

Hyperbaric Oxygen Therapy Unit

Indraprastha Apollo Hospital . New Delhi



A decade of practice of hyperbaric Medicine

Introduction

- **Dr PC Reddy** is a great visionary and introduced many new treatment modalities in the country. He was impressed by the desire of Dr Tarun Sahni to introduce hyperbaric medicine in India and gave his sanction to set up a centre at the newly built hospital in New Delhi.
- The **FIRST private Hyperbaric Unit** in India was therefore established in the year 2000 at the Apollo hospital New Delhi placing India on the hyperbaric map of the world under the guidance of Dr JK Sachdeva – the first medical director of the hospital .
- The centre has seen an overall growth in areas of diving medicine, compressed air works , training , research and management of challenging clinical conditions.

This presentation gives a brief overview on the last 15 years activities

Hyperbaric Medicine



Occupational

• **Diving Medicine**

- Diagnosis and treatment of conditions caused by marine hazards and how relationships of a diver's fitness to dive affect a diver's safety.
- Providing support and back up to recreational and professional diving & related activities.



Occupational

• **Compressed Air Works**

- The chambers open at the bottom and contain air under pressure, used to carry out construction work.
- Providing technical & medical support to such operations



Clinical

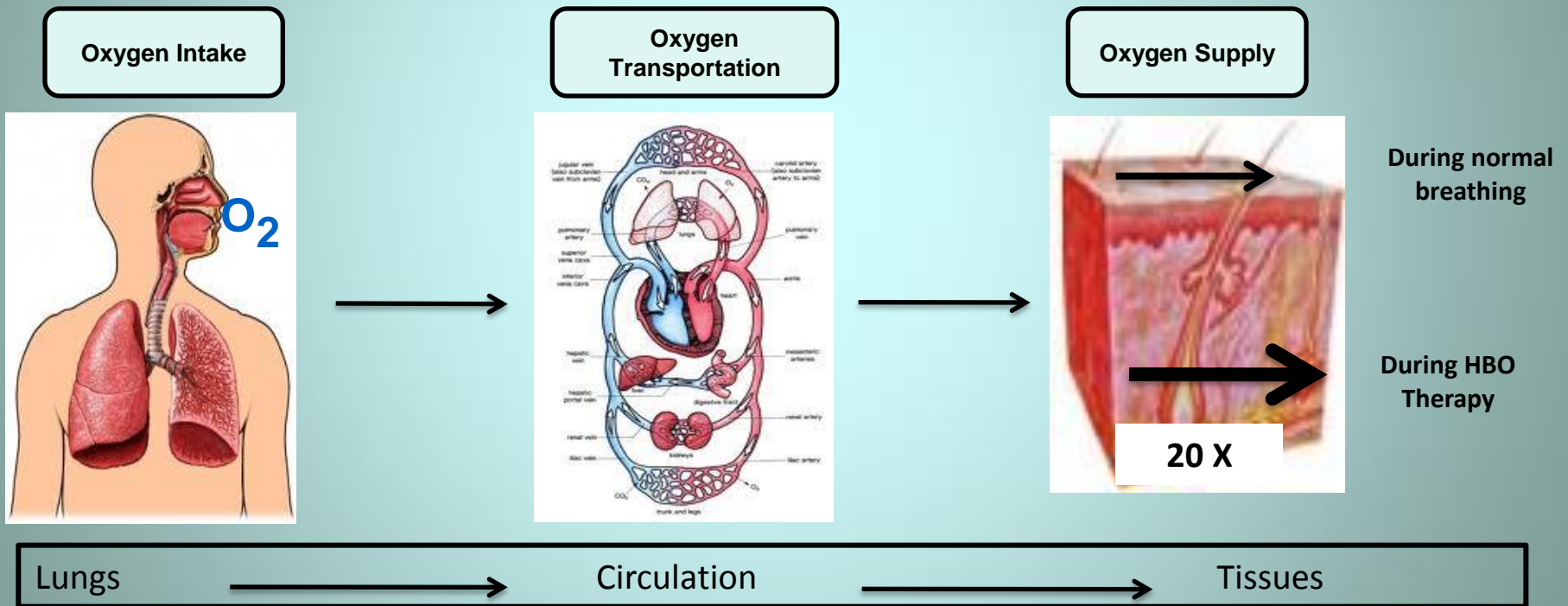
• **Hyperbaric Oxygen Therapy**

- The intermittent inhalation of **100% Oxygen** under a pressure exceeding that of the atmosphere (1 Atmosphere is the normal room air pressure at sea level = 760 cm Hg)
- Prime Area of focus.

