Clinical Practice Procedures:
Assessment/Oximetry – pulse

Policy code	CPP_AS_OP_0722
Date	July, 2022
Purpose	To ensure a consistent procedural approach to undertaking oximetry – pulse.
Scope	Applies to Queensland Ambulance Service (QAS) clinical staff.
Health care setting	Pre-hospital assessment and treatment.
Population	Applies to all ages unless stated otherwise.
Source of funding	Internal – 100%
Author	Clinical Quality & Patient Safety Unit, QAS
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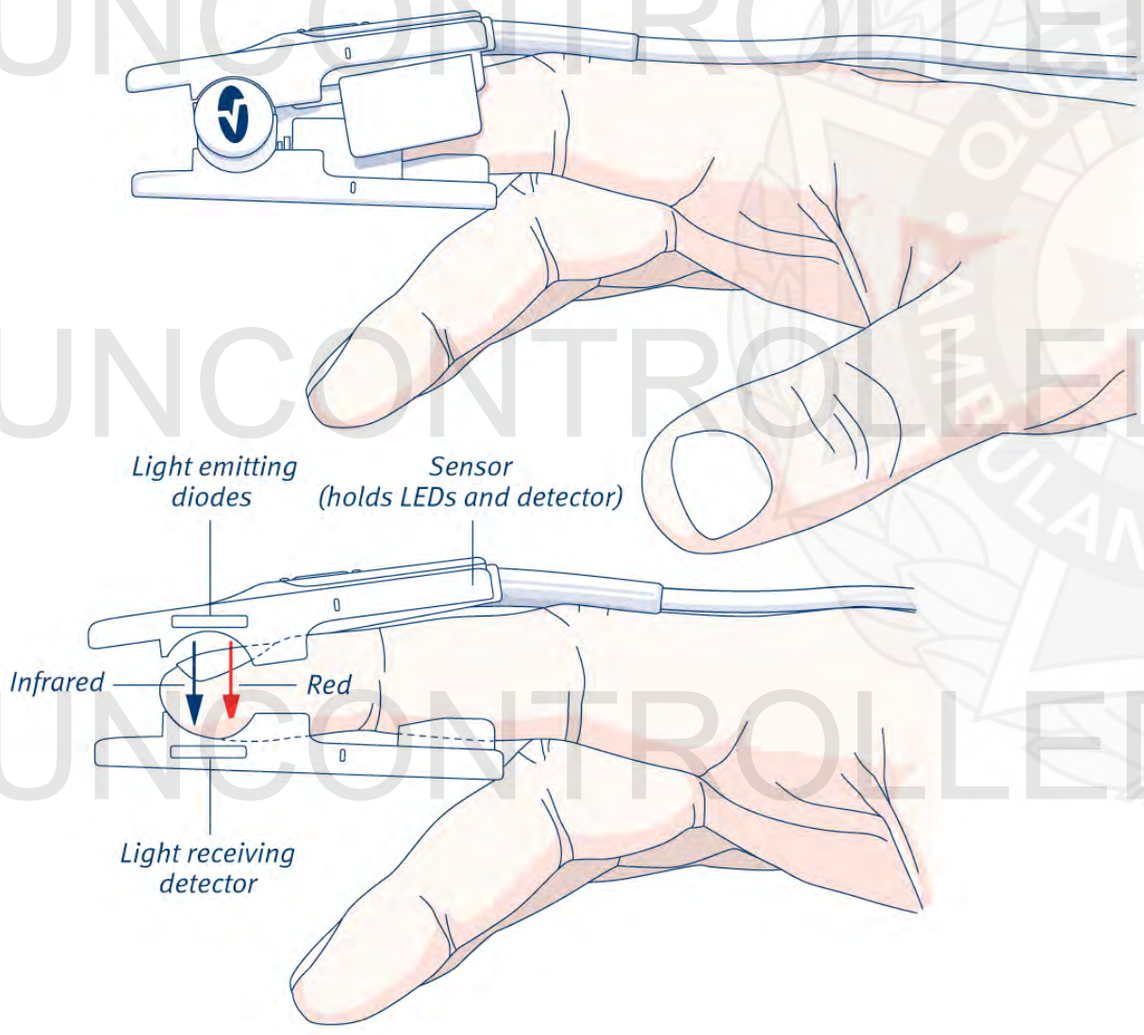
Oximetry – pulse

July, 2022

Pulse oximetry estimates the oxygen saturation in arterial blood (SaO_2), by directing both red and infrared light from two LEDs through a patient's translucent fleshy body site (usually a finger, toe or earlobe). The absorption of the two wavelengths differs significantly dependant on the level of haemoglobin oxygenation and the pulse oximeter translates this ratio into a percentage (SpO_2).[1]

It is important to consider the relationship between blood oxygenation and measurable haemoglobin saturation when interpreting pulse oximetry.[2]



