

HOME OXYGEN TREATMENT

Who benefits from added oxygen?

Oxygen is essential for life. In normal healthy people, the blood oxygen level is usually above 85 units (mmHg). In people with lung problems, this level may fall to quite low levels even though the body can continue to perform normally. If the oxygen level falls below 55-60 units, added oxygen may be helpful.

Chronic obstructive pulmonary disease (COPD) is the term commonly used by doctors to describe the smoking-related conditions of emphysema and chronic bronchitis. Patients with these problems become severely short of breath, often with a normal oxygen level. In the later stages of COPD, however, low oxygen levels also become more common. In patients with severe COPD and low oxygen levels of 55-60 units or below, added oxygen prolongs life and in some cases also improves the quality of their life. Patients who use their added oxygen for 24 hours a day show a longer life span than those who use it for 15 hours; and these people, in turn, do better than those who use it only during sleeping hours. The use of added home oxygen has become routine for COPD patients with longstanding low blood oxygen levels.

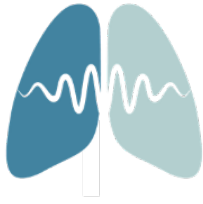
There have not yet been large studies of home oxygen therapy for people with other lung conditions such as **cystic fibrosis** and **pulmonary fibrosis**, but the same criteria are often used for giving oxygen to people with these other problems. Oxygen may also be used for relief of breathlessness in patients who have **lung cancer** when the blood oxygen is low. Occasionally oxygen is supplied for emergency use to patients who have had **severe acute life-threatening attacks of asthma**, or for **severe angina** heart disease when these patients have a low oxygen level, when maximal medical treatment has been given and heart surgery is not possible.

As oxygen is essential for all our lives, the term 'addicted to oxygen' occasionally used by those who need added oxygen, would seem to be quite misleading. Some people with lung disease simply need a little bit more.

When is home oxygen prescribed?

Measurement of blood oxygen level is made by taking an arterial blood sample, usually from an artery in the wrist. If the value breathing air is low, home oxygen may be prescribed. A repeat sample may also be taken whilst added oxygen is given. Blood oxygen levels can vary from day to day depending upon the lung condition and any other medical problems. The oxygen measurement is often made on several occasions when somebody is quite ill.

For home oxygen, however, measurement is made after recovery from any acute medical problem when medical treatment is stable and no infection is present. The amount of oxygen needed is expressed as a flow rate, in litres per minute (generally between one and four litres per minute). The prescription will also recommend the number of hours per day during which the oxygen saturation was 96% on room air should be used (generally at least 16 hours per day, and sometimes even longer).



Does oxygen help every cause of breathlessness?

Many people with lung disease suffer from shortness of breath, particularly on physical exertion. In some cases this may mean a low blood oxygen level, but there are many other causes of breathlessness. These include fatigue of breathing muscles, fluid on the lungs, the blockage of the airways. Many patients notice that they have received oxygen for treatment of shortness of breath when attending hospital. This has generally been combined with other treatments for the underlying causes of shortness of breath. Generally, the fall in blood oxygen which may occur during a flare-up of a lung condition improves after treatment, and in many cases further oxygen is not required after this time. Although the use of oxygen in these cases may also relieve shortness of breath, in many cases it simply does not. It is important to realise that the reason for giving oxygen in COPD is to prolong life, and not to relieve shortness of breath, although this **may** also occur as an added benefit.

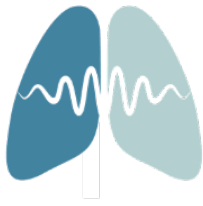
What about oxygen during physical exertion?

Many people with lung disease feel short of breath during physical exertion, but not all will have a fall in their oxygen levels to account for this. To find out whether your blood oxygen falls with exercise, the oxygen level is measured at rest, and then during exercise. The amount of exercise you can perform and the level of oxygen at the end of exercise when breathing room air (or bottled air) is then compared with that whilst breathing oxygen (also from a bottle). Some people definitely benefit from oxygen during exertion, but others are disappointed to find they do not. If a benefit is demonstrated, it is recommended that you use your oxygen 'as needed', which means during any activity which normally causes you to become short of breath. If no benefit is demonstrated with oxygen, remember that there are many other causes of breathlessness besides a low oxygen level.

How is oxygen given?

The most common method of oxygen delivery nowadays is the **oxygen concentrator**. This electrically driven machine concentrates oxygen from the air through a fine sieve. Electricity is used for many hours in the day from a standard power point. Cost rebates may be available through your local electricity supplier if you are a pensioner or a veteran. These machines provide the amount of oxygen needed to reverse the low blood oxygen levels. They do not remove oxygen from a room any more than an adult would by simply breathing from the same room air.

