



## Critical Care Therapy and Respiratory Care Section

Category:	Clinical
Section:	Clinical Monitoring
Title:	Overnight Pulse Oximetry
Policy #:	08
Revised:	03/00

### 1.0 DESCRIPTION

#### 1.1 Definition

- 1.1.1 A pulse oximeter is a completely non-invasive device for providing an estimate of arterial oxyhemoglobin saturation ( $\text{SaO}_2$ ) by utilizing selected wavelengths of light to determine the saturation of oxyhemoglobin ( $\text{SpO}_2$ ). The oximeter's lightweight sensors, designed for ease of use with various types of patients, allow non-invasive optical absorption measurements of pulsing arterial blood. The sensors take measurements by optical means alone. There is no heat source that may burn the patient. The light source consists of two light-emitting diodes operating at minimal power levels.
- 1.1.2 The pulse oximeter is a portable, bedside monitor that is electrically powered or battery operated.
- 1.1.3 The pulse oximeter conveys, both audibly and visually, the results of measurements of oxygen saturation and pulse rate; the two digital displays give a continuous readout that updates with each heartbeat. A qualitative indication of the strength of the pulse is represented by either a vertical light bar, known as a perfusion indicator, or a plethysmographic waveform.
- 1.1.4 The pulse oximeter provides preset or manually set alarms for high and low oxygen saturations and heart rate.
- 1.1.5 The oximeter will not make a measurement unless the patient's perfusion is adequate to provide the data needed for accuracy. The perfusion indicator, the vertical light bar or plethysmograph, provides an indication of patient perfusion.

## 1.2 Goal

- 1.2.1 To monitor, during sleep, both audibly and visually, adequate patient oxygenation and to obtain a report of the trends. Because the pulse and oxygen saturation can be updated with every heartbeat, there is an immediate indication of any hypoxemic event in which the patient desaturates.

## 1.3 Indications

- 1.3.1 Any patient who appears hypoxic, secondary to a restrictive or obstructive disorder.
- 1.3.2 Patients who have low arterial PaO<sub>2</sub>'s as indicated by arterial blood gas.
- 1.3.3 Patients being evaluated for home oxygen and/or home CPAP use.
- 1.3.4 The need to monitor the adequacy of arterial oxyhemoglobin saturation.

## 1.4 Hazards

- 1.4.1 Electrical precautions should be taken as with any electrically powered equipment. DO NOT immerse the pulse oximeters in water or in any liquid solution.
- 1.4.2 Battery or fuse changes should only be performed by qualified personnel. Only the same type and rating of fuse must be used for replacements to minimize the risk of fire.
- 1.4.3 Cross-contamination of equipment can occur with reusable sensors if they are not properly disinfected.

## 1.5 Precautions

- 1.5.1 The pulse oximeter is calibrated to read arterial hemoglobin oxygen saturation of functional hemoglobin (saturation of hemoglobin functionally available for transporting oxygen to the arteries). Significant levels of dysfunctional hemoglobins such as carboxyhemoglobin or methemoglobin may affect the accuracy of the measurement.
- 1.5.2 The pulsatile saturation measurements are not reliable if a patient's perfusion is insufficient to supply data.

- 1.5.3 Cardiogreen dye and other intravascular dyes may, depending on concentration, affect the accuracy of the measurement.
- 1.5.4 Patient motion may affect sensor performance.
- 1.5.5 Lipid infusion can interfere with sensor performance.

## **2.0 EQUIPMENT**

- 2.1 Ohmeda Pulse oximeter
- 2.2 Ohmeda oxisensor/cable with finger probe
- 2.3 33.6 Faxmodem

## **3.0 PROCEDURE (PATIENT SET-UP)**

- 3.1 Verify physician's order for overnight pulse oximeter study
- 3.2 Plug into 120 Volt AC electrical outlet
- 3.3 Connect Ohmeda oxisensor/cable with finger probe
- 3.4 Turn pulse oximeter on (Will do a self-calibration)
- 3.5 View Main Menu – Touch
- 3.6 Touch “Labels” – use the ◀ ▶ and -/+ to scroll through, enter the Patient's full name and MR#, touch ↵ when done.
- 3.7 Touch “Date” – verify that the date and time are correct. Use the ◀ ▶ and -/+ to scroll through and change if needed. Touch ↵ when done.
- 3.8 Touch picture of Waveform
- 3.9 Apply the finger probe to the finger. The index finger is the recommended site. Wrap the finger probe with colored adbau.
- 3.10 Set the SpO<sub>2</sub> and Heart Rate Alarms using the alarm buttons ( to the right of the screen). Set alarms according to the physician's orders.

## **4.0 PROCEDURE (TREND PRINT OUT)**

- 4.1 Connect modem/analog cable to the RS232 connector on the rear of the pulse oximeter

- 4.2 Plug both the pulse oximeter and faxmodem into 120 Volt AC electrical outlets.
- 4.3 Plug the telephone cord into a single-line telephone jack. (Will not dial out on a multi-line jack)
- 4.4 Turn the faxmodem on.
- 4.5 Turn pulse oximeter on.
- 4.6 Press the “Menu” button
- 4.7 Select “Settings”, then “Mode” to choose the trend data (SpO<sub>2</sub>) to be transmitted. Then select ↵
- 4.8 Select “Modem” to display the Modem Status screen.
- 4.9 Choose “Select Data” and select the number of hours of data to be transmitted (ALL), then select ↵
- 4.10 Press “Send”, select “Fax”, then enter the phone number for 10D fax machine (00834).
- 4.11 Then select “Send”. After you select “Send” to transmit a fax, some or all of the following messages may be displayed:
  - 4.10.1 Dialing Remote Fax – modem is dialing the number
  - 4.10.2 Busy – the fax machine is busy. The modem redials the number until the fax machine is no longer busy or until you press “Cancel.”
  - 4.10.3 Connecting – the fax machine has answered the phone
  - 4.10.4 Sending fax – the connection process is complete. A bar graph shows the progress of the transmission. The percentage of data transmitted, the number of pages faxed, and the total number of pages to be faxed are shown below the bar graph. The page is sent again if the fax machine reports poor page quality. The bar graph shrinks accordingly. The percentage sent and the page number reference reflect the new status.
  - 4.10.5 Fax Done – transmission is complete. The modem disconnects the phone line. Press ↵ to display the “Send” screen.
- 4.12 Canceling a transmission – if you select “Cancel” while transmitting data, transmission stops, and the modem disconnects the phone line. When you

cancel a fax transmission, the “Fax Cancelled” message is displayed on the screen and transmitted to the fax machine. Press ← to return to the “Send” screen.

- 4.12 Place trend print-out in the front of the patient’s chart by 8 AM, inform the patient’s nurse that the study/report is completed.

SIGNATURE: \_\_\_\_\_  
Assistant Section Chief, CCTRCS, CCMD

DATE: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_  
Section Chief, CCTRCS, CCMD

DATE: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_  
Medical Director, CCTRCS, CCMD

DATE: \_\_\_\_\_

(Orig. 3/00)