Indications

- To determine patient oxygen saturation
- Assessment of the newborn

Contraindications

- Nil in this setting

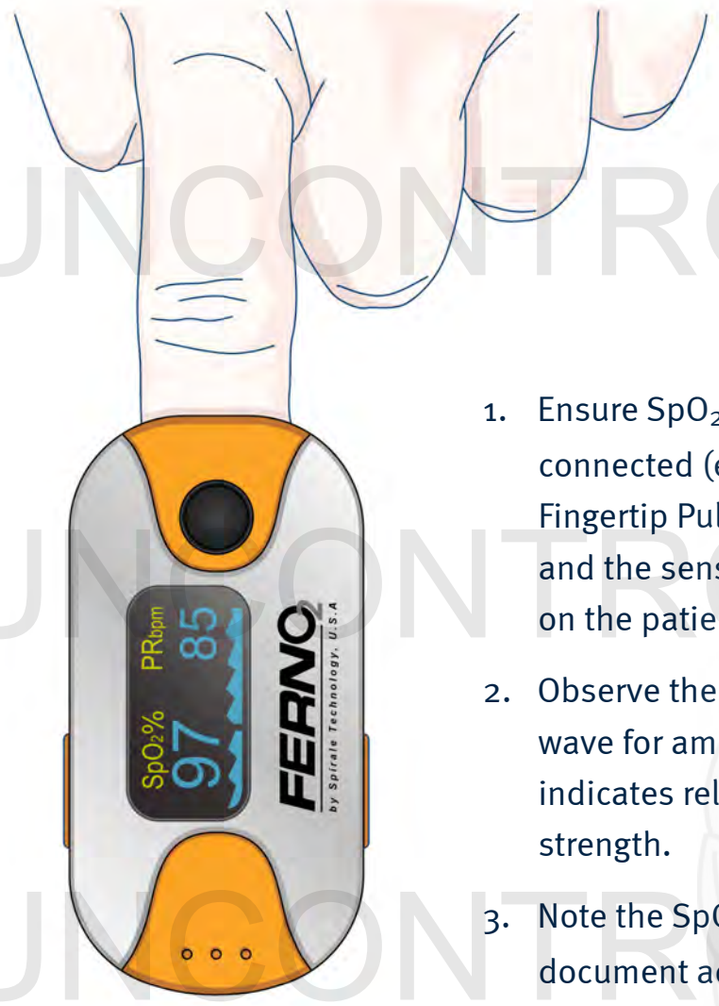
Complications

The reliability of SpO_2 readings depends on the following factors:

- correct sensor size and placement
- adequate arterial blood pulsation through the sensor site

Inaccurate pulse oximetry readings may occur when the following factors are present:

- excessive patient movement
- exposure to ambient light
- dirt or nail polish under the sensor site
- methaemoglobinaemia
- carbon monoxide
- insufficient amplitude on the pulsing pleth wave

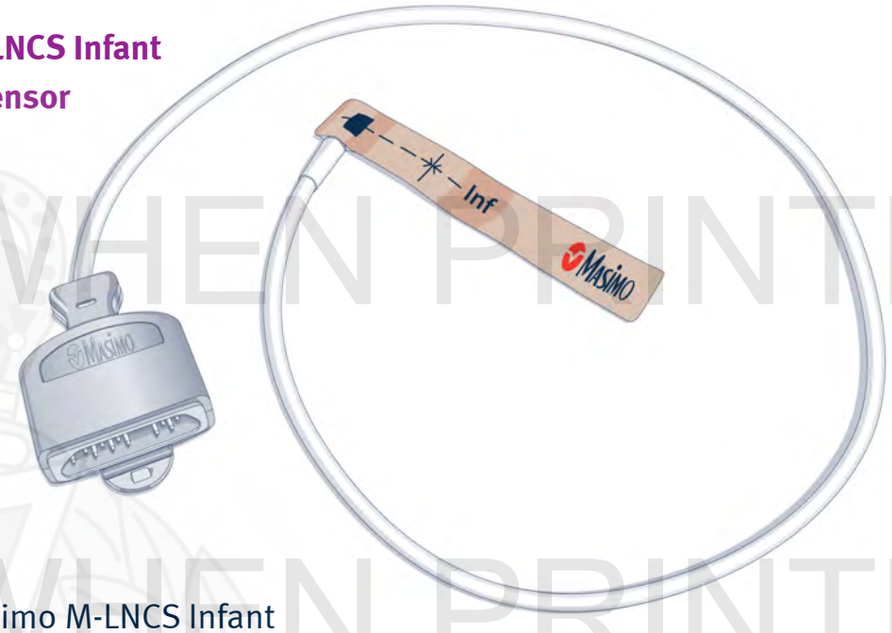


1. Ensure SpO_2 cable is connected (excludes FERNO Fingertip Pulse Oximeter) and the sensor is placed on the patient.
2. Observe the pulse bar/pleth wave for amplitude; this indicates relative signal strength.
3. Note the SpO_2 reading and document accordingly.

