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Hyperbaric Oxygen Therapy

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Hyperbaric oxygen therapy (HBOT) is a type of treatment used to speed up healing of carbon monoxide poisoning, gangrene, and wounds that won't heal. It is also used for infections in which tissues are starved for oxygen.

For this therapy, you enter a special chamber to breathe in pure oxygen in air pressure levels 1.5 to 3 times higher than average. The goal is to fill the blood with enough oxygen to repair tissues and restore normal body function.

Facts about hyperbaric oxygen therapy

Hyperbaric oxygen therapy was first used in the U.S. in the early 20th century.

The therapy was tried again in the 1940s when the U.S. Navy used it to treat deep-sea divers who had decompression sickness. The therapy was also used to treat carbon monoxide poisoning by the 1960s.

Today, it's still used to treat sick scuba divers and people with carbon monoxide poisoning, including firefighters and miners. It has also been approved for more than a dozen conditions ranging from burns to bone disease. These include:

Carbon monoxide poisoning

Cyanide poisoning

Crush injuries

Gas gangrene (a form of gangrene in which gas collects in tissues)

Decompression sickness

Acute or traumatic reduced blood flow in the arteries

Compromised skin grafts and flaps

Infection in a bone (osteomyelitis) that doesn't respond to other treatment

Delayed radiation injury

Flesh-eating disease (necrotizing soft tissue infection)

Air or gas bubble trapped in a blood vessel (air or gas embolism)

Chronic infection called actinomycosis

Diabetic wounds that are not healing correctly

Medicare, Medicaid, and many insurance companies generally cover hyperbaric oxygen therapy for these conditions. But may not do so in every case. Check with your insurance plan to see if it is covered and if you need pre-authorization before treatment.

Be aware that HBOT is not considered safe and effective for treating certain conditions. These include HIV/AIDs, brain injury, heart disease, stroke, asthma, depression, spinal cord injury, and sports injuries.

How does HBOT work?

HBOT helps wound healing by bringing oxygen-rich plasma to tissue starved for oxygen. Wound injuries damage the body's blood vessels, They release fluid that leaks into the tissues and causes swelling. This swelling deprives the damaged cells of oxygen, and tissue starts to die. HBOT reduces swelling while flooding the tissues with oxygen. The higher pressure in the chamber increases the amount of oxygen in the blood. HBOT aims to break the cycle of swelling, oxygen starvation, and tissue death.

HBOT prevents "reperfusion injury." This is the severe tissue damage that happens when the blood supply returns to the tissues after they have been deprived of oxygen. Blood flow can be interrupted by a crush injury, for instance. If this happens, a series of events inside the damaged cells leads to the release of harmful oxygen radicals. These molecules can do damage to tissues that can't be reversed. They cause the blood vessels to clamp up and stop blood flow. HBOT encourages the body's oxygen radical scavengers to seek out the problem molecules and let healing continue.

HBOT helps block the action of harmful bacteria and strengthens the body's immune system. HBOT can disable the toxins of certain bacteria. It also increases oxygen concentration in the tissues. This helps them resist infection. And the therapy improves the ability of white blood cells to find and destroy invaders.

HBOT encourages the formation of new collagen and new skin cells. It does so by encouraging new blood vessels to grow. It also stimulates cells to make certain substances, like vascular endothelial growth factor. These attract and stimulate endothelial cells needed for healing.

Types of hyperbaric oxygen chambers

Hyperbaric oxygen therapy uses two types of chambers:

Monoplace chamber. This is a chamber built for one person. It's a long, plastic tube that looks like an MRI machine. The patient slips into the chamber. It's slowly pressurized with 100% oxygen.

Multiplace chamber. This chamber, or room, can fit two or more people at once. The treatment is largely the same. The difference is that people breathe pure oxygen through masks or hoods. A technician may also be in the chamber with you as you get the treatment.

What happens during HBOT

Only a healthcare provider should prescribe HBOT. A number of hospitals offer these chambers. People relax, sit, or lie comfortably in these chambers and take deep breaths. Sessions can last from 45 minutes up to 300 minutes. The time depends on the reason for the treatment.

Your ears may feel plugged as the pressure is raised. This is similar to when you're in an airplane or the mountains. Swallowing or chewing gum will "pop" the ears back to normal.

Your blood carries the extra oxygen throughout the body. This infuses the injured tissues that need more oxygen so they can start healing. You may feel lightheaded when a session is done. Mild side effects include claustrophobia, fatigue, and headaches. Always have someone drive you home after HBOT.

Several sessions are often needed. Best to check beforehand to see whether your insurance company, Medicaid, or Medicare covers the cost.

Precautions

Hyperbaric oxygen therapy is not for everyone. It shouldn't be used by people who have had a recent ear surgery or injury, a cold or fever, or certain types of lung disease.

The most common complication after HBOT is trauma to the middle ear. Other possible complications are eye damage, lung collapse, low blood sugar, and sinus problems. In rare, severe cases, a person can get oxygen poisoning. This can lead to seizures, fluid in the lungs, lung failure, or other problems. Considering the possible risks and benefits, the decision to use hyperbaric oxygen therapy must be carefully made after a discussion with your healthcare provider.

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