Hyperbaric Oxygen Therapy

The intermittent inhalation of **100% Oxygen** under a pressure exceeding that of the atmosphere (1 Atmosphere is the normal room air pressure at sea level = 760 cm Hg)

Committee on Hyperbaric Medicine (1976), Undersea & Hyperbaric Medical Society, USA



During HBO - the higher pressure forces Oxygen into plasma and the blood is now capable of carrying 10-20 times more oxygen to the tissues which is responsible for the beneficial effects of Hyperbaric Oxygen

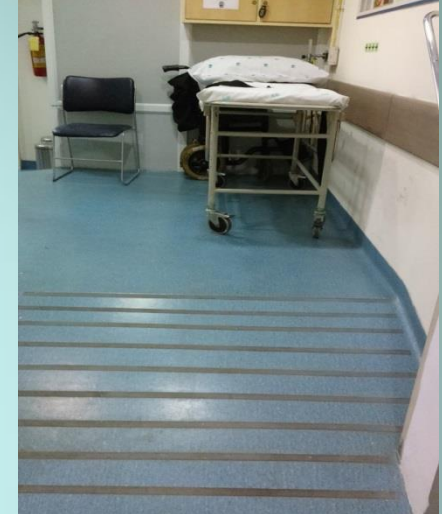
Hyperbaric Chamber at Apollo Hospital, Delhi



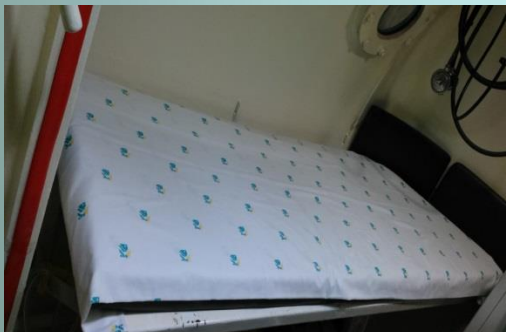
Multiplace Chamber – 4 to 6 patients at one time



