

PULSE OXIMETRY

INTRODUCTION:

The use of pulse oximetry aids in the assessment of respiratory function in the field. The pulse oximeter allows for non-invasive monitoring of oxygen saturation (the percent of hemoglobin saturated with oxygen; referred to as SaO₂ or O₂ sat. A normal SaO₂ for healthy individuals is 95-100%. A low ($\leq 93\%$) or falling SaO₂ indicates that the airway or ventilatory status may be compromised.

INDICATIONS:

1. Respiratory distress/complaints
2. Cardiac problems
3. Multiple system trauma
4. Poor color
5. Patients requiring use of airway adjuncts and/or assisted ventilations
6. Suspected shock
7. Altered level of consciousness

PRECAUTIONS:

1. Patients with hemoglobin disorders such as CO poisoning, anemia, and methemoglobinemia may give artificially high SaO₂ readings. Readings in such patients should be interpreted with extreme caution. Contact medical control in these situations.
2. Pulse oximetry readings may be difficult to obtain in states of low perfusion.

PROCEDURE FOR PATIENTS WITH SaO₂ < 90% OR FALLING SaO₂:

1. Check airway and manage as indicated. Consider Oxygen or CPAP if indicated.
2. Increase oxygen delivery (increase liter flow) and/or assist ventilation.
3. Remember to treat the patient and not the pulse oximeter. Look for extended capillary refill/cyanosis in the fingertips and earlobes or cyanotic lips.
4. Check pulse oximetry device placement. Possible causes of inaccurate readings include:
 - A. Excessive probe movement
 - B. Optical interference by bright light (direct sunlight, fluorescent and xenon arc lighting). Cover the sensor.
 - C. Poor waveforms/signals (hypovolemia, hypothermia, profound hypotension, or vasoconstriction)
 - D. Artificial fingernails and certain dark colored nail polishes may interfere with use.

PEDIATRIC CONSIDERATIONS:

1. Special probes may be required to obtain readings in pediatric patients.

SPECIAL NOTES:

1. **May be used by Basic, Basic-IV, Intermediate 99 and Paramedic/RN personnel.**
2. Best probe site in adults is usually the middle fingertip with nail polish removed.
3. Attempt to obtain and document pulse oximetry readings before and during oxygen therapy.
4. The use of pulse oximetry as a vital sign is encouraged, as the oximeter may be helpful in detecting hypoxia not evidenced by signs or symptoms. However, remember to treat the patient and not the monitor.

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