

Health

SECTION F

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Oxygen boost

Hyperbaric chamber helps healing, reduces infection

By Jason Hidalgo

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James Taylor, 69, of Sparks lies inside an enclosed, cylindrical chamber that appears to be from a science-fiction movie.

Inside the tube at the Northern Nevada Hyperbaric Center in Reno he will be surrounded by 15 times the oxygen as the atmosphere supplies. Taylor said he was referred by Dr. Richard Goode of the Stanford Medical Center to help with efforts to reconstruct his jaw due to damage from chemotherapy.

"The last surgery to repair my face failed due to ... irradiated tissue, which does not heal very well," said Taylor, communicating via e-mail because jaw problems

affect his speech. "I have already had four chin replacements and (am now) working on a fifth (procedure). I think the treatment with hyperbaric oxygen is my best chance of having a successful surgery of my mouth and chin, and eventually a reconstruction of my mandible (lower jaw)."

Numerous applications

Hyperbaric chambers were originally used to treat diving-related injuries such as decompression sickness and air or gas embolisms. The American Medical Association and the Food and Drug Administration now recognize the benefits of hyperbaric oxygen therapy (HBOT) for 14

conditions including radiation tissue damage, gangrene and carbon monoxide poisoning.

There are four primary mechanisms through which HBOT works, said Richard Flyer, clinical director for Northern Nevada Hyperbaric Center: healing wounds, fighting infection, strengthening the immune system and reducing tissue inflammation.

"Wounds of all kinds need a certain level of oxygen in tissue to heal," Flyer said.

Oxygen also helps promote the production of collagen, the principal protein of the skin, tendons, cartilage, bone and connective tissue, Flyer said.



RELAXING: Michelle Harris, a certified respiratory therapist, communicates with patient James Taylor while he receives treatment at the Northern Nevada Hyperbaric Center in Reno.

Andy Barron/Reno Gazette-Journal

See OXYGEN on 5F

Oxygen/‘This is mainstream medicine’

From 1F

Another benefit is that higher oxygen levels enhance white blood cells to kill harmful bacteria, which helps fight infection and boost the immune system.

HBOT also kills many harmful microbes that thrive in environments without oxygen, which is why it's effective against a condition such as gangrene.

Besides reducing tissue inflammation, HBOT also helps in the formation of new blood vessels in damaged tissue, Flyer said.

Screening important

Not everyone, though, is a suitable candidate for HBOT.

Pressure changes, for example, make HBOT and absolute contraindication for someone with an untreated collapsed lung, Flyer said. Oxygen therapy also raises blood pressure, so people with high blood pressure problems need to get their condition under control before getting treatment.

To prevent complications from health conditions, the center has a medical director, Dr. Jonathan Tay, who screens prospective patients. Clients also need a referral from their doctor.

A common misconception among people, and even some people in the medical field, is that HBOT is alternative treatment, Flyer said.

“This is mainstream medicine,” Flyer said. “In fact, those 14 conditions recognized by the AMA and FDA can be reimbursed through Medicare, Medicaid and third-party insurance. One of our goals is to

educate people and the medical community about the approved uses of hyperbarics.”

How much your insurance covers depends on your benefits, Flyer said. For

people who don't have insurance, the center uses a sliding scale to determine fees.

An average session in the chamber lasts about 60 minutes, plus an additional 30 minutes to pressurize and de-pressurize the machine, Field said.

Staff members also constantly interact with patients to make sure everything is all right.

About one in 20 patients feel uncomfortable being enclosed in the chamber. For those people, a mild sedative is usually prescribed. Those who don't need medication

usually pass by the time by either reading, watching movies or listening to music.

“There were no surprises in the chamber (for me),” Taylor said. “There's adequate room, and it's comfortable.”

“I just listen to music, though. They won't let me bring my glasses in there.”

