

## ARTP Guidance: Oximetry measurement in the Community – Finger Pulse Oximetry

### Introduction

In the light of the COVID19 pandemic, this document has been prepared to give guidance around reliable oximetry measurement, particularly for healthcare workers in the community. Many new staff will be expanding their skills and practice going forward and this guidance is to pull together the essential practical information for new users. This document relates only to finger pulse oximeters; other techniques are available but are unlikely to be used in primary care

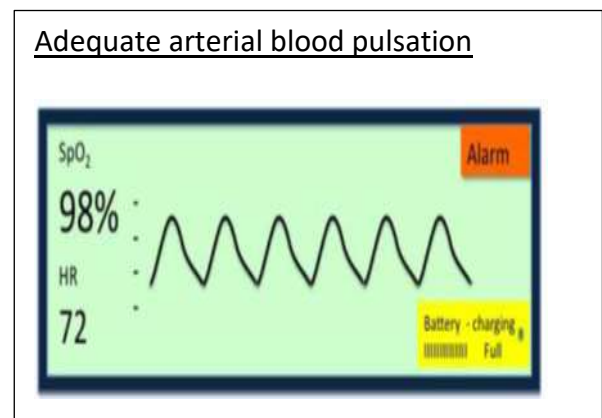
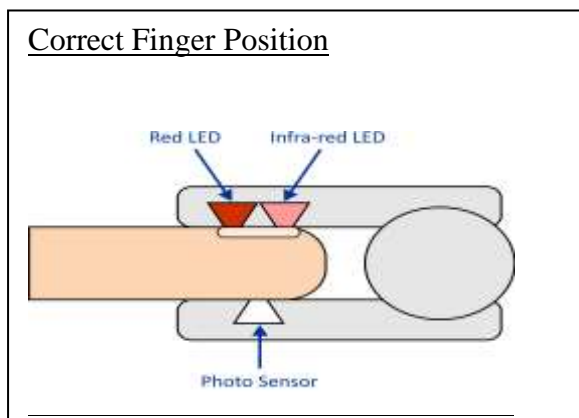
Pulse oximetry is a simple, non-invasive method of assessing the percent saturation of oxygen in haemoglobin. They effectively measure the relative amount of oxygenated blood attached to haemoglobin as a percentage of all available blood haemoglobin. The oxygen saturation value is expressed as SpO<sub>2</sub> and is given as a percentage. Therefore, SpO<sub>2</sub> is more of an estimation of arterial oxygenation and should always be used in conjunction with further clinical assessment. Whilst SpO<sub>2</sub> can estimate and monitor blood oxygen, it should not be considered a substitute for blood gas analysis.

The normal range for SpO<sub>2</sub> in a healthy adult breathing room air is most commonly stated as 95–99%.

Pulse oximeters do not require any calibration, as a self-check is undertaken when switched on.

### Measurement Errors

The reliability of SpO<sub>2</sub> depends on the following factors:



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

- Excessive patient movement
- Exposure to bright ambient light
- Nail polish/false nails present
- Skin pigmentation
- Cold hands / poor peripheral circulation / Raynaud's phenomenon
- Certain cardiac arrhythmias
- Severe anaemia

### Measuring pulse oximetry correctly

- Ensure good peripheral circulation.
- Turn pulse oximeter on and wait for it to do a self-check.
- Ensure correct positioning of pulse oximeter probe.
- Always record the inspired oxygen conditions (eg. room air, concentration of breathed oxygen).
- Check the pulse quality (most common source of error).
- Check for errors in measurement.
- Leave oximeter probe in place for 5 minutes before recording measurements.
- When patient recording complete, clean probe and store appropriately.

### Normal and abnormal levels of oxygen saturation with grades of hypoxaemia

<u>SpO<sub>2</sub></u>	<u>Level of Oxygenation</u>	
95–99%	Normal	
90–95%	Mild Hypoxaemia	(N.B. Blood gas <u>may</u> be required <92%)
80–90%	Hypoxaemia	(N.B. Blood gas required)
<80%	Severe Hypoxaemia	(N.B. Blood gas required)

Patients with known chronic respiratory disease are likely to have lower levels of SpO<sub>2</sub>. When interpreting the reading, the 'normal' or 'target' patient values should be taken into account.

### Infection control

In addition to relevant standard infection control procedures and additional measures carried out during the COVID19 pandemic, including use of relevant PPE, cleaning of oximeters is important to reduce the spread of COVID19 virus between patients.

It is recommended that the oximeter probe and any cables attached to it are wiped down between patients **using an alcohol wipe** ensuring that all patient contact areas are cleaned and allowed to dry. Some manufacturers may have specific cleaning recommendations which should be followed.

Prepared by ARTP COVID Group - May 2020

## References/further reading

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*WHO tutorial*

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