



HYPERBARIC ADRIATICA srl

HYPERBARIC THERAPY OUTPATIENT CENTER

Agreement with the National Health Service



Medical Director Dr.
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RECEPTION AND WAITING ROOM OF THE HYPERBARIC CENTER

HYPERBARIC OXYGEN THERAPY (HBOT)

Hyperbaric oxygen therapy (HBOT) involves the administration of pure oxygen in hermetically sealed environments (hyperbaric chambers) where the internal pressure is increased to values above atmospheric pressure using external air. This method allows oxygen to diffuse into the plasma at a higher-than-normal concentration, allowing it to reach, due to the pressure difference, even places where red blood cells have difficulty reaching.

HBOT, if performed correctly, can be crucial in resolving acute pathologies, improving the prognosis, both in terms of survival and the extent of the after-effects.

HBOT, by reactivating deficient metabolic processes, can lead to healing or significant improvement in some chronic diseases. However, it should not be seen as a last resort when the patient's condition is almost completely compromised, but should be used whenever there is a therapeutic rationale.

HBOT displays the characteristics of a drug with a high therapeutic coefficient; therefore, it requires careful dosage, monitoring of response, and prevention of possible side effects. For these reasons it should be practiced by specialists with specific professional training.



THERAPEUTIC EFFECTS OF OTI

The increased availability of oxygen to hypoxic tissues promotes various cellular processes which can be summarized as follows:

- **Increased repair processes in ischemic tissue:** hyperbaric oxygen increases collagen synthesis, allowing for normal hydroxylation of this protein.
At lower than normal tissue oxygen tensions, collagen is not synthesized properly and ulcers and wounds do not heal.
- **Increased osteogenic stimulation:** HBOT increases mineralization processes and bone tissue synthesis in fractures and osteonecrosis.
- **Antibacterial action:** high-voltage oxygen has a double bactericidal function, direct and indirect.

Direct action is exerted against bacteria through the production of Free Radicals (FR), a group of substances deriving from the reduction of oxygen that degrades the cell wall of pathogenic germs.

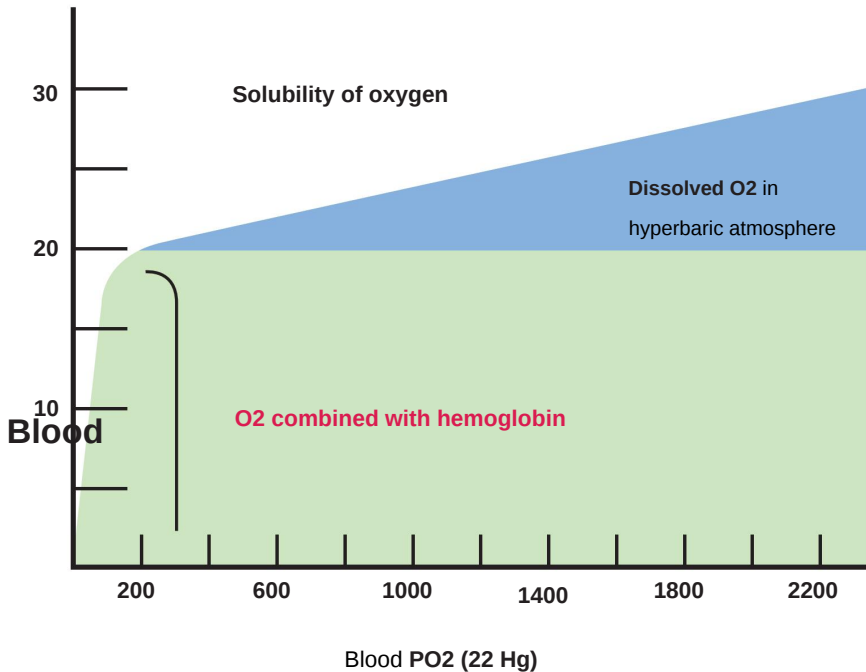
Indirect action is achieved through the synergy of hyperbaric oxygen with antibiotics in soft tissue or bone infections.

Anti-edema action: In trauma involving areas with non-expandable compartments, edema usually develops and is self-perpetuating through a vicious cycle of "trauma-edema-hypoxia-vasodilation-edema." HBOT interrupts this process by causing both arterial vasoconstriction and pressure on the superficial venous wall, thus facilitating increased venous circulation and lymphatic drainage.

Neoangiogenic action: after approximately 15 HBOT sessions, oxygen is able to perform a neoangiogenic function, that is, the formation of new vessels through the release of factors such as Vascular Endothelial Growth Factor (VEGF).

This function is essential for restoring microcirculation in compromised vascular situations such as diabetic foot, re-establishing vascular flow in hypoxic areas.

SOLUBILITY OF OXYGEN



The graph shows the parameters of the chemical-physical process underlying the treatment

INDICATIONS WHERE HBOT IS ESSENTIAL FOR PATIENT

SURVIVAL OR RECOVERY In 2015, a joint STUDY GROUP composed of representatives of the scientific societies—the Italian Society of Anesthesia, Analgesia, Resuscitation, and Intensive Care (SIAARTI), the Italian Society of Underwater and Hyperbaric Medicine (SIMSI), and the National Association of Private Hyperbaric Centers (ANCIP)—revised the Guidelines on indications for hyperbaric oxygen therapy in light of new scientific findings and following the rules of Evidence-Based Medicine (EBM). The document provides information on the available evidence of HBOT's effectiveness in individual pathologies and proposes Good Clinical Practice recommendations for assessing the clinical appropriateness of the treatment.