Added oxygen is usually delivered into the nose through soft plastic prongs attached to tubing which fits onto the outflow port of the concentrator. Long lengths of tubing enable you to move around your house more freely while wearing the nasal prongs. If the blood oxygen cannot be raised using the usual nasal prongs, oxygen can be delivered directly into the windpipe (or trachea) through a tiny surgically made hole into which a fine oxygen catheter is inserted. The catheter is kept in place by a chain necklace and can be cleaned and changed at home. Oxygen therapy delivered straight into the trachea can also give much higher blood oxygen levels for a much lower oxygen flow rate. People whose exercise capacity is increased a lot by additional oxygen benefit from light-weight portable oxygen cylinders. They are available in a holder with wheels. Even smaller cylinders may be carried in a holster over the shoulder, or in a backpack. In order to get these small cylinders to last longer before needing a refill, they are generally fitted with a conservation device. These simple battery-operated devices control the flow of oxygen from the cylinder to the nasal prongs. They conserve oxygen by delivering a short pulse of oxygen only when breathing in, rather than continuously as with normal oxygen



supply systems. Thus oxygen is not wasted while breathing out. This prolongs the time each oxygen cylinder lasts by at least 3 to 5 times.

Another solution to the problem of wasted oxygen during exhalation is the wearing of special masks with a reservoir device which stores oxygen during exhalation and releases it during inhalation. These days, large, difficult to handle cylinders are rarely supplied for oxygen needs. They can, however, provide a back-up facility in case of mechanical or power failure for those who require oxygen for 24 hours per day.

Tips for using oxygen equipment

For home use, oxygen is generally delivered through soft nasal prongs rather than a mask. This enables the oxygen to be used whilst eating or drinking. Most people have no problems with nasal prongs. At the most common flow rates (up to 4 litres per minute), added water vapour or humidification is not usually required to keep the nose moist. Occasionally some people may notice discomfort and drying of the nasal membranes, but this can be improved by applying a water-based lubricant to the nose several times per day. Where humidification is needed it can be achieved by the use of a 'bubble bottle' containing water, through which the oxygen is bubbled.

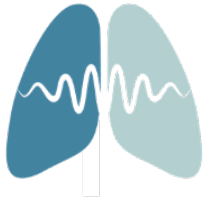
Travel with oxygen

The oxygen concentrator is transportable and may be taken in the car if you are planning to be away from home for any long periods. It must remain in an upright position and may be carried in the boot if large enough, or standing up on the back seat, with a rear seat belt to hold it in place. Depending on the level of oxygen in your blood, it may not be necessary to take your concentrator if the trip is only a short one. Concentrators may also be stowed on buses for interstate journeys (check with your local busline). Some airlines will carry your oxygen concentrator free of charge (obtain further information from your local oxygen supplier or the airline). It is hoped that in future airlines will be able to provide an oxygen concentrator which fits under the plane seat and can be set to the required flow rate. Safety regulations forbid the use of patients' own compressed oxygen equipment in flight. However, airlines can provide such equipment and arrangements are in place to encourage the lung disease sufferer to carry out air travel both within Australia and overseas. Contact your Oxygen supplier or airline for more information. It is hoped that in future airlines will be able to provide an oxygen concentrator which fits under the plane seat and can be set to the required flow rate.

Oxygen safety

Oxygen use in the home is safe. Oxygen does not explode; however, it does support combustion. This means that you **must not smoke** whilst wearing oxygen, and you should not wear your oxygen while close to gas stoves, lighted fireplaces, or any other sources of heat or open flame. There have been cases where nasal prongs have caught fire as the wearer was smoking during oxygen use.

There are many positive benefits from home oxygen treatment. Most people report that with a few changes to their lifestyle, a good quality of life can be maintained. Complaints including 'being addicted to oxygen', 'being tied to a machine', and 'living on the end of a plastic tube', prove to be quite wrong. When compared to being in hospital, living at home with added oxygen treatment allows control of daily life and generally improves the way people feel. With the increasing use of portable oxygen equipment, we now see more people out and about at



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the shops, theatre, or simply walking the dog; people who would otherwise be frightened to leave their front door. The use of long (9.2m or 30 ft) lengths of tubing at home with the concentrator close to the external doorway, allows time in the garden or simply sitting outside. Most people find being 'self-conscious' with oxygen equipment is short-lived, and once confidence improves the positive benefits quickly outweigh any embarrassment.

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