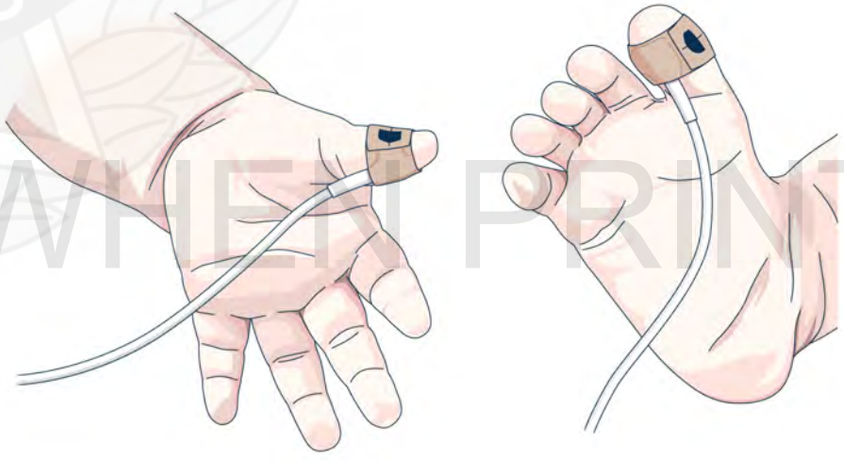
Additional information

- Any digit (finger or toe) may be used to obtain an SpO_2 reading.
- The SpO_2 of arterial blood is usually 94–100%.

Masimo M-LNCS Infant Adhesive Sensor

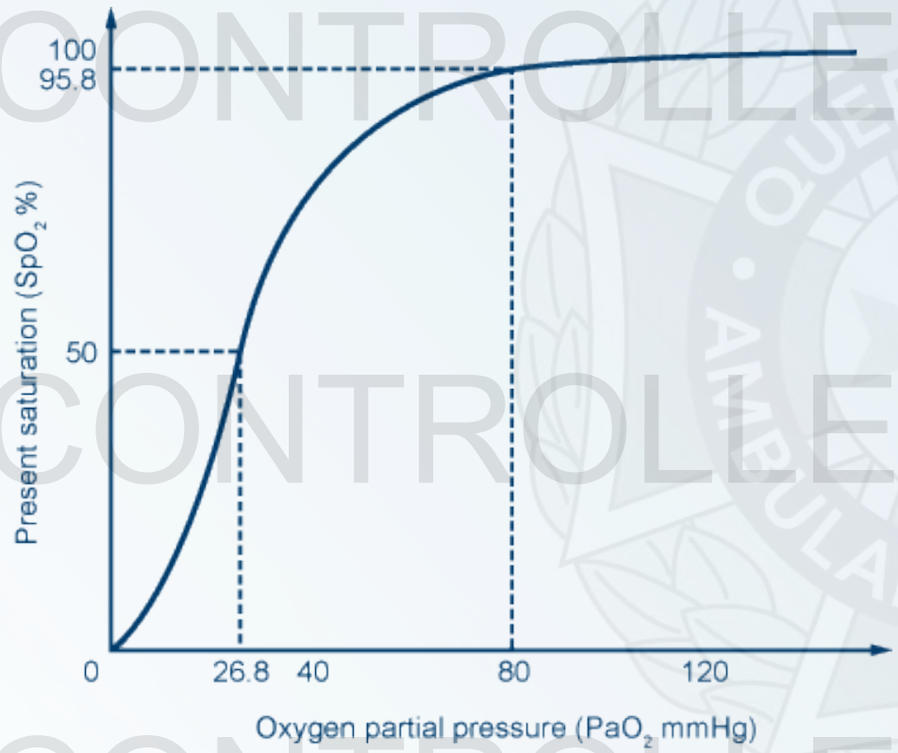


1. The Masimo M-LNCS Infant Adhesive Sensor is a single use, self-adhering wrap-around sensor suitable for use on infants and young children from 3 to 20 kg.
2. The sensor should be fitted to the infant's thumb or large toe, ensuring it is wrapped firmly but not tightly around the digit to achieve good skin contact. If a good quality reading is not achieved with first application, it may be removed and re-applied to a slightly higher or lower position.
3. Masimo M-LNCS Adhesive Sensors must not be used on patients for whom the standard clip-on finger sensor is a suitable fit.



Additional information *(cont.)*

- QAS oxygen saturation monitors are unable to differentiate between carboxyhaemoglobin and oxyhaemoglobin[1] therefore patients with carbon monoxide poisoning must be administered the maximum oxygen dose irrespective of SpO_2 (refer to *DTP: Oxygen*).
- Pulse oximetry is not a complete measure of respiratory or circulatory sufficiency.
- A small change in saturations (e.g. a drop in SpO_2 97 % to 90%) represents a large change in blood oxygenation (PaO_2 100 to 60 mmHg).



Oxygen dissociation curve [2,3]

- During newborn resuscitation pulse oximetry should be placed on the right hand.
- Ambulance clinicians should note that SpO_2 readings may be lower than normal immediately following birth. The following table gives the expected SpO_2 reading in full term newborns during the first ten minutes following birth.[4]

Targeted pre-ductal SpO_2 after birth	
1 minute	60 – 70%
2 minutes	65 – 85%
3 minutes	70 – 90%
4 minutes	75 – 90%
5 minutes	80 – 90%
10 minutes	85 – 90%

- An SpO_2 reading below those expected is a good indication that resuscitation of the newborn is required.