Finger Pulse Oximeters – Technical Training

What is pulse oximetry?

Pulse oximetry, also known as **SpO2**, is the peripheral capillary oxygen saturation, which is an estimate of the amount of oxygen in the blood.

It is a measure of how efficiently blood is carrying oxygen around the body and is one of the **vital signs** measured by clinicians.

Specifically, SpO2 is the percentage of oxygenated **haemoglobin** compared to the total amount of haemoglobin in the blood.

Haemoglobin is a molecule present in red blood cells that readily bonds with and releases oxygen, allowing it to transfer oxygen from the lungs around the body.
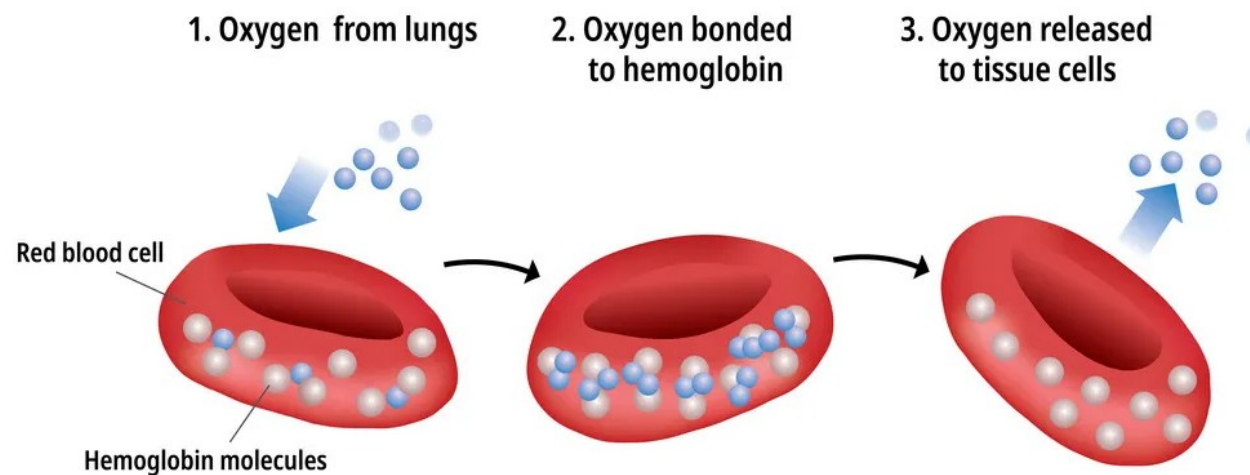
How do we measure SoO2?

We can measure SpO2 using a **pulse oximeter**, which measures the oxygen saturation using a sensor attached to the patient.

It is measured at the extremities, most commonly the index finger, but also on the ear lobe, the big toe or the whole foot of a newborn.

A pulse oximeter displays the percentage of haemoglobin saturated with oxygen, together with the heart rate. Some models display a graphical representation of the blood flow at the measurement site, known as a **plethysmograph** or **pleth waveform**.

Different types of pulse oximeter

There are varying levels of pulse oximeter, from high-performance table-top devices, through hand-held devices, compact finger oximeters, and for consumer use, watches and smart phones that can measure SpO2.

How does pulse oximetry work?

With each heartbeat, a pulse of oxygenated arterial blood flows to the sensor site. Oxygenated haemoglobin differs from deoxygenated haemoglobin in the way that it absorbs red and infra-red light.

A pulse oximetry sensor uses an LED emitter to shine red and infra red light through the measurement site and a detector on the opposite side measures the intensity of light that comes through at each wavelength.

