

## Oxygen Concentrator

### What is oxygen concentrator?

- Oxygen concentrator is an electrically operated medical device which provides purified oxygen. This device works by pumping indoor air into a container that separates oxygen from room air and concentrates it to provide oxygen continuously to users.
- Compared with other oxygen supply devices like compressed oxygen cylinder, the oxygen concentrator is larger in size and it may restrict the movement of the user since it operates on electricity. However, its operation is simple and no refill of oxygen is required. Therefore, it is suitable for long term use at home.



### Who needs oxygen concentrator?

- Oxygen concentrator would be prescribed to patients suffering from chronic oxygen deficiencies such as severe chronic obstructive pulmonary disease (COPD). Through measuring a patient's blood gases level of oxygen and carbon dioxide, doctor can decide whether the patient needs long term oxygen therapy.
- Long term oxygen therapy (oxygen is given for more than 15 hours per day) can correct oxygen deficiency, reduce dyspnoea, reduce heart and lung workload, and hence improve patient's aerobic capacity and quality of life. Some studies also show that long term oxygen therapy can decrease the mortality rate of patients with COPD.

### Basic accessories of oxygen concentrator

#### 1. Nasal oxygen cannula

- It is a soft plastic tube with two nasal tips. When no humidifier is installed, it can be attached directly to the oxygen outlet port of an oxygen concentrator and deliver the oxygen into nostrils directly.
- Doctor will usually advise patients receiving long term oxygen therapy to use nasal cannula because the oxygen concentration delivered is relatively low (24-44%) which is suitable for COPD patients. Moreover it is easy to use and does not interfere with talking and eating.



## **2. Humidifier**

- The installation of a humidifier to the oxygen outlet port of an oxygen concentrator can reduce nasal discomfort such as dry nose, blocked nose, nose bleeding, sore throat and hoarseness which are associated with inhaling dry oxygen.
- Since the weather in Hong Kong is humid, normally there is no need to install a humidifier. User may consider installing a humidifier only when he needs high oxygen flow rate (above 4 litres per minute), in winter days when relative humidity is low or when he has problem of dry nose.

## **Points to note when using oxygen concentrator**

### **1. Don't change the oxygen flow rate without consulting your doctor**

- Oxygen is a medicine that needs to be prescribed by the doctor. Hence, user must follow the prescription and never change the flow rate without consulting the doctor.
- In certain circumstances, oxygen is dangerous. If a user with COPD receives too much oxygen, his breathing reflex will be suppressed and resulted in hypercapnia (too much carbon dioxide in the body). He should seek emergency medical advice if there are symptoms suggestive of hypercapnia such as sleepiness, tiredness, headache and confusion.

### **2. Proper operation and regular maintenance**

- Seek and follow doctor's professional advice regarding the use of oxygen concentrators. Follow the manufacturer's instructions in the operation manual to ensure the device is properly operated. Contact the supplier for regular maintenance.

### **3. Location of oxygen concentrator**

- To ensure free flow of air supply, put the oxygen concentrator at well-ventilated location and keep it at least 30 cm away from the wall, furniture or curtain.
- Oxygen can cause rapid burning. Do not smoke if you are operating the oxygen concentrator or near a person using oxygen therapy.
- For safety reasons, the oxygen concentrator and the person using oxygen therapy should maintain a distance of at least 2 metres (or a distance recommended in the operation manual) from any source of high temperature and sparkling objects (including cooker).

#### **4. Cleansing and disinfection of accessories**

- Clean and maintain the accessories regularly according to manufacturer's instructions.

#### **Nasal oxygen cannula**

- Use disposable nasal oxygen cannula and replace it according to manufacturer's instruction (usually 2 to 4 weeks).
- Disinfect the nasal oxygen cannula at least once a week. It should be immersed in a solution containing 1:49 diluted household bleach (5.25%) for at least 10 minutes. Rinse with water and dry completely before storage.

#### **Humidifier**

- To reduce the risk of contracting Legionnaires' disease, use only sterile water to fill up the humidifier (Do Not use distilled water or tap water). Sterile water is available from most dispensaries.
- Never leave stagnant water in the humidifier. Empty the water tank, keep all surface dry and change the sterile water daily.
- Clean and maintain the humidifier according to manufacturer's instructions. After cleaning or disinfection, rinse the humidifier with sterile water or cooled freshly boiled water.
- For more information on Legionnaires' disease, please visit the webpage of the Centre for Health Protection (<https://www.chp.gov.hk/en/healthtopics/content/24/2117.html>).

#### **5. Backup oxygen**

- Since the oxygen concentrator operates on electricity, a compressed oxygen cylinder should be kept at home for emergency use in case of suspension of electricity supply.

#### **6. Respiratory infection**

- If there are signs and symptoms of respiratory infection, for example, fever, increased shortness of breath and wheezing, increased cough, increase in the amount or change in colour of the sputum, user should seek medical advice immediately.

