Tests to measure oxygen levels

From time to time your health care professional may need to check your oxygen levels. Tests used to check your oxygen levels are:

- pulse oximetry
- blood gas test
- oxygen assessment

Pulse oximetry

What is it?

This measures how much oxygen your blood is carrying. This is called the oxygen saturation and is a percentage (scored out of 100). It’s a simple, painless test using a sensor on your skin.

What’s it used for?

If you’re living with a lung condition, your blood oxygen level may be lower than normal. This is important to know because when your oxygen level is low, the cells in your body can have a hard time working properly. Having a very low blood oxygen level can also put a strain on your heart and brain.

The text can be done as a one-off spot measurement. It can also be used to see if your oxygen levels drop during exercise – for example walking – or when you are asleep.

What happens during the test?

You will have a small device clipped to your finger or ear lobe, called an oximeter. This gadget shines light through your fingertip or earlobe and measures how red your blood is (blood cells with haemoglobin carrying oxygen are red – if they’re not, they are bluer).

If you wear nail varnish, this can block the light and affect the reading, so you’ll be asked to take it off – on one finger only.
What will the results look like?

The oximeter will be attached to a monitor that will show the percentage of oxygen in your blood. For someone who’s healthy, the normal blood oxygen saturation level will be around 94–99%.

If the oxygen level is below this, it may mean that you need additional oxygen therapy or other treatment. Your health care professional will discuss this with you. Low levels can put a strain on the heart. Usually you will have a blood gas test before oxygen is prescribed.

Current guidelines recommend that people with a resting stable oxygen saturation of 92% or less should be referred for a blood gas assessment to see if oxygen therapy is appropriate.

A change in your oxygen level may mean that your lung condition has got worse. In people with pneumonia and in children with lung problems oxygen saturation can help to decide if someone needs to be looked after in hospital.

Blood gas test

What is it?

A blood gas test is used to measure how much oxygen and carbon dioxide are in your blood. The test is called an arterial blood gas test if the sample is taken from your wrist. It’s called a capillary blood gas test if the sample is collected from your earlobe.

What’s it used for?

It is used to check how well your lungs are working and whether they’re able to exchange oxygen and carbon dioxide efficiently. It can be used to see if you need oxygen therapy.

What happens during the test?

The tester will take a small sample of your blood. They will normally take this by using a needle and a syringe in one of the arteries of your wrist (or occasionally from the inside of your elbow). Sometimes some local anaesthetic is applied.

Some hospitals check blood gas by taking a blood sample from your earlobe. Your tester will put a special cream on your earlobe that helps increase blood flow. This makes your ear go red and feel hot. The blood vessels in your ear lobe will then contain about the same amount of oxygen as blood taken from your artery. After a few minutes the tester can take a sample by making a tiny cut and catching the blood droplet that forms.

The earlobe method can’t usually be used if you need to have the test when you are unwell (such as when you’re admitted to hospital with a flare-up of COPD symptoms).

What will the results look like?

The results will be a set of readings in relation to oxygen, carbon dioxide and acidity. Abnormal results of any of the gas components may mean your body is not getting enough oxygen or is not getting rid of enough carbon dioxide.

A high level of carbon dioxide may mean that your breathing is shallow at night and you may benefit from using a ventilator device at home.
Oxygen assessment

What is it?

Your oxygen levels will be tested while you’re sitting down. Sometimes you’ll be asked to do a walking test to see if your oxygen levels go down as you exercise and, if that happens, whether extra oxygen means you can walk further. The outcome can help your health care professional decide if you should have oxygen therapy.

If your oxygen levels are low, your blood gases will be checked again while you are breathing in extra oxygen through your nose. The oxygen is delivered by small see-through tubes known as nasal cannula. This will help work out how much oxygen you need to improve the level of oxygen in your blood.

More information on having tests

Breathing keeps us alive. It provides the oxygen that our bodies need and removes carbon dioxide, the waste gas that we produce. If you have problems with your breathing, your health care professional may suggest taking one or more tests. These can help to work out:

- if your lungs are working normally, or if there is a problem
- if there is a problem, what type of problem it is
- if there is a problem, how severe is it

Highly-trained health care professionals will run your tests. They will make sure the equipment gives an accurate result and that it is hygienic to use, for example by using a separate, disposable mouthpiece for each person.

Remember:

- The results of tests can be used together with your medical history, symptoms and examination results as well as X-rays and scans to help guide your treatment.
- Different people may need more or less complicated tests. Sometimes the tests need to be done only once to see what the problem is. Sometimes they are repeated to monitor changes over time or response to treatment.
- When you get your results, ask your health care professional to explain them to you. Keep asking questions until you understand what your results mean.

Preparing for your test

When you’re going for a test, you may get a leaflet or an appointment letter with specific instructions. Read them carefully before your test. For some tests, you may be asked:

- to wear loose-fitting clothing, or suitable shoes for a walking test
- to stop smoking for 24 hours before the test (if you smoke, this can alter the results of some tests)
- to avoid eating for some hours before
• to avoid drinking alcohol and caffeinated drinks (like coffee, tea, cola or energy drinks) for some hours before
• not to take your medication for some hours before
• to bring along your medication, such as inhalers

If you’re unsure how to prepare, get in touch with the person who made the appointment for you.

If you’ve had a chest infection or a flare-up of symptoms and taken drugs such as steroids or antibiotics to treat it, this may affect your test results. If your test appointment is within 4–6 weeks of this, check with your health care professional about going ahead. Remember to tell whoever does your test about your recent chest infection and the drugs used to treat it.

Questions about your test

This information gives general information about breathing and other tests. But you may have more detailed questions. We’ve suggested some questions you could ask when your health care professional suggests you have some tests done or at the test appointment itself:

• What is the test for?
• Who will carry out the test, and where?
• What will happen during the test and how long does it take?
• Do I need to prepare for the test?
• Will there be any side effects and how long will they last?
• How and when will I get the results?