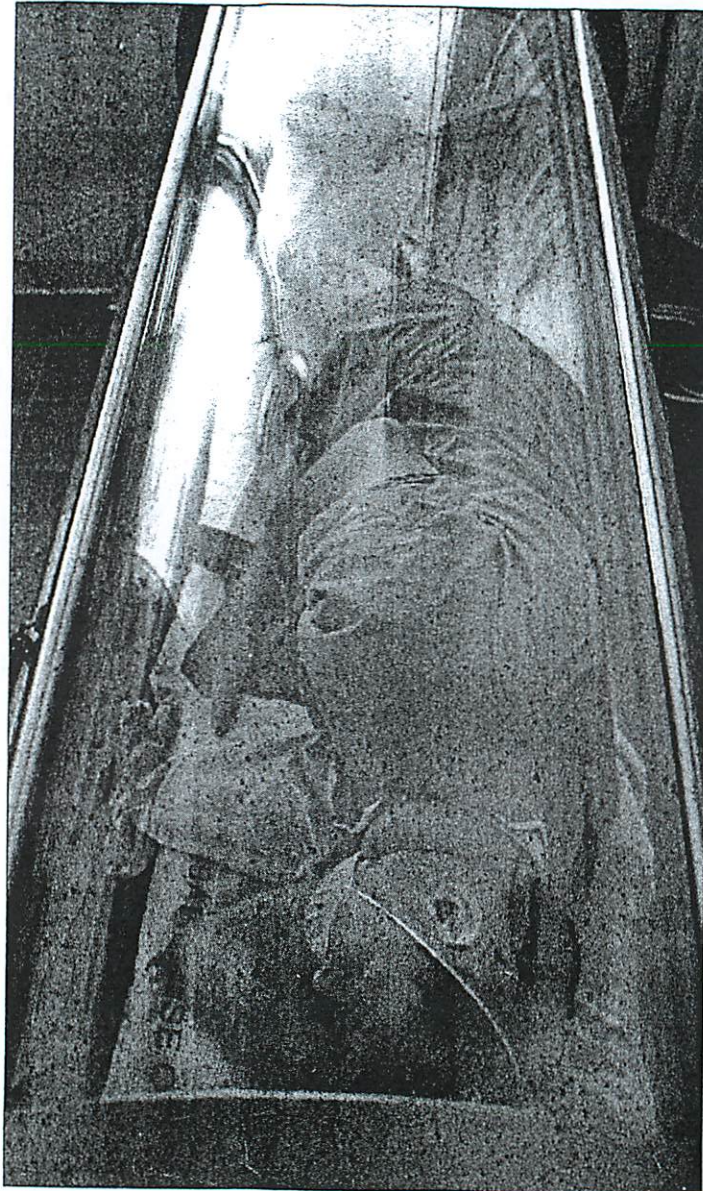
Information

For more information on the Northern Nevada Hyperbaric Center, call 826-2084.

An average session in the chamber lasts about two hours.



Flyer



AT REST: James Taylor relaxed in the hyperbaric chamber in Reno.

Andy Barron/Reno Gazette-Journal

What can the hyperbaric chamber do?

Here's a list of conditions that can be treated by hyperbaric oxygen therapy and covered by insurance:

■ **Osteomyelitis:** Inflammation of the bone due to infection by microbes such as bacteria salmonella or staphylococcus. Usually the result of injury or complications from surgery, including amputations.

■ **Diabetic and certain problem wounds:** These are basically wounds that heal too slowly. Wounds need oxygen to heal. Oxygen also helps promote the production of collagen, the principal protein for skin and other tissues.

■ **Radiation tissue damage and osteoradionecrosis:** This involves soft tissue and bone tissue damage from post cancer radiation therapy.

■ **Gas gangrene:** Tissue death due to loss of adequate blood supply (a prime oxygen source). Gangrene is caused by bacteria that thrive in environments that have no oxygen.

■ **Compromised skin grafts and flaps:** Skin grafts are used to cover an area where a patient's skin has been lost due to burn, injury or surgery. Grafts become compromised when they don't get adequate blood supply, causing them to die.

■ **Crush injuries and compartment syndrome:** Examples include auto

accidents resulting in a foot getting crushed by impact. This can cause irregular blood supplies within the area, with some parts not getting enough.

■ **Necrotizing soft tissue infection:** Also known as “flesh-eating bacteria.” This involves severe bacterial infection that can cause extensive tissue death.

■ **Carbon monoxide and cyanide poisoning:** Carbon monoxide gas prevents oxygenation of the blood, thus the need for re-oxygenation. Oxygen also improves the body's response to treatment from cyanide poisoning.

■ **Air or gas embolism:** Commonly associated with diving. This involves air getting trapped in the bloodstream. It can cause a stroke if it reaches the brain.

■ **Decompression sickness:** A condition that results from exposure to low barometric pressure, which causes inert gases normally dissolved in body fluids and tissues to come out and form bubbles.

■ **Thermal burns:** Oxygen therapy speeds up the healing rate of burns by 30 to 50 percent.

■ **Limb salvage, reattachment and amputations:** Oxygen therapy helps increase blood flow, which increases the chances of salvaging an extremity,

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