Comfortable Airline seats for patients



Ramps for easy accessibility



Stretcher for lying patients inside the chamber

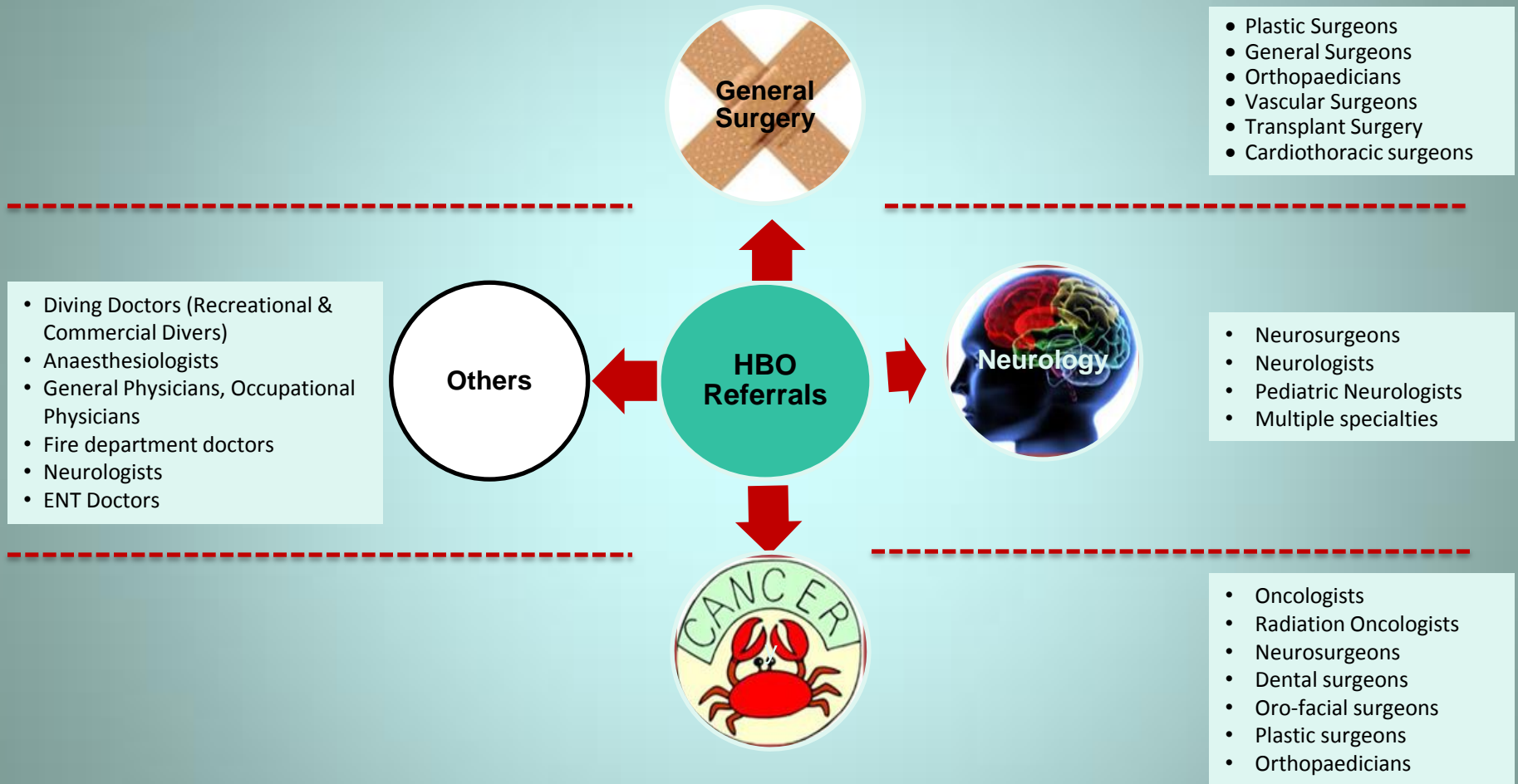


Patient Lockers



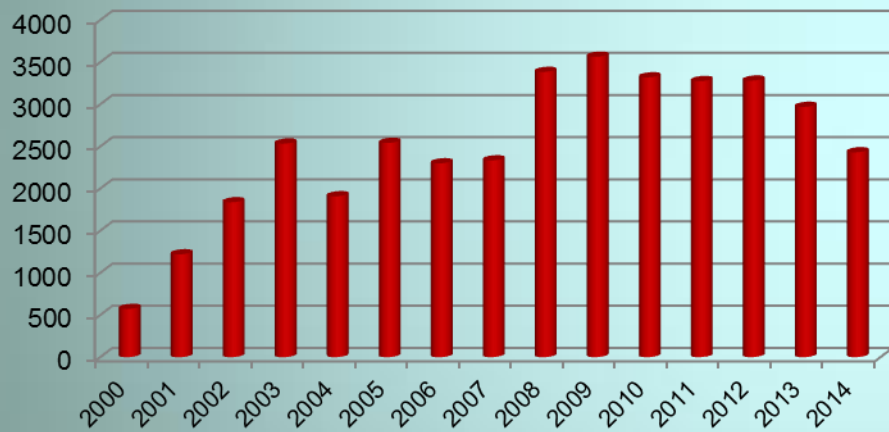
Cleaning Area

Referring Specialties : Hyperbaric Oxygen Therapy

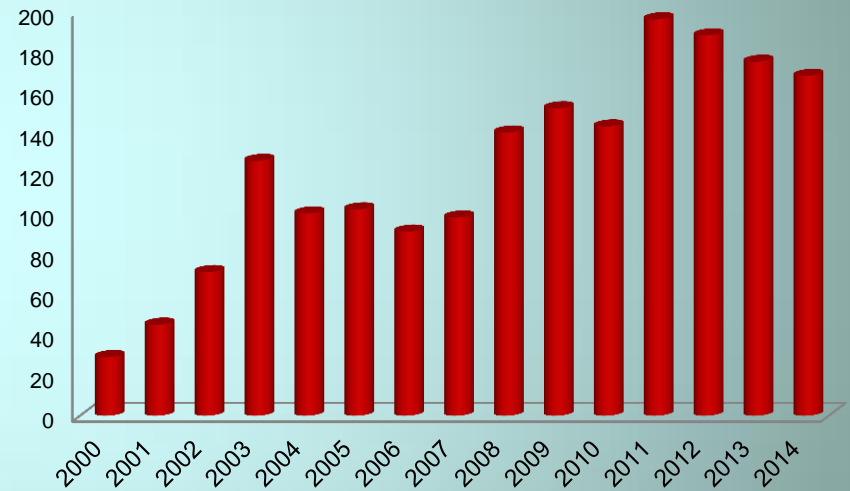


Treatment details 2000 to 2014

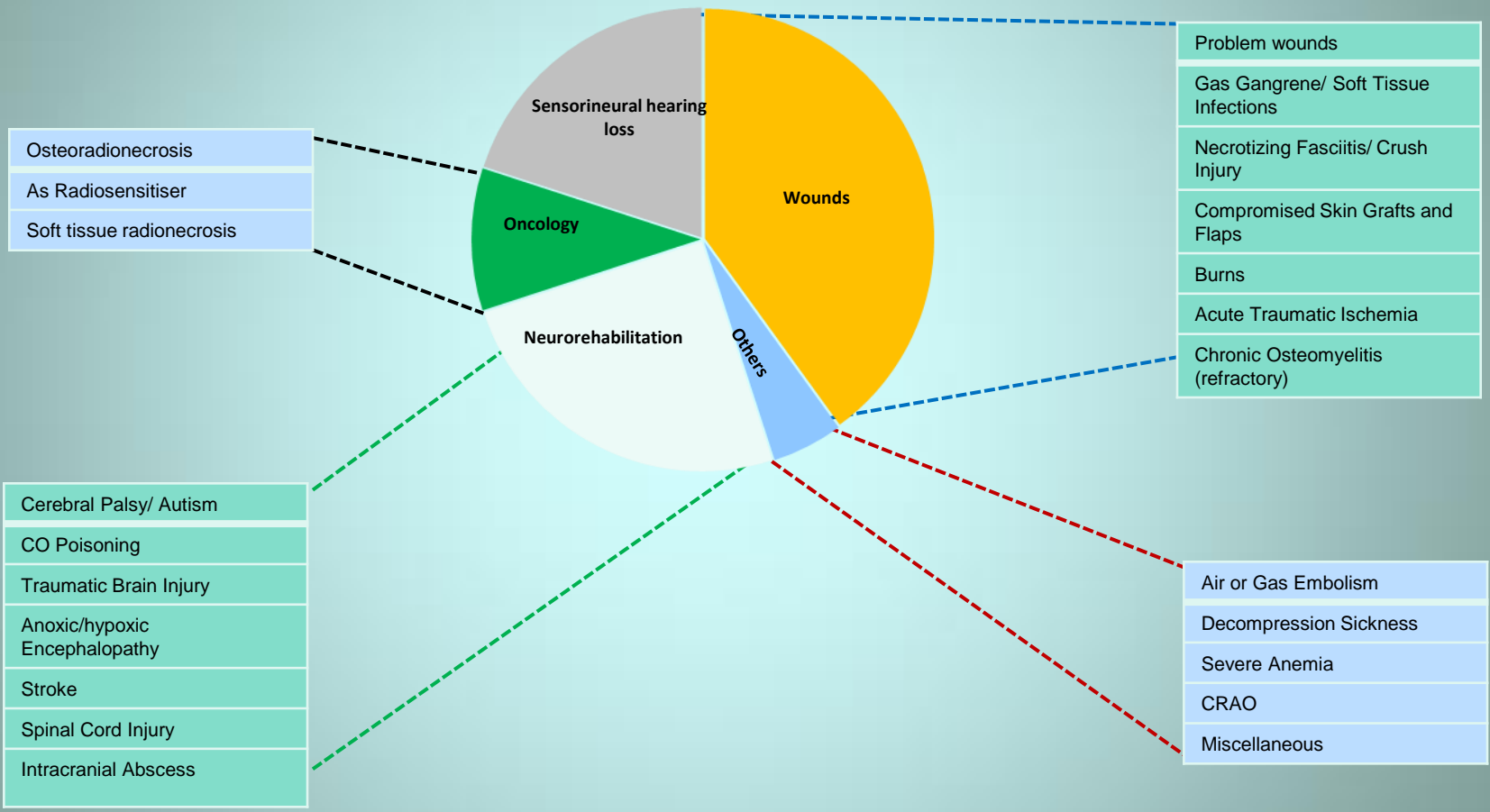
No: of therapies



No: of Patients



Case Mix – Distribution of patients 2000 to 2014



Hyperbaric Express

Indian Express

INDIA'S ONLY NATIONAL
BOMBAY SATURDAY DECEMBER 18 1993



Hyperbaric Oxygen to the rescue of Delhi DareDevils



- Apollo Hospitals is not just one of the country's premier healthcare providers but also plays a pioneering role in helping India become a centre of excellence in global healthcare.
- In keeping with its image as the pioneer in providing latest medical treatment, Hospital, Santa Vin, New Delhi established a Hyperbaric chamber, which in 2000. This is the first private hyperbaric center in India and the number of progressively growing.
- This treatment is being used by Premier Rugby and Soccer clubs globally to a premier sportsman for injury during the game so that they can continue to states Dr. Tarun Sahni, Consultant, Hyperbaric Medicine.
- This treatment has recently been used by Delhi Daredevil fast bowler Dirk Nannies at the game at the earliest.

Pure O2 treatment for paraplegic patients

Risha Chitlangia | TNN
New Delhi: Acute head injury often results in disability.

Healing Power Of HBOT

Doctors are using hyperbaric oxygen therapy (HBOT) to treat wounds that take time to reater-than-normal atmospheric pressure

Times of India 2010

