PROCEDURE

Hyperbaric oxygen therapy

Hyperbaric oxygen therapy involves breathing pure oxygen inside a pressurized chamber to increase oxygen delivery to body tissues.

PURPOSE
Increase oxygen delivery to support healing or treat pressure-related illness

PROCEDURE TYPE
Therapeutic; non-invasive treatment inside a pressurized chamber

WHERE IT IS DONE
Outpatient clinic or hospital hyperbaric unit

ANAESTHESIA
None

HOW LONG IT TAKES
Usually 90 to 120 minutes per session

PREPARATION
Follow facility safety rules; review medicines and blood glucose

RECOVERY
Same day; drive only if well and unrestricted

MAIN RISKS
Ear injury, sinus pain, temporary vision changes, oxygen toxicity

RESULTS
Immediate to weeks, based on the condition and treatment course

Overview

Hyperbaric oxygen therapy, or HBOT, involves breathing pure oxygen in a specially designed chamber. The pressure inside the chamber is raised above normal air pressure. This allows your blood to carry more oxygen to tissues throughout your body.

The extra oxygen may help damaged tissue heal, support the body's response to certain infections, and reduce bubbles caused by changes in pressure. HBOT is often used alongside wound care, antibiotics like amoxicillin or doxycycline , surgery, or other treatment. It does not usually replace them.

Treatment may take place in a single-person chamber, where you lie on a sliding bed, or a larger chamber that treats several people at once. In a larger chamber, oxygen may be supplied through a mask or hood.

Medical HBOT is different from low-pressure "mild" chambers marketed for wellness. These may not provide the same pressure or oxygen dose used in hospital-based treatment.

Why the procedure is performed

HBOT is used for a limited group of medical conditions. The reason for treatment affects how quickly it must begin and how many sessions may be needed.

Recognized uses include:

Not every wound, infection, or case of carbon monoxide exposure needs HBOT. A hyperbaric specialist considers the diagnosis, expected benefit, timing, and other available treatments.

Evidence does not support using HBOT as a general wellness treatment. Some advertised uses, such as treating autism, cancer, Lyme disease, or long-term effects of a mild brain injury, are not established medical indications.

- Decompression sickness, usually after diving
- Carbon monoxide poisoning
- Air or gas bubbles blocking blood vessels
- Certain serious soft-tissue infections
- Selected wounds that are not healing, including some diabetic foot ulcers
- Tissue damage caused by previous radiation treatment
- Certain bone infections that have not responded to standard treatment
- Crush injuries and threatened tissue
- Skin grafts or tissue flaps with poor blood supply
- Severe blood loss when transfusion is not possible or sufficient

Who should and should not have it

You may be offered HBOT when extra oxygen under pressure is expected to improve the outcome of a recognized condition. For chronic wounds or radiation injury, it is generally part of a wider treatment plan rather than a stand-alone treatment.

HBOT should not be given to someone with an untreated pneumothorax. This is a collapsed lung caused by air trapped between the lung and chest wall. Increasing and then lowering chamber pressure could make it dangerous.

Treatment may need to be delayed or adapted if you have:

Some chemotherapy medicines, including bleomycin or doxorubicin, need specialist review. Pregnancy does not automatically rule out emergency HBOT, particularly for carbon monoxide poisoning, but elective treatment requires an individual assessment.

- A cold, fever, blocked sinuses, or difficulty clearing your ears
- Certain lung conditions that can trap air
- Poorly controlled seizures
- Low blood glucose or diabetes requiring insulin
- Severe claustrophobia
- A recent ear or chest operation
- An implanted medical device not confirmed safe under pressure
- Current or recent use of medicines that may interact with HBOT

How to prepare

Your treating facility's own instructions take priority because chamber equipment and safety policies differ.

Give the team a complete list of your medicines, supplements, allergies, medical devices, and recent treatments. Tell them if you might be pregnant or have lung disease, seizures, diabetes, ear problems, or claustrophobia.

You will usually be asked to remove anything that could create a spark or fire risk. This may include electronics, jewelry, hearing aids, cosmetics, hair products, petroleum-based skin products, and some wound dressings. The facility may provide a cotton gown.

Unless told otherwise, you can usually eat before treatment. If you have diabetes, follow the unit's instructions about meals, insulin, other diabetes medicines, and glucose checks. Avoid smoking because nicotine narrows blood vessels and reduces oxygen delivery.

Contact the unit before arriving if you develop congestion, fever, vomiting, or new breathing problems.

What happens during the procedure

You enter or lie inside the chamber, and the door is sealed. Staff remain in contact with you

throughout treatment.

Pressure increases gradually. Your ears may feel full, similar to takeoff or landing in an airplane. Staff will show you how to swallow, yawn, or gently clear your ears. Tell them promptly if you develop ear pain. The pressure can be paused or changed.

Once the treatment pressure is reached, you breathe oxygen. Depending on the chamber, oxygen may fill the chamber or come through a fitted mask or clear hood. Scheduled air breaks may be used to limit oxygen exposure.

