



# GREENLIGHT CLINICAL GUIDELINES

Oxygen Saturations

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# Oxygen Saturations Guidelines

## Introduction

'Oxygen Saturation' (Sats/ SpO<sub>2</sub>) is a clinical observation that measures how much oxygen is in a person's blood. This can be done in a non-invasive manner by using a Pulse Oximeter (POx) or sometimes named a Sats (Saturations) probe. This document will explain how to use a Pulse Oximeter and will give basic information on how the machine works and how to interpret the given results. It will also note areas that may be useful for further education.

Oxygen is introduced into the body via the lungs. Small air sacs called Alveoli then transfer it into blood stream. It is then carried to all the cells in the body. This cycle is continuous throughout a human's life.

## What does a Pulse Oximeter measure?

A Pulse Oximeter measures oxygen levels in the blood.

## What are the different Oxygen Saturation ranges?

A healthy oxygen saturation is 96% SpO<sub>2</sub> or above.

In some cases of chronic lung disease a person can be assigned a 'new normal' range as their body has adjusted to lower levels of Oxygen. If the person is unable to tell you a new range interpret the results as you would a healthy person. However, most COPD patients that are on different ranges would be able to inform you.

These are commonly:

- 94 - 98% SpO<sub>2</sub> (COPD only)
- 88 - 92% SpO<sub>2</sub> (COPD only)

If you obtain a low reading encourage the patient to take a few deep breaths; this will help you assess whether this may be a functional problem or not. If it remains low in comparison to the patient's normal range consider discussing with the Senior Medic On-Call.

*If a patient is showing signs of difficulty in breathing and or cyanotic do not hesitate to call an ambulance.*

## Common ailments that can cause abnormal oxygen saturations

(Chronic Obstructive Pulmonary Disease (COPD), note previous)

- Emphysema
- Pneumonia
- Bronchitis
- Pulmonary Effusion
- Asthma Attack
- Choking

## How a Pulse Oximeter works

A Pulse Oximeter works by measuring infra-red light. Oxygenated and deoxygenated blood allow infra-red light through the capillaries at different strengths. The POx shines a light through one side of the finger and a detector calculates the difference in light strength. The POx then interprets received information and calculates a saturation level.

Due to how the POx works misleading results can occur. Common reasons for false results are:

- Nail varnish on nails.
- False/fake nails.
- Bad circulation/cold hands.
- POx restricting blood flow.
- Low battery/ dim bulb.
- Dirt covering light or receiver.

## References:

Dougherty. L, Lister. S & West-Oram (2015) *The Royal Marsden Manual of Clinical Nursing Procedures, 9<sup>th</sup> edn.* Wiley, London.  
Mariab. N (2006) *Essentials of Human Anatomy & Physiology, 8<sup>th</sup> edn,* Pearson, San Francisco.  
World Health Organization (2011) *Pulse Oximetry Training Manual.* WHO Press, Switzerland.

## How to measure Oxygen Saturations using a Pulse Oximeter

- Step 1: Wash and dry your hands thoroughly.
- Step 2: Obtain consent and explain procedure.
- Step 3: Find the site on which you will place the POx. Check the capillary refill ( $\leq 4$ ), that the area is warm and that the finger is clear of dirt, nail varnish and false nails.
- Step 4: Place the POx on the finger, making sure that it is not too tight restricting blood flow to the area.
- Step 5: Turn on the POx and document the Oxygen saturation (Be mindful that the HR may also be shown on the screen).
- Step 6: Remove the POx and clean.
- Step 7: Wash and dry your hands thoroughly.

*NB All Greenlight Clinical Guidelines are based upon approved existing guidelines adapted for the specific use and demographic of service users seen on the medical van in the community.*

### References:

- Dougherty. L, Lister. S & West-Oram (2015) *The Royal Marsden Manual of Clinical Nursing Procedures*, 9<sup>th</sup> edn. Wiley, London.
- Mariab. N (2006) *Essentials of Human Anatomy & Physiology*, 8<sup>th</sup> edn, Pearson, San Francisco.
- World Health Organization (2011) *Pulse Oximetry Training Manual*. WHO Press, Switzerland.