Pulse Oximetry and COVID-19

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Pulse oximetry is a test that measures how much oxygen is in blood. Many people consider oxygen level an important sign of how well a body is working, just like a person’s blood pressure or body temperature. Many people with COVID-19 disease have low levels of oxygen in their blood, even when they feel well. Low oxygen levels can be an early warning sign that people need medical care.

How a pulse oximeter works

A pulse oximeter is a small device that clips onto someone’s finger and passes a beam of red light through the fingertip. Oxygen level, or oxygen saturation of the blood, is measured by how much light is absorbed as it passes through the fingertip. A pulse oximeter measures the percentage of oxygen saturation. This percentage is found under the “SpO2” setting on an oximeter.

Oxygen levels

A normal level of oxygen is usually at least 95% or higher. Some people with chronic lung disease or sleep apnea can have normal levels of around 90%. The SpO2 reading on a pulse oximeter shows the percentage of oxygen in someone’s blood.

The Center for Disease Prevention and Control defines severe illness of COVID-19 in people as taking more than 30 breaths per minute and having an SpO2 reading lower than 94%, on room air at sea level (or a decrease of more than 3% from a baseline reading for patients with chronic hypoxemia, a below-normal level of oxygen in blood, specifically in the arteries). See CDC: SARS-CoV-2 Illness Severity Criteria (www.cdc.gov/coronavirus/2019-ncov/hcp/disposition-hospitalized-patients.html#definitions).

Pulse oximetry results may not be as accurate for people with darker skin. Their oxygen levels are sometimes reported as higher than they really are. This possibility should be considered when interpreting pulse oximetry results.

A person’s oxygen levels may be low if they feel short of breath, are breathing faster than usual, or feel too sick to do their usual daily activities, even if a pulse oximeter says their oxygen levels are normal. People should call a doctor or another health care provider right away if they have these symptoms.

An initial SpO2 reading should serve as a person’s baseline. A medical professional should be consulted for SpO2 readings below the baseline, or per facility protocol if the person is a long-term care facility resident or has been previously evaluated by a physician for COVID-19-related concerns. Supplemental
oxygen or other treatments may be needed. In general, people should contact a health care provider if they have shortness of breath or their SpO2 number is less than 95%.

**KEY POINTS:**

If the SpO2 reading of a long-term care facility resident with COVID-19 is below baseline, refer the person for further evaluation and possible treatment.

Other people should contact a health care provider for shortness of breath or when SpO2 is less than 95%.

### How to measure oxygen saturation

Follow manufacturer instructions for cleaning and disinfecting pulse oximeters. Be sure to disinfect the unit with an antiviral wipe before and after each use. Turn the unit on with the power button. If it does not turn on, check the batteries. Place the unit on a finger and wait for numbers to display. In addition to SpO2, the unit may display heart rate and the waveform of the pulse. This can be helpful, because better measurements are taken when pulse waves are more distinct.

Some factors that can make it hard for the unit take good readings are:

- Darker skin color
- Dark colored nail polish
- Cold fingers or poor circulation
- Tremor or movement
- Too much pressure on the probe
- Low blood pressure