



# PULSE OXIMETER (SA02)



## Escambia County, Florida - ALS/BLS Medical Protocol

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Pulse oximeters are used for the detection of hypoxemia in arterial oxyhemoglobin.

Peripheral oxygen is obtained by placing a sensor probe on the peripheral capillary bed.

The calculated SpO<sub>2</sub> on the pulse oximeter correlates with the partial pressure of oxygen contained in the blood (SaO<sub>2</sub>). A normal SpO<sub>2</sub> reading on room air is 95-100%.

The following guidelines will be used for measuring the severity of respiratory distress when the patient is on room air (prior to oxygen administration):

The paramedic should assess the clinical condition of the patient and correlate it with the pulse oximeter readings.

### Indications

1. Patients complaining of history of:
  - a. Respiratory distress or disease.
  - b. Cardiac conditions.
  - c. Neurologic problems.
2. To monitor distal Oxygenation of extremity fractures and dislocations.
3. All patients treated and/or transported with Oxygen.
4. All patients presenting with altered mental status.

### Causes of False High Readings

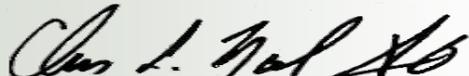
1. **Carbon monoxide poisoning** - Elevated carboxyhemoglobin is known to falsely elevate saturation readings since carboxyhemoglobin modulates light similar to oxyhemoglobin as it passes



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through the tissue.

2. **Trauma** - While the SpO<sub>2</sub> may be normal, due to the hemorrhage, the blood is not available to transport the oxygen to the cells. SpO<sub>2</sub> measures saturation and not perfusion. Due to decreased hemoglobin, the patient remains hypoxic, even though the SpO<sub>2</sub> reading may be normal.

### Causes of False Low Readings

1. **Deeply pigmented patients** - These patients may have diminished light transmission.
2. **Nail polish or fake nails** - Nail remover should be used to remove nail polish.
3. **Patient Movement.**
4. **Low blood flow states** (e.g. severe hypotension, cardiac arrest, etc.) will cause the pulse oximeter to not register.

### Types of Sensors

1. **Clip Adult Digit Oxygen Transducer** - used for quick "spot checks" of patients 8 years old and above.
2. **Tape Adult Digit Oxygen Transducer** - used for continuous monitoring of patients 8 years old and above.
3. **Tape Pediatric Digit Oxygen Transducer** - used for continuous monitoring of patients below the age of 8 years old.
4. **Tape Adult Nasal Oxygen Transducer** - used for continuous monitoring of patients 8 years old and above. Measures cerebral oxygen saturations only.



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### Procedure

1. Attach appropriate sensor to patient. Turn unit on. Remove nail polish on finger being used for pulse oximeter sensor.
2. A valid reading is indicated by a continuous accurate reading of pulse rate and consistent steady percent saturation reading.
3. If unit is equipped with a printer, print the saturation reading.
4. Oxygen therapy should be guided by the pulse oximeter percent SaO<sub>2</sub> reading and the ALS protocols. Remember that, in general, a 90% SaO<sub>2</sub> corresponds to a PO<sub>2</sub> of 60mmHg, a minimum acceptable level.
5. Apply appropriate amount of oxygen according to ALS protocols. Contact supervising physician for further guidance.
6. Document the saturation and give the reading in the encode. Type of sensor used, and sensor placement should be documented on the rescue report. Save strip for documentation purposes.



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