



UNIVERSITY OF NORTH CAROLINA HOSPITALS
Nursing Procedure Manual

TITLE: Ppulse Oximetry

PURPOSE: To outline the steps for applying an oxisensor transducer and setting up/ adjusting a Nellcor pulse oximeter or the Hewlett-Packard (H-P) SaO₂ Module on H-P Component Monitoring System.

LEVEL: Performed by RN and LPN; NA can apply sensor and record data.

SUPPORTIVE DATA:

Pulse oximetry is a non-invasive monitoring system that provides continuous information about arterial oxygen saturation without subjecting the patient to a painful arterial stick. Using light to measure arterial oxygen saturation (SaO₂), the pulse oximeter tracks the patient's SaO₂ level non-invasively and continuously monitors pulse rate and amplitude too. Pulse oximetry works by placing a pulsating arteriolar vascular bed between a dual light (red and infrared) source and a photodetector. The photodetector records the relative amount of each color absorbed by arterial blood and transmits the data to a monitor, which displays the information with each heartbeat. If the SaO₂ level or pulse rate exceeds or drops below user preset limits, visual and audible alarms go off. **Note: Bilirubin lamps and/or other bright lights can alter the SaO₂ numbers. To avoid this problem, cover the probe with a washcloth or some other material. Other disease states, dyes, and different types of saturated hemoglobin can cause inaccurate readings. The use of visual assessments to check for signs and symptoms of low blood oxygenation is most important in these cases.**

EQUIPMENT:

Item:

Location:

- Oximeter On Unit
 - H-P Non-Disposable SaO₂ Sensor Transducer Specific Areas
- OR**
- Nellcor Oxygen Transducer (Select One) CD Lawson #'s:
 - * Adult Digit Sensor (Pts. over 30 Kg) 000395
 - * Nasal Oximeter R-15 (Adults over 50 Kg) 000399
 - * Infant Sensor I-20 (1-20 Kg) 000396
 - * Neonate Sensor N-25 (less than 3 Kg) 000398
 - * Pediatric Sensor D-20 (10-50 Kg) 000397

CONTENT:**STEPS:****Application of Sensor**

1. Provide the patient with a simple explanation of pulse oximetry and its value.
2. Select appropriate sensor probe for patient's age, weight, condition, duration of pulse oximetry monitoring, as well as the use of BP cuff, arterial catheter and/or peripheral I.V. line.
3. Remove any nail polish from any digits which will have a sensor applied.
4. Obtain selected sensor from CD and follow instructions included in package or with monitor for non-disposables.
5. Remove plastic backing from sensor probe.

D-25 Digit or D-20 Pediatric Sensor:

6. Place the sensor, adhesive side up, over the patient's finger. Position the dashed center line directly above the fingertip.

I-20 and N-25 Sensor

7. Wrap sensor around finger tip or foot. Position dashed line at either medial or lateral border of extremity.

KEY POINTS:

2. The area for sensor application needs to be highly vascular and rich in arterial blood. Check the proximal pulse and capillary refill at a point closest to the site. Use of BP cuff, presence of arterial catheter and/or peripheral IV lines should be included.
3. Acrylic nails and dark nail polish interferes with light transmission.

6. An index finger is the preferred D-25/D-20 location. Alternatively, apply the sensor to a small thumb, smaller finger or great toe.

STEPS:**KEY POINTS:**

8. Press the sensor onto the patient's finger or toe and wrap the adhesive strip circumferentially around the digit.
8. Finger/Toe movements and slippage of the probe sometimes hinder the sensors. If extra tape is used it should not constrict the digit - this can provide false readings.

Troubleshooting

9. Check patient's BP and vital signs first - if they are acceptable for patient, then check for the following (*):

*** Bad Connection**

10. Make sure sensors are properly aligned, wires are intact and securely fastened and pulse oximeter is plugged into a power source.

*** Inadequate or Intermittent Blood Flow to Site**

11. Check the patient's pulse and capillary refill time and take corrective action if blood flow to the site is decreased (*see key point*). If unable to correct you may need to find an alternative site.
11. This may mean loosening restraints, removing tight clothes, taking off a blood pressure cuff, or checking arterial lines and I.V. lines.

*** Equipment Malfunctions**

12. Remove the pulse oximeter from the patient; put the alarm limits at 85% and 100%, and try the instrument on yourself or some other healthy person. This will tell you if it is working correctly.

STEPS:

KEY POINTS:

Discontinuing Use of Sensor Transducer

- 13. Remove sensor from monitoring site.
- 14. Wash site off with soap and water.
- 15. Clean reusable sensor transducer with Staphene (DO NOT USE ALCOHOL).
- 16. Do Not Recycle a sensor from a patient on enteric or contact isolation and a sensor that is very soiled.

DOCUMENTATION: Document pulse oximeter readings (SaO₂), sensor placement and alarm settings (continuous mode) on Patient Care Record or flowsheet. Document trends and nursing/medical action taken on Patient Care Record/ Progress Note.

APPROVAL: December, 1995 By: Nursing Procedure Committee

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