations should be documented and communicated to the nurse in charge of the patient.

C. If, during the titration period, the patient exhibits persistent difficulty in maintaining acceptable SpO2 > 92%, the respiratory care practitioner will place the patient back on their last FIO2 setting which met the criteria for acceptable SpO2 or PaO2.
REFERENCES


REFERENCES (continued)