

## Pulse Oximeters

The pulse oximeter is a physician-ordered non-invasive piece of equipment used to measure the oxygen saturation level in the blood. The pulse oximeter consists of the machine and the pulse oximeter probe. One end of the probe is connected to the machine and the other end (the probe) is placed on the child. There are different types of probes, which can be used based on the child's size and mobility.

A light source on one side of the probe passes through the child's skin and tissue. The light is absorbed by oxygen saturated hemoglobin molecules and is interpreted by a sensor on the opposite side of the light source. The oxygen saturation number (spO<sub>2</sub>) reflects the amount of oxygen saturated hemoglobin molecules present. The oxygen saturation number will be lower in the child with less oxygen saturated hemoglobin molecules and higher in the child with more oxygen saturated hemoglobin molecules.

### Pulse Oximeter Components

- Pulse oximeters display a read out of the oxygen saturation and heart rate.
- Some models have high and low alarms available for the heart rate and the oxygen saturation.
- Some electric powered oximeters have a battery powered backup supply.
- Refer to the manufacturer's manual for:
  - Proper use and probe placement.
  - Trouble shooting.
  - Battery power time usage.
  - Alarm limit setting.
  - Pulse volume output adjustments.
  - Alarm silencing.

### Considerations for Use of Pulse Oximeters

- An oximeter may be used for continuous or intermittent monitoring. A portable battery-operated pulse oximeter can be used for spot checks, hourly checks, switching oxygen sources, during times of distress, and during routine respiratory assessments.
- The physician will order when the oximeter should be in use and what the acceptable oxygen saturation value is for the child, usually in the mid to high 90's, for most children. However, acceptable oxygen saturation levels may be lower for some children with chronic lung conditions or congenital heart disease.
- The pulse oximeter may be used in home care when the child with respiratory conditions and equipment first comes home, for intermittent assessment, to verify stabilization after increase or decrease in oxygen flow or respiratory distress, and when trying to wean the child from oxygen, a tracheostomy tube and/or ventilator equipment.

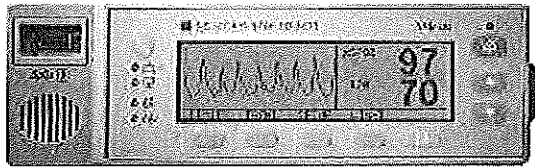
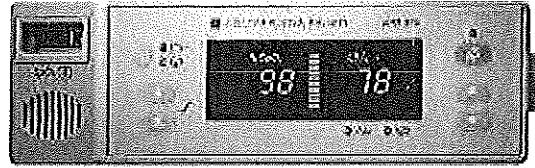
- The electric powered oximeter can be used continuously i.e., during sleep or if the child is sick causing respiratory problems. It can also be used as described above when a portable monitor is not available.
- The pulse oximeter probe can be placed on the child's big toe, the outside of the foot, the finger, ear lobe, or the thumb. The oximeter probe can be taped to secure the probe and wire for stability.
- The child's pulse should be taken if accuracy of the oximeter or probe is in question. If the child's pulse matches the heart rate readout on the oximeter, the spO2 level should be accurate; if not, readjust the probe site.
- Electric/battery powered oximeter should be plugged into an electrical outlet so the battery is maintained for when needed.

### **Battery-Powered Oximeter:**

- A battery-powered oximeter must accompany the child while traveling outside the immediate care area.
  - Battery-powered oximeters operate on the same principle as the electric machines except for a different power source. The battery powered machine is available in AC/DC and with a cigarette lighter adapter.
- Use the cigarette lighter adapter when on a long trip instead of the battery.
- The battery-powered oximeter should be plugged into a grounded electric outlet until needed.
- The battery-powered oximeter should not be left in the car trunk on hot days. Heat will damage a battery in any type of machine.
- Spare batteries must be available.

It is important to remember that some insurance companies will not pay for pulse oximeter use except for spot checks. The physician has to write a letter of medical necessity with documented desaturations and the reason for requesting the equipment.

Some insurers require interval saturation monitoring by the physician in the office/clinic, not the HME company or home nurse. This is to justify continued use of oxygen and avoid falsification by the providing agency.



**Pulse Oximeters**



**Pulse Oximeter Probes**