You can usually rest, watch television, or communicate with staff. You remain awake, and anaesthesia is not needed.

At the end, pressure returns slowly to normal. Your ears may pop again during this stage. Staff then check how you feel and may examine your ears or repeat a blood glucose test.

Recovery and what to expect afterward

You should not have significant pain afterward. Mild ear fullness, sinus pressure, tiredness, or light-headedness can occur. These effects often settle shortly after leaving the chamber.

You can usually eat and drink normally after treatment. If you have diabetes, follow your glucose-monitoring and meal plan because HBOT can lower blood glucose.

Most people can return to normal light activity the same day. Follow any separate limits caused by your wound, infection, surgery, or other condition.

Sedation is not normally used, so many people can drive themselves. Do not drive if you feel dizzy, have blurred vision, received a sedating medicine, or were told not to drive by the facility.

You may be able to work after a session, but tiredness and appointment length can make time off necessary. Physical work may remain restricted because of the condition being treated.

Risks and possible complications

Pressure changes can injure the middle ear or sinuses. This is called barotrauma. It may cause pain, muffled hearing, fluid behind the eardrum, or, less often, a torn eardrum.

Other possible complications include:

An oxygen-related seizure usually stops when oxygen exposure ends, but it requires immediate medical assessment. Staff control the pressure and oxygen dose and monitor you throughout treatment.

Oxygen supports burning, so hyperbaric units use strict rules to prevent fires. Do not bring prohibited products or equipment into the chamber.

- Temporary short-sightedness or blurred vision during a treatment course
- Faster progression of an existing cataract after prolonged treatment
- Low blood glucose, especially in people using insulin
- Anxiety or panic inside the chamber
- Lung injury from pressure changes
- An oxygen-related seizure

Results and follow up

The timing of results depends on why HBOT is being used. Improvement after treatment for decompression sickness or carbon monoxide poisoning may be assessed quickly. Wound, bone, or radiation-related problems may require repeated sessions before progress is clear.

Your team may track wound size, tissue appearance, infection, pain, neurological function, or imaging findings. Follow-up may involve a wound specialist, surgeon, infectious disease specialist, diving medicine specialist, or the clinician managing your underlying condition.

Attend routine reviews even if you feel well. The team may change or stop HBOT if there is no meaningful improvement, if the treatment goal has been reached, or if risks begin to outweigh likely benefits.

Alternatives

Alternatives depend on the condition being treated.

For a chronic wound, options include pressure relief, improved blood flow, glucose management, dressings, removal of dead tissue, infection treatment, and surgery. These measures are essential even when HBOT is used. Without HBOT, healing may be slower in selected wounds, but HBOT also requires frequent appointments and does not guarantee healing.

For infection, antibiotics and surgical removal of infected or dead tissue are usually the main treatments. Choosing HBOT without these treatments may leave the source of infection untreated.

For radiation-damaged tissue, medicines, wound care, reconstructive surgery, or removal of

damaged tissue may be considered. Surgery can address structural damage but may heal poorly in tissue with a reduced blood supply.

For carbon monoxide poisoning, high-flow oxygen at normal pressure is widely used. HBOT delivers oxygen at higher pressure but requires transfer to a suitable unit and is reserved for selected cases.

Decompression sickness and an air or gas embolism may require urgent recompression. There may be no equally effective substitute when HBOT is specifically recommended for these conditions.

When to call your healthcare team

Contact the hyperbaric team promptly for persistent ear or sinus pain, reduced hearing, ear drainage, new blurred vision, repeated low blood glucose, fever, congestion, or worsening wound symptoms.

Call emergency services for severe shortness of breath, chest pain, a seizure, fainting, new confusion, or sudden weakness. These are emergency symptoms rather than issues to wait to discuss at a routine appointment.

Mild tiredness or brief ear fullness can usually be mentioned at your next session if it is improving. Tell staff before treatment if you are having trouble clearing your ears.

Common questions

Will I be asleep?

No. You are normally awake throughout HBOT. Anaesthesia and sedation are not usually needed. Staff can see or speak with you during treatment.

Can I drive home afterward?

Usually, if you feel well and have not received a sedating medicine. Do not drive with dizziness, blurred vision, low blood glucose, or any restriction given by the facility.

How painful is hyperbaric oxygen therapy?

The treatment itself should not be painful. Ear pressure is common while the chamber pressure changes. Tell staff immediately if pressure becomes painful.

How many sessions will I need?

An emergency condition may require one or several treatments. Chronic wounds or radiation

injury may require a longer course. The number is based on the condition and your response.

When will I know if it is working?

Some effects are assessed immediately. Wound healing and radiation-related tissue changes may take weeks and are judged through examinations, measurements, and follow-up tests.

What if I feel claustrophobic?

Tell the unit before treatment. Staff may arrange a chamber visit, explain communication and exit procedures, or discuss other ways to manage anxiety.

Sources

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