Paraplegic patients are made to breathe 100% oxygen under high atmospheric pressure to restore limb movement. Doctors say the therapy can help salvage the injured limb if given as part of emergency care.

"We have treated close to 100 neurosurgery patients, who suffered post-accident disability, with HBOT and have seen encouraging results. Most of our patients can now walk," said Dr. Tarun Sahni, senior consultant, internal medicine and in-charge of HBOT clinic at Indraprastha Apollo Hospital.

In 100% pure oxygen, HBOT has proven effective in a number of different medical and surgical conditions, either as a primary or supplementary treatment.

How it works?

Under normal atmospheric pressure, haemoglobin carries oxygen to different parts of the body. But at a greater-than-normal atmospheric

pressure, the oxygen molecules bind more readily to the haemoglobin, making it easier for the blood to carry oxygen to the injured tissue.



Inside image of the chamber

100% oxygen supply an healer's feat," said Dr Sahni. Apollo Hospital in collaboration with Monash University in Australia will soon start a study to assess the effect of HBOT in lower limb trauma. "We will give HBOT to all the patients who come to our emergency with lower limb injury. Various studies have shown that HBOT can help minimize damage if given soon after accident," said Dr Sahni.

Apart from head injuries HBOT is widely being used for treating diabetic foot and other non-healing wounds. "Diabetic foot is fast becoming a common problem and often results in amputation. HBOT is an effective treatment for diabetic foot. We give oxygen supply at two-and-a-half times more atmospheric pressure and most patients respond well within 10 sittings. The number of sittings depends on the extent of the disease," he said.

"Any wound which does not heal within six weeks, local must be considered for HBOT," added Dr Sahni.