INDICATIONS FOR HYPERBARIC OXYGEN THERAPY

- 1** Decompression Illness (AGE, DCS)
- 2** Progressive Necrotizing Infections (Anaerobe myositis, necrotizing fasciitis, necrotizing dermoepidermal infections, diabetic gangrene)
- 3** Carbon monoxide poisoning
- 4** Crush/traumatic injuries and fractures at risk
- 5** Skin grafts and flaps at risk
- 6** Sudden hearing loss
- 7** Chronic refractory osteomyelitis
- 8** Chronic skin ulcers
- 9** Post-actinic tissue lesions
- 10** Diabetic foot
- 11** Aseptic osteonecrosis
- 12** Periodontal disease
- 13** Algodystrophic syndrome
- 14** Retinitis Pigmentosa - Central Retinal Artery Ischemia
- 15** Ménière's disease
- 16** Bisphosphonate-induced osteonecrosis of the jaw



PATHOLOGIES COVERED BY THE NHS (Marche Region - DGR n. 886 of 2 July 2018)

EMERGENCY OTO SERVICES

1. Decompression sickness
- 2 Carbon monoxide poisoning
- 3 Arterial gas embolism

PROGRAMMABLE ORDINARY SERVICES

- 1 Progressive necrotizing infections (PNI)
- 2 Chronic refractory osteomyelitis
- 3 Acute traumatic ischemia and/or compartment syndrome
- 4 Compromised skin grafts and muscle-cutaneous flaps
- 5 Radionecrotic lesions
- 6 Slow-healing ulcers in diabetic patients
- 7 Slow-healing ulcers in non-diabetic patients
- 8 Aseptic osteonecrosis
- 9 Hearing loss--sudden acute deafness

HOW TO ACCESS

Private or outpatient patients: Access to HBOT services under the agreed-upon regime (at the cost of the healthcare card only, or free if exempt) is permitted following a request made by a public specialist doctor, who will be required to complete: **1. Form 3** (treatment plan as per the attachment to ASUR General Directorate Decision No. 459 of 09/08/2018) **2. Prescription on a standard NHS prescription pad** containing a request for the first hyperbaric visit, plus the number of HBOT sessions. Subsequent HBOT sessions may also be prescribed by the GP using an NHS prescription pad.

For patients residing outside the Marche Region, OTI treatments are covered by the National Health Service (NHS) within the limits of the available budget as set out in the current Contractual Agreement.

Hospitalized Patients Requests for OTI services from the Operating Units of the Hospital Facilities belonging to the AST and Hospital Companies of the Marche Region, for inpatient patients, must be motivated and signed by the requesting Doctor of the department, using the specific form attached to the ASUR General Directorate Determination no. 459 of 09/08/2018. **(Form 2).**

Patients admitted under an emergency regime: Requests for services (OTI) from the Emergency Department or 24/7 Emergency/CO118 Regional Department must be signed by the referring physician using the specific form attached to ASUR General Directorate Decision no. 459 of 09/08/2018 **(Form 1)**, following a prior telephone arrangement with the On-call Medical Manager of the Hyperbaric Center.

For emergencies/health emergencies only, contact: Tel. 335 6545501 - Medical Officer on Call

Non-contracted: For anyone who cannot access the treatment under a contracted regime, but suffers from pathologies recognized by the SIMSI guidelines, simply contact our Hyperbaric Center for all the information necessary to begin therapy.

HOW THE TREATMENT WORKS

The treatment is carried out in a hyperbaric chamber, at a pressure between 2.0 and 2.8 atmospheres absolute (ATA), for times ranging from 90 to 120 minutes, on medical advice and under medical supervision direct.

Once the therapeutic level is reached, patients breathe 100% pure oxygen through oro-nasal masks or other medical devices suitable for hyperbaric therapy.

Oxygen is delivered at a pressure corresponding to that of the chamber, by means of Suitable distribution lines. The effectiveness of each user's oxygen breathing is monitored by an oxygen analyzer.

This allows us to verify that the treatment has been carried out correctly.

The hyperbaric chamber allows simultaneous therapy for up to 8 patients

seated. During the entire therapy period, there is always qualified healthcare personnel present inside the room who will assist you.

patients will be able to contact us if necessary.

The Center has aids, such as stretchers and wheelchairs, suitable for the hyperbaric environment, available to any non-ambulatory patients.

Patients, at the time of the first visit, are adequately informed regarding the correct execution of OTI treatment and on the risks and

benefits of hyperbaric therapy. Before accessing the hyperbaric chamber, the technician in charge of the treatment checks that there are no objects inside objects incompatible with the hyperbaric environment are brought.

Patients are also made to wear suitable shoe covers.



THE FANO HYPERBARIC CENTRE HAS:

- An 8-place hyperbaric chamber • Urgent/emergency clinic • Two examination and dressing clinics
- Changing rooms for patients • Waiting area
- Disinfection room
- Stretchers, wheelchairs and suitable aids to the hyperbaric environment



THE FANO HYPERBARIC CENTER ENSURES:

- Health care inside the hyperbaric chamber • Verification of the correct execution of the treatment (measurement of the percentage of inspired oxygen present in the oronasal mask)
- Continuation of treatment only in case of favorable prognosis for therapy

The Hyperbaric Center is located in the "Ex Zuccherificio" area, a few kilometers from the city center, near the SS 16 state road. It is easily accessible from the city and from those coming from outside Fano.

THE STAFF







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