

PULSE OXIMETRY

1. Level: EMT, AEMT, Paramedic, RN
2. Purpose: SpO₂ monitors display a digital readout showing an estimate of the amount of saturated hemoglobin. Pulse Oximetry measures two light frequencies, red and infrared and compares how much of each frequency is absorbed in order to obtain a reading.
 - 2.1. Normal SpO₂ readings:
 - 2.1.1. adult >95%
 - 2.1.2. children >96%
3. Indications:
 - 3.1. Any patient requiring monitoring of oxygenation status
 - 3.2. Mechanical ventilation
 - 3.3. Oxygen administration
 - 3.4. Assessing oxygenation during patient assessment
4. Caution: Do not withhold oxygen based upon a SpO₂ reading when signs and symptoms of hypoxia are present (treating the monitor instead of the patient). The SpO₂ reading is affected by many outside factors such as fever, acidosis and alkalosis. Because of this, it is possible to get a reading above 95% and still be hypoxic, always treat the patient, not the monitor.
5. Procedures:
 - 5.1. Use extremity not being used for BP if possible
 - 5.2. Body Substance Isolation (BSI)
 - 5.3. Gather and assemble necessary equipment: (alcohol preps, pulse oximetry unit and sensor)
 - 5.4. Clean selected probe area with alcohol
 - 5.5. Connect oximetry sensor to patient
 - 5.5.1. The reusable sensor should be used to capture oxygen saturation
 - 5.5.1.1. If you are unable to capture a reading or waveform using the reusable sensor, try to shield the sensor from light and eliminate excess movement of the patient
 - 5.5.1.2. Use the disposable sensor only if you are unable to capture an oxygen saturation reading and waveform using the reusable sensor and the patient's presentation indicates the need to assess pulse oximetry
 - 5.6. Normal saturation percentage of arterial oxygen (SpO₂) should be > 95% for average patient.
 - 5.7. If SpO₂ falls more than 10 %, investigate possible causes for decrease:
 - 5.7.1. Respiratory failure (CHF, mechanical, circulatory, etc.);
 - 5.7.2. Improper ET tube placement;
 - 5.7.3. Pressure changes (altitude in aircraft); or
 - 5.7.4. Sensor failure:
 - 5.7.4.1. poor contact;
 - 5.7.4.2. circulatory compromise (shock, ASCVD, etc.);
 - 5.7.4.3. excessive movement;
 - 5.7.4.4. excessive lighting at site;
 - 5.7.4.5. dirty or bloody site or sensor
 - 5.7.4.6. devices constricting extremity (BP cuff, clothes, etc.); or
 - 5.7.4.7. hypothermia
 - 5.7.4.8. broken sensor/cable

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- 5.8. Monitor cardiac rhythm.
- 5.9. Match SpO₂ monitor with pulse rate.
- 6. Other causes of false readings:
 - 6.1. anemia
 - 6.2. carbon monoxide poisoning
 - 6.3. sickle cell
 - 6.4. artificial fingernails/ nail polish
 - 6.5. bright Lights
 - 6.6. edema
 - 6.7. peripheral vascular disease
 - 6.8. do not use any extremity that has an AV fistula (dialysis shunt)