

PULSE OXIMETER

Objective

To ensure proper use of a pulse oximeter to accurately measure oxygen saturation.

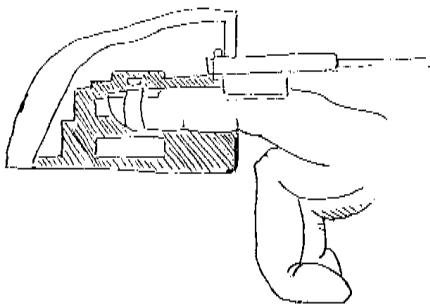
Procedures

How do you use a Pulse Oximeter

- Generally the probe is placed on the client's index, middle, or ring fingertip.
- If you can't place the probe on the client's fingertip try the earlobe, forehead, or bridge of the nose, which are highly vascular. You could also place it on a toe, unless circulation to the lower extremities is compromised.
- If you're not sure that the site has adequate circulation, check the proximal pulse and capillary refill at the pulse point closest to the site. A strong pulse and brisk refill confirm that the site is appropriate.
- Keep the monitoring site clean and dry. To prevent pressure necrosis, move a reusable probe every 4 hours. If you're using a disposable probe, assess the site every 8 hours for skin irritation from the adhesive. If the skin becomes irritated, change the site.

Some newer oximeters can accurately read through certain artificial nails and red or pink nail polish. Have clients remove blue, green, gold, black, or brown nail polish.

- It is advisable to rotate fingers every 2-3 hours if clip is left on for a prolonged time.



Each pulse oximeter clips onto a client's finger or other monitoring site. Emitting sensors shoot narrow beams of red and infrared light through the tissue. Different amounts of the beams are absorbed by the arterial blood, depending on its oxygen saturation. A receiving sensor on the other side relays the different amounts to a computer, which uses them to calculate the oxygen saturation of arterial blood (SaO₂)

- Many probes have markings to ensure that the light-emitting sensors and light-sensors shoot beams or light through the tissue, and the light-receiving sensor measures how much light is absorbed by oxygenated and deoxygenated hemoglobin in arterial blood. Be sure these markings are opposite each other. If they're not, you won't get an accurate reading. (You don't need to check this for probes placed on the forehead or bridge of the nose).

Troubleshooting tips

- If the alarm for insufficient Sao2 sounds, check the client first. Make sure he's not in respiratory distress; if he is, you may need to reposition him, suction his airway, or administer oxygen.
Then check to make sure that the probe is fastened correctly and that the low alarm limit hasn't been set too high. A good rule of thumb is to set the low limit 5% below the target saturation. If you turn off the equipment, it will default to the manufacturer's alarm limits (usually 85% for the lower alarm).

RECENT ADVANCES

- Built-in indicators of arterial flow let you see the strength of blood flow. A pulse bar display indicates relative pulse strength.
- Most pulse oximeters store trend information that you can print out at any time.
- Handheld units can be used in the home.

If the alarm is set correctly, make sure blood flow isn't restricted by tight clothing, wrist restraints, tightly taped intravenous (I.V.) lines, blood pressure cuffs, arterial lines, or a similar problem. Blood flow to the fingertip can also be affected by hand and arm movements.

- If the high SaO2 alarm (usually set at 100%) sounds, check for the equipment malfunction and make sure the upper limit hasn't been set below 100%.
- If you can't get a signal, or the signal is weak or false, check the client's vital signs (pulse, respirations). If he's okay, then check for:
 - *A bad connection.* Make sure the wires are intact, the probe is securely fastened, and the pulse oximeter is plugged into a power source.
 - *Inadequate or intermittent blood flow to the site.* Check the client's pulse and capillary refill time. Loosen restraints and tight-fitting clothes. If none of these interventions works, you may need to find an alternative site for the probe.
 - *Equipment malfunctions.* Remove the oximeter probe from the client, set the alarm limits at 85% and 100%, and try the instrument on yourself or another healthy person to check that it's working correctly.

- Inaccurate readings can be caused by drugs that cause vasoconstriction; clinical conditions such as shock, hypothermia, thrombosis, and reduced cardiac output or vascular volume; arterial vascular diseases, such as Raynaud's disease, that impair peripheral circulation, severe anemia and tremors.
- If site is cold or poor circulation you may improve signal reception by placing a warm washcloth on the site.
- Other electronic devices can interfere with the readings. If they do, move the probe to another site or change the power source.
- Ambient light (sunlight, bright fluorescent lights) may also interfere. If it does, cover the probe with a dry washcloth.
- Clinical conditions that can cause false readings include carbon monoxide poisoning (false high) and edema at the monitoring site (false low). So don't use a pulse oximeter to monitor a client with carbon monoxide poisoning, and avoid placing the probe at edematous sites.

Information

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