



## **Norman Knight Hyperbaric Medicine Center Patient Guide to Hyperbaric Oxygen**

### **What is hyperbaric oxygen therapy?**

Hyperbaric oxygen therapy (HBO) is a medical treatment in which the entire body is under increased atmospheric pressure and the patient breaths 100% oxygen. This treatment is administered in a pressurized chamber. It is proven effective for a number of different medical and surgical conditions either as a primary treatment or in addition to other medical treatments such as antibiotics or surgery.

At the Hyperbaric Unit at Massachusetts Eye and Ear, we use a single person (monoplace) chamber. Some facilities use a multi-place chamber and treat more than one person at a time.

### **How does hyperbaric oxygen therapy work?**

Normally our atmosphere is exerting 14.7 pounds per square inch of pressure at sea level. This is equivalent to one atmosphere absolute (1 ATA). In this atmosphere, we breathe approximately 20% oxygen and 80% nitrogen. During HBO, the pressure is increased two or three times more than normal and you breathe 100% oxygen. Most patients are treated at two times the normal atmospheric pressure (2 ATA).

The combination of high concentrations of oxygen (100%) and increased pressure cause large amounts of oxygen to be dissolved in your blood and other tissue fluids. There can be as much as 10 to 15 times the usual amount of oxygen dissolved in your blood, which gets more oxygen to the rest of your body.

Many different problems have been shown to benefit from HBO. Some of the most common problems are non-healing wounds (especially in diabetics), osteomyelitis (bone infections), radiation injury to bone or soft tissue burns, decompression illness (bends) and carbon monoxide poisoning.

### **How do I get ready for my treatment?**

**Medications:** Some medications are not compatible with hyperbaric oxygen therapy (Adriamycin, Bleomycin, and Sulfamylon). The nurse/technician will need to know all drugs you are currently taking. Each drug will be considered individually in relation to HBO therapy, and if changes are necessary in your medication schedule, your physician will be consulted.

While your doctors need to know all of your medications; chemotherapy agents, seizure medications, steroids, and diabetic medications are of particular importance. Please be sure to

inform the medical team of all such medications that you are taking now or have taken in the past.

You will be advised to take at least 400 units of vitamin E daily during the entire course of HBO therapy. Vitamin E is available in most drug stores and does not require a prescription. It helps protect your body from absorbing more oxygen than it can safely use.

**Cold and Other Illnesses:** It is important that you notify us if you have symptoms of a cold or the flu – fever, cough, sore throat, runny nose, fever blisters, cold sores, nausea, vomiting, diarrhea and general ache all over feelings. These types of symptoms are not helped by oxygen, so the HBO treatments may be postponed until your symptoms have subsided and the HBO physician to restart treatments has cleared you.

**Smoking:** Nicotine causes small blood vessels to contract, causing decreased circulation and oxygenation. Smokers also have higher carbon monoxide levels than non-smokers and so do not receive the full benefit of oxygen therapy. Once HBO therapy has been prescribed for you, you are urged to stop smoking. Stopping tobacco use is very important for the entire time you are under treatment for your wound but also is important for your overall long term health. This “no smoking” rule applies to cigarettes, pipe tobacco and cigars, as well as snuff.

**Cosmetics:** Any makeup, hair spray, perfume, deodorant or shaving lotion: containing a petroleum or alcohol base may not be used prior to a treatment. Please discuss any skin care product you wish to use with the nurse/technician so they may help assure your safety.

**Clothing:** You will be provided with 100% cotton gowns for your treatment. No other articles of clothing are to be worn into the chamber. Watches, rings and other jewelry, hard and soft contact lenses and other prosthetic devices will need to come off before the treatment. It is important that body cleanliness be maintained during the course of treatment. Glasses may be worn.

**Scheduling:** The nurse/technician in the unit will schedule your treatments on a daily basis. Every effort will be made to consider your other activities or other treatments, but there may be times when your appointment will be changed, canceled, or postponed due to emergency situations. If on the other hand, you find you are unable to keep an appointment, please call the Hyperbaric Unit as soon as possible.

## What will I feel during treatment?

Once you are in the chamber and the door is closed, you will hear the oxygen begin to circulate, we will then start the gradual increase in pressure. This is called compression. There may be some warmth that you notice, but this is temporary. A nurse/technician will remain with you during the treatment, to adjust the rate of compression according to your tolerance and to coach you on how to relieve the “pressure sensation”, which you will feel in your ears. This feeling is similar to what you may have felt while traveling down a mountain, flying or scuba diving. We will coach you on how to clear your ears, but you may need to try several ways in order to find the most effective for you. Compression generally last 7 to 10 minutes, depending on how effectively you clear your ears.

When you have reached the prescribed pressure, the fullness in your ears will cease, and you may rest or sleep during the remainder of the treatment. You may also watch TV or listen to music during this time, which will be about 1.5 to 2 hours. The temperature in the chamber is similar to room temperature, but may be adjusted slightly.