risha.chitlangia@timesgroup.com

Sahara

An effective alternative
Hyperbaric oxygen therapy is a unique treatment for a range of

...of the world's leading medical journals. The treatment is used for a wide range of conditions, including decompression sickness, gas embolism, carbon monoxide poisoning, and radiation injury. It is also used for the treatment of diabetic foot, non-healing wounds, and chronic osteomyelitis.

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Patriot FRIDAY, 22 JULY 1988



A 27-member adventure team from the Southern Naval Command, Cochin, successfully carried out a Snake-diving in the Pangang Lake (Ladakh) on Monday. Snake diving had never been attempted at this altitude (16,000 feet) and this accomplishment is likely to find a mention in the Guinness Book of World Records.

Diving into the Guinness Book

Our Special Correspondent
Naval frogmen in the high Himalayas. That is a wonder in itself, but plunging the depths of the highest salt water lake in the world to rescue the mission, and they have a record to show for it.

A dive of 120 ft into the Pangang Lake at 14,200 ft altitude on the Sino-Indian Border in the Ladakh should put the feat into the Guinness Book of Records. But there is more to the mission.

The 27-member adventure team from the Southern Naval Command, Cochin, under the leadership of

Commander P P Tugnait and Lt Cdr K Senthom first sailed in two open boats from Kanrayabari to Bombay, a distance of 1500 kms through a storm-tossed Arabian Sea.

The Pangang Lake is shared by India and China, a third of which lies on the Indian side of the international border. The Chinese pilot boats on their side of the lake but they were not sighted by the Indian divers.

