This booklet has been designed by the staff of the Hyperbaric Service for patients receiving hyperbaric oxygen therapy (HBOT). It aims to provide expanded answers to the common questions that are asked by patients during their treatments.

The content of this booklet is by no means conclusive and the information given here can be elaborated on by the hyperbaric Nurse, Technician and Doctor
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History of hyperbaric medicine at the Alfred

Hyperbaric medicine has been operating continuously at the Alfred since 1987.

The original chamber facilities were used to treat divers with the bends. As the number of patients being treated increased, facilities have been upgraded and our current chamber was put in place in 1999. Alfred’s Hyperbaric Service is the only public chamber in Victoria and provides the State Service 24hour 365day for emergencies alongside its regular inpatient and outpatient care.

What is hyperbaric oxygen therapy (HBOT)?

Hyperbaric Oxygen Therapy is the administration of 100% oxygen at a pressure greater that atmospheric pressure. As the air we breathe contains only 21% oxygen, breathing 100% oxygen at high pressure results in much more oxygen being dissolved in the body.

Hyperbaric oxygen has been used for many years to treat decompression illness ('the bends') in divers. We
are now using this treatment for other conditions such as gas gangrene, bone infections and some non-healing wounds.

**What conditions are treated?**

There are eight recognized and scientifically supported indications for HBOT.

These include:

- Necrotising soft tissue infections
- Cerebral or Arterial gas embolism
- Crush injury & compartment syndrome
- Compromised surgical flaps & grafts
- Osteomyelitis
- Radiation necrosis
- Wound healing
- Decompression illness

**What happens during a hyperbaric treatment?**

As the pressure in the chamber increases, you will develop a feeling of fullness in your ears. You will be taught how to 'equalise' or 'clear your ears'. This may involve swallowing, yawning, or performing a valsala manoeuvre. You should expect a popping sensation in your ears. If the build up of pressure in your ears is becoming uncomfortable, please tell the nurse so that pressurisation can be stopped until your ears have
cleared. You may not be able to equalise if you have a cold, flu or sinusitis.

You will notice that the chamber will become warmer during pressurisation. This is normal. Please let us know if you get too hot, we can give you a wet face washer. There is a basic overhead fan in the chamber which the nurse can increase. You will also notice that the chamber will become cooler during depressurisation. This is also normal. Blankets can be provided to help keep you comfortable.

You may find that the treatments are time consuming, however, it is important that you continue the treatments on a regular basis. Interruptions will interfere with the healing process.
Preparation for hyperbaric treatment

There are several procedures that you must do before each treatment. These include:

- **Medical Assessment**

  Before you are accepted for treatment you will be examined by a Hyperbaric physician, to assess your suitability to undergo hyperbaric oxygen therapy. As well as the examination, several tests may be ordered, these may include:

  - Chest X-Ray
  - Lung function tests
  - Hearing tests
  - Blood tests
  - Skin oxygen levels

- **Admission Process**

  Each day, you will be admitted as a hospital day patient. This is done in the Hyperbaric Service. Our receptionist will assist you in signing the appropriate forms. You will be notified of your treatment time which in general will be the same time each day (Monday to Friday). Prior to treatment we will check that you are “dive fit” enough to go into the chamber.
We ask you to be in the Hyperbaric Unit 30 minutes before the treatment begins to be seen by the medical or nursing staff.

If you unable to attend for any reason (cold, hay fever, or transport problems) it would be appreciated if you telephone us as soon as possible on (03) 9076 2269.

Hyperbaric oxygen is frequently used as part of a total treatment program. It is very important that you follow the advice of the medical officer which may include:

- Continue to take prescribed medications
- A light breakfast or lunch is recommended prior to your treatment.

**Common side effects of HBOT**

Although hyperbaric Oxygen therapy is generally a very safe and well tolerated form of medical treatment, there are some important risks and side effects of which you should be aware. The most common issues are:

- **Barotrauma**
  - Ears are the most common, and after dental work such as fillings. Can also rarely occur in lungs and gastrointestinal system.

- **Oxygen toxicity**
  - The risk of this is low but not totally avoidable. At high levels oxygen can become
• Visual changes
  o This usually develops slowly during long courses of hyperbaric oxygen therapy. Temporary myopia (short sightedness) can occur, especially in older patients, diabetics and those with pre-existing eye disease. Vision should return towards what is normal for you within a few weeks.

**How will hyperbaric oxygen therapy help me?**

There are several procedures that you must do before each treatment. Hyperbaric oxygen helps the body in several ways:

- **Hyperoxygenation**
  Hyperbaric oxygen increases the amount of oxygen able to be utilized by the body by super-saturating the tissue and well as haemoglobin.

- **Vasoconstriction and reducing oedema (swelling)**
  Hyperbaric oxygen has the unique property of constricting blood vessels thereby reducing oedema, whilst simultaneously increasing the oxygen supply to an area.

- **Promotes tissue growth**
  Collagen is necessary to make scar tissue and stabilises skin while growing over wounds. High
oxygen levels promote the growth of collagen. Tissue such as skin, muscles and other soft tissues grow faster in an oxygen rich area.

- **Stimulates white blood cell (WBC) action**
  Some white blood cells kill bacteria by using special enzymes and toxic substances incorporating oxygen. In areas of the body where oxygen levels are low, WBC lose the oxygen dependent killing systems. HBO restores this function, enhancing the killing of bacteria.

- **Promotes angiogenesis (blood vessel growth)**
  Hyperbaric oxygen stimulates the growth of new blood vessels into poorly perfused tissues. It also ‘supports’ at risk tissues until the new blood vessels grow.

- **Improves antibiotic action and toxic effect on micro-organisms**
  Certain antibiotics have enhanced action in an oxygen rich environment. Some bacteria are also restricted in their growth in oxygen rich tissues.

- **Decrease gas bubble size & nitrogen elimination**
  This generally affects only SCUBA divers. Hyperbaric oxygen helps to reduce gas bubble size and diffusion of the embolised gas whilst re-oxygenating ischaemic tissue.
Safety in a hyperbaric environment

As the Hyperbaric Chamber is a high oxygen concentration environment there is a slight risk of fire. As a safety precaution, we will ask you to wear 100% cotton scrubs which we provide. Shoes are not allowed inside the chamber. Please leave footwear outside the chamber so dirt and grease from the floor is not taken inside.

For safety reasons the following items are prohibited inside the chamber:

- Mobile phones
- Mp3 or CD players
- Watches
- Matches
- Cigarette lighters
- Hearing aids
- Prosthetics
- Insulin pumps
- Synthetic fibres
- Makeup/lipstick
- Hair spray/gel/other products
- Synthetic wigs/hairpieces
- Perfume/cologne

You may like to bring something to read during your treatment – but don't forget your glasses! The Hyperbaric Unit has a small library of books and magazines. There also is a selection of DVD’s and music for use during treatments to choose from.

A nurse with Hyperbaric qualifications will always accompany you inside the chamber.
Outside the chamber there is another Hyperbaric qualified nurse and a Hyperbaric technician who are specially trained to operate the chamber. They observe the chamber interior constantly via a video and intercom. A doctor is readily available.

**Conclusion**

The Hyperbaric Service is a 24 hour service, available seven days a week to treat emergency patients. Due to the irregular and unpredictable demand for hyperbaric treatment there will possibly be times when you may be kept waiting. This is unavoidable; we ask for your patience and understanding.

We have many other educational resources for you in the unit, so ask the nursing staff if you would like more information.

If you have any queries, please don't hesitate to ask.