Near the end of your treatment the nurse/technician will gradually decrease the pressure added at the beginning. This is the decompression phase. During decompression, you experience a “popping” sensation in your ears as a result of the changing pressure. This popping is a normal adjustment in your ears; similar to what happens when you are driving up a mountain.

## What are the possible side effects?

As with all medical procedures and treatments, there are some side effects that may result from exposure to hyperbaric oxygen. These are rare. The following is a summary of some of the potential risks or side effects of hyperbaric oxygenation:

**Barotrauma or pain in the ears or sinuses:** This occurs if you are unable to equalize the pressure in your ears or sinuses. You should notify the technician immediately if you experience such ear or face pain. Staff can assist by slowing the speed of the pressurization or halting the process. They will coach you on techniques that help to equalize the ear pressure. If uncorrected this unrelieved pressure can result in injury to the eardrum or sinuses.

**Cerebral Air Embolism and Pneumothorax:** Whenever there is a rapid change in air pressure, there is the possibility of rupture of the lungs with escape of air into the veins or into the chest cavity outside the lungs. This can only occur if the normal passage of air out of the lungs is blocked during decompression, this can occur with breath holding, coughing, or mucus plugging (as with a bad chest cold). Only slow decompressions are used in hyperbaric oxygen treatment to minimize this possibility.

**Oxygen Toxicity:** The risk of oxygen toxicity will be minimized by never exposing you to greater pressure or longer times than are known to be safe for the body and its organs. Symptoms of this would be dizziness, facial twitching and nausea. This can lead to a seizure if the oxygen is not decreased. It is important to tell the staff ASAP if you start to develop any of these symptoms.

**Risk of Fire:** With the use of oxygen in any form there is an increased risk of fire, but strict precautions have been taken to prevent this and the unit complies with all applicable codes. There has never been a fire involving a patient in a monoplace chamber in the United States.

**Risk of Worsening of Near-Sightedness:** (Myopia) After 20 or more treatments, especially if you are over 40 years of age, it is possible that you may experience diminution in your ability to see things far away. Understand that this is believed to be temporary and that vision usually returns to its pretreatment level about six weeks after the cessation of therapy.

**Maturing or Ripening Cataracts:** In individuals with cataracts, it has occasionally been demonstrated that there may be a maturing or ripening of the cataracts.

**Temporary Improvement in Far-Sightedness:** (Presbyopia) After 20 or more treatments, especially if you are over 40 years of age, there is a possibility that you may experience an improvement in your ability to see object close by, or to read without reading glasses. However, understand this is believed to be temporary and that your vision should return to its pretreatment level of acuity in about six weeks following the cessation of therapy.

**Numb Fingers:** A small proportion of our patients sometimes notice a numb feeling in the fourth and fifth fingers or in the hands after 20 or more treatments. This should not be of concern and should disappear in about six weeks following cessation of therapy.

**Ear Fluid:** Fluid found in the ears sometimes accumulates as a result of breathing high concentration of oxygen. It may sometimes feel like a pillow over your ears. This disappears after treatment ceases and often can be eased with decongestants.

**Fatigue:** Some people may subjectively feel fatigue following hyperbaric treatment, but this is not a consistent finding.

## **No Show and Cancellation Policy**

**No Show:** If a patient misses a total of three (3) scheduled appointments without calling or notifying the unit, the patient will be considered as forfeiting any more of their scheduled HBO treatments at MEE and future scheduled treatment will be cancelled.

**Cancellations:** When a cancellation is due to an illness and notification is received, the patients scheduled time will be held for up to one week. If a patient has six (6) or more cancellations, the HBO unit reserves the right to either move the requested time slot to another time or discharge the patient from the remaining treatments.

*For any questions related to these policies, please speak with a member of the hyperbaric medicine team.*

## **Discount Parking Program**

HBO patients that receive between 20 - 40 treatments on consecutive days are responsible for the first half of visits at Mass Eye and Ear's current parking rate. Mass Eye and Ear offers both self-parking options in our lot and valet parking. Please next page for more detailed parking information.

**Parking vouchers will be provided to the patient on additional treatment days at no further charge.**



## Patient Pre-Treatment Checklist

In order for each patient to be safely and properly prepared for treatment, please adhere to the following checklist **each day** prior to coming to the unit.

- Remove all jewelry (except wedding band).
- Remove hearing aids, prosthesis and dentures (all may be removed at unit).
- Bathe or shower prior to treatment to completely remove cosmetics, perfumes and deodorants.
- NO hairspray, oils, hair creams, body lotions, petroleum based products. Treatments must be cancelled if residue from these products remains on skin.
- NO Sulfamylon or petroleum based dressing during hyperbaric treatment regimen.
- Have a meal or snack within one (1) hour prior to treatment since blood sugar levels may decrease during the hyperbaric treatment. **This is especially important for diabetic patients.**
- **The patient should take all their medication as scheduled**, however, please inform our staff if any routine medication was not taken that day.
- No medication patches allowed (Do not apply till after your treatment)

***The Norman Knight Hyperbaric Medicine staff will be happy to assist you with any questions concerning preparation for treatments, please call 617-573-4411.***