Clinical Practice Procedures: Assessment/Oximetry – pulse

<table>
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<tr>
<th>Policy code</th>
<th>CPP_AS_OP_0417</th>
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<tr>
<td>Date</td>
<td>April, 2017</td>
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<td>Purpose</td>
<td>To ensure a consistent procedural approach to undertaking oximetry – pulse.</td>
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<td>Scope</td>
<td>Applies to Queensland Ambulance Service (QAS) clinical staff.</td>
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<td>Health care setting</td>
<td>Pre-hospital assessment and treatment.</td>
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<tr>
<td>Population</td>
<td>Applies to all ages unless stated otherwise.</td>
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<tr>
<td>Source of funding</td>
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Oximetry – pulse

Pulse oximetry estimates the oxygen saturation in arterial blood (SaO₂), 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 (SpO₂).[1]

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

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**Indications**

- To determine patient oxygen saturation

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**Contraindications**

- Nil in this setting

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**Complications**

The reliability of SpO₂ 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
Procedure – Oximetry – pulse

1. Ensure SpO₂ 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 SpO₂ reading and document accordingly.

Additional information

- Any digit (finger or toe) may be used to obtain an SpO₂ reading.
- The SpO₂ of arterial blood is usually 94–100%.

Additional information (cont.)

- QAS oxygen saturation monitors are unable to differentiate between carboxyhaemoglobin and oxyhaemoglobin[1] therefore patients with carbon monoxide poisoning are to be administered the maximum oxygen dose irrespective of SpO₂. (See DTP: Oxygen)
- Pulse oximetry is not a complete measure of respiratory or circulatory sufficiency.
- A small change in saturations (e.g. a drop in SpO₂ 97% to 90%) represents a large change in blood oxygenation (PaO₂ 100 to 60 mmHg).

Oxygen dissociation curve [2-3]

- 100
- 95.8
- 50
- 25.8
- 40
- 80
- 120

Oxygen partial pressure (PaO₂ mmHg)

Oxygen dissociation curve [2,3]