Using known ratio curves of red to infra-red and their relationship to oxygen levels (**r-curves**), the pulse oximeter is able to determine how much of each wavelength of light has been absorbed, and hence the amount of oxygen in the blood.
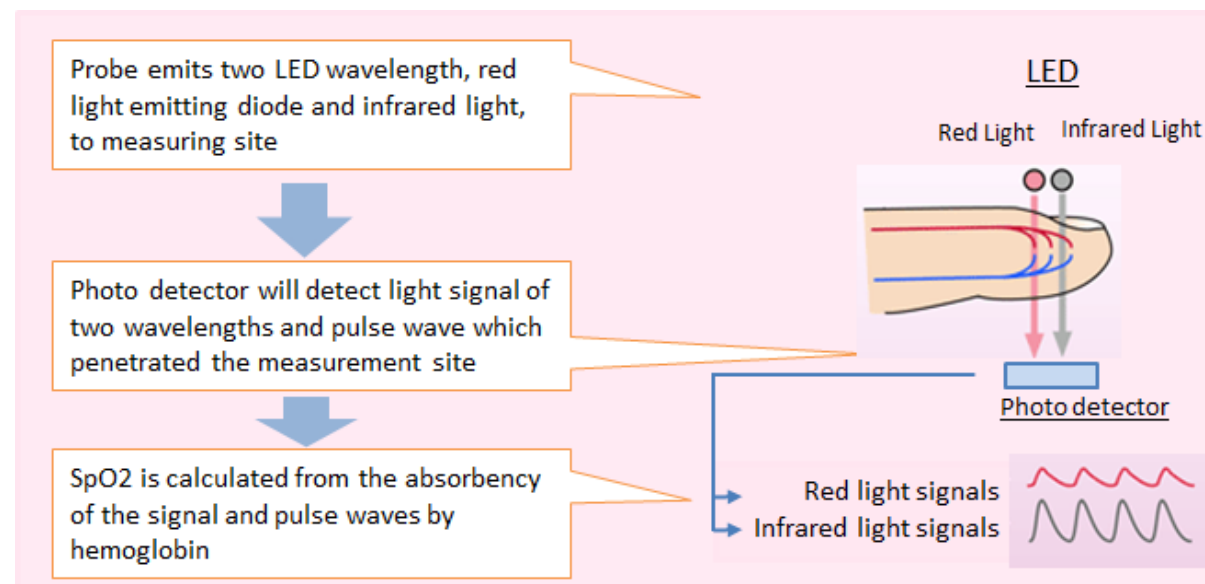
In simple terms: **oxygenated blood appears redder.**

Finger oximeters supplied by Viamed

Viamed primarily supplies the **ChoiceMMed / Beijing Choice** brand of finger oximeters, as we have found them to be of higher quality than many other budget brands.

There are 3 main display types:

LCD, such as the MD300-C15D

pros: very low cost
cons: not backlit

LED – red segmented LED display, such as MD300-C19

pros: bright and self illuminated
          displays signal strength
cons: the digits can be misinterpreted if viewed upside down

OLED – colour organic LED display. Such as MD300-C2

pros: bright and self illuminated.
          displays the signal strength
          can display the pleth waveform
          multiple display orientations
cons: reasonable, yet limited, service life (manufacturer states 5 years)

Paediatric versions

For paediatric patients or adults with smaller fingers, a range of paediatric finger oximeters is available. These are OLED versions with the same functionality as the MD300-C2.

MD300-C5   - blue

MD300-C52 - teddy bear design

MD300-C53 - frog design

MD300-C55 - panda design

Accessories

Carrying cases are available, but will be discontinued once stock is depleted. See part numbers 0022190 / 1 / 2 / 3.

Some finger oximeters are supplied with a free carrying case, check stock memos to determine what is included.

Warranty

The customer warranty is 12 months from the date of invoice for all Beijing Choice finger oximeters.

Batteries

All of these finger oximeters use 2x AAA batteries.

All will power off automatically 8 seconds after being removed from the finger to save power.

Maintenance/Service

These devices do not contain user serviceable components. Viamed does not service or repair finger oximeters due to the very low cost to purchase a replacement.

Latex

All devices and all accessories are latex-free.

Where to find additional information

- Viamed website
- Product leaflets – linked to stock pages
- FAQs on the stock page
- Memos on the stock page
- Instructions for use