



## Section 14: Appendix 2: Medical Procedures

### SECTION 14: PULSE OXIMETRY

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

INDICATIONS	SIGNS AND SYMPTOMS	PRECAUTIONS
<ul style="list-style-type: none"> <li>• Patients with suspected hypoxemia.</li> <li>• All cases of respiratory distress</li> <li>• For the treatment of primary respiratory or cardiac disease</li> <li>• All cases of altered or depressed level of consciousness</li> <li>• Drug overdoses</li> <li>• Any patient requiring intubation or BVM support</li> <li>• Major trauma</li> <li>• Smoke Inhalation (may not be accurate due to CO)</li> <li>• Any patient on home oxygen, home ventilator, or BiPAP</li> </ul>	<ul style="list-style-type: none"> <li>• Dyspnea</li> <li>• Tachypnea</li> <li>• Tachycardia</li> <li>• Bradycardia (late sign in adults)</li> <li>• Altered mental status</li> <li>• Pallor, cyanosis</li> <li>• Diaphoresis</li> <li>• Prolonged capillary refill</li> <li>• Accessory muscle use</li> <li>• Abnormal breath sounds</li> </ul>	<ul style="list-style-type: none"> <li>• Poor perfusion; must be applied with good perfusion</li> <li>• Patients with history of anemia</li> <li>• Patients with suspected high carboxyhemoglobin / methemoglobin (CO poisoning, smoke inhalation, heavy cigarette smokers)</li> </ul>

#### PROCEDURE

1. Turn the machine on and allow for self-tests.
2. Apply probe to patient's finger or any other digit as recommended by the device manufacturer.
3. Allow machine to register saturation level.
4. Record time and initial saturation percent on room air if possible on the patient care report (PCR).
5. Verify pulse rate on machine with actual pulse of the patient.
6. Monitor critical patients continuously until arrival at the hospital. If recording a one-time reading, monitor patients for a few minutes as oxygen saturation can vary.
7. Document percent of oxygen saturation every time vital signs are recorded and in response to therapy to correct hypoxemia.
8. In general, normal saturation is 97 - 99%. Below 94%, suspect a respiratory compromise.
9. Use the pulse oximetry as an added tool for patient evaluation. Treat the patient, not the data provided by the device.
10. The pulse oximeter reading should never be used to withhold oxygen from a patient in respiratory distress or when it is the standard of care to apply oxygen despite good pulse oximetry readings, such as chest pain.
11. Factors which may reduce the reliability of the pulse oximetry reading include:
  - Poor peripheral circulation. (blood volume, hypotension, hypothermia)
  - Excessive pulse oximeter sensor motion.
  - Fingernail polish. (may be removed with acetone pad)
  - Carbon monoxide bound to hemoglobin.
  - Irregular heart rhythms. (atrial fibrillation, SVT, etc.)
  - Jaundice.
  - High ambient light. (washes out the sensors light)

**All patients who require vital signs to be taken should have oxygen saturation measured and recorded as part of the vital signs.**

**Measure oxygen saturation before applying oxygen and repeat the measurement after oxygen has been applied. Do not delay oxygen administration in patients experiencing severe respiratory distress.**



## Section 14: Appendix 2: Medical Procedures

### SECTION 14: PULSE OXIMETRY-Cont.

E	EMT	E
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TREATMENT GUIDELINES		
SPO2 READING	INTERPRETATION	ACTION
100% TO 95%	Ideal Range	No supplemental oxygen is needed
95% TO 90%	Mild to Moderate Hypoxemia	Check airway, start oxygen therapy via nasal cannula @ 4 - 6 lpm
90% TO 85%	Severe Hypoxemia	Check airway, start aggressive oxygen therapy, high flow oxygen via nonrebreather mask @ 15 lpm. Consider bag valve mask ventilation with 100% oxygen if the patient does not have adequate ventilations.
85% OR LESS	Respiratory Failure	Prepare to intubate or assist ventilations with 100% oxygen and bag valve mask

KEY POINTS
<ul style="list-style-type: none"> <li>• 100% oxygen should be administered to all patients despite a good SpO<sub>2</sub> if they are hypoxic.</li> <li>• Make sure that all dirt and nail polish or any obstructive covering is removed to prevent the unit from giving a false reading.</li> <li>• Attempt to obtain a room air reading and a reading with supplemental oxygen.</li> <li>• DO NOT read while B/P being taken. May give false readings.</li> <li>• Oxygen saturation measurements must routinely be recorded as part of the run report. Include those measurements taken as part of routine vital signs and those measurements taken before and after oxygen administration.</li> <li>• Although the pulse oximeter displays the heart rate, the unit should not be used in place of a physical assessment of the heart rate.</li> <li>• Oxygen saturation readings may be inaccurate in any situation where the flow of blood through the finger is impaired, such as:             <ul style="list-style-type: none"> <li>• Hypotension or shock with poor peripheral perfusion</li> <li>• Peripheral vascular disease</li> <li>• Extremity injury with restriction of peripheral perfusion</li> <li>• Cold extremities</li> </ul> </li> <li>• Oxygen saturation readings may be incorrectly high in situations such as carbon monoxide poisoning.</li> <li>• Many patients with COPD have chronic low oxygen readings and may lose their respiratory drive if administered prolonged high oxygen therapy. Routinely assess pulse oximetry as well as respiratory drive when administering oxygen to these patients. Do not withhold oxygen from any patient that requires it.</li> <li>• The room air pulse oximetry reading is NOT required if the patient has been placed on supplemental oxygen prior to EMS arrival.</li> <li>• Pulse oximetry is NOT an indicator of myocardial or cerebral perfusion. Give oxygen regardless of Spo<sub>2</sub> to AMI or stroke patients.</li> </ul>