Then they trekked from Jammu to the Pangang Lake in 14 days and, after a professional survey of a 15 km segment of the lake, they did a scuba dive in relay and it was Lt Cdr S Mukherjee who touched 120 ft on 18 July when the water temperature was 2° centigrade.

The Freedom 40 submersible adventure is remarkable in that

it is the only one of its kind in the world. The treatment chamber has been used for a number of years at the Naval Hospital in Mumbai and the Air Force Hospital in Bangalore. The Hyperbaric Oxygen chamber, available to defence personnel and their relatives, is at Indraprastha Apollo Hospital.

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BEAUTIFUL

Following the intense international media coverage given to the use of hyperbaric oxygen by Michael Jackson, many beauty clinics and spas are also offering this therapy for its acclaimed role in the cosmetic and beauty area.

The term hyperbaric oxygen therapy is self-explanatory, the hyper denoting high pressure (more than the normal atmospheric pressure) oxygen treatment. During Hyperbaric Oxygen Therapy, the amount of oxygen content in the blood is increased 30 times over. It is this increased availability of oxygen and the fact that it is at a higher pressure (more than the normal atmospheric pressure) that is responsible for the beneficial effects of hyperbaric oxygen.



Hyperbaric Oxygen Therapy has over the past decade emerged as an important adjunct to alleviate patients suffering and reduce recovery time. The patients who will benefit most are patients with acute traumatic wounds and crush injuries where hyperbaric oxygen of given early could be life and limb saving. Burns, gas gangrene and compartment syndrome are other indications where addition of hyperbaric oxygen at the earliest can reduce morbidity and mortality. Patients exposed to smoke while in a fire have carbon monoxide poisoning, for which HBO therapy is the first line of treatment to prevent permanent, delayed neurological complications.

Patients who have been suffering for years with non-healing ulcers due to diabetes, radiation or any other cause may have hope that they might benefit from this therapy. So also could patients with radiation induced complications like lower extremities, cystitis etc. Decubitus ulcers (Bed sores) in select patients may heal faster with HBO therapy. This treatment expedites healing of bone in patients with chronic osteomyelitis when combined with conventional treatment. Intracranial abscesses, acute hearing loss and acute optic neuritis also benefit from HBO therapy.



Hyperbaric Oxygen Therapy: A breath taker

...of the world's leading medical journals. The treatment is used for a wide range of conditions, including decompression sickness, gas embolism, carbon monoxide poisoning, and radiation injury. It is also used for the treatment of diabetic foot, non-healing wounds, and chronic osteomyelitis.

THE APOLLO FILES

July 2000 NEWSLETTER Vol. 2 Issue: 7

DEPARTMENT PROFILE: HYPERBARIC OXYGEN TREATMENT CENTRE

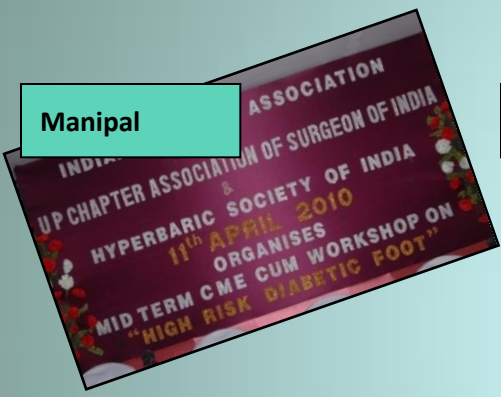
Hyperbaric Oxygen Therapy (HBO) is a treatment modality in which the patient breathes 100% oxygen at a pressure greater than the atmospheric pressure. This results in high concentration of oxygen reaching the tissues and benefits patients whose recovery from illness is impaired due to poor oxygen delivery to tissues. Those who will benefit most are patients with acute traumatic wounds and crush injuries, compartment syndrome, burns, gas gangrene etc. In many cases like carbon monoxide poisoning from exposure to smoke, HBO therapy is the first line of treatment and should be given as soon as possible to prevent permanent neurological complications. While HBO therapy expedites healing of bone in patients with chronic Osteomyelitis, it is the only treatment for radiation induced complications like lower extremities, cystitis and entitis. Non-healing ulcers due to diabetes, radiation or any other cause and Decubitus Ulcers (Bed sores) in select patients will heal faster with HBO therapy. The benefits of HBO therapy is still being researched in many other conditions.

The establishing of this centre has been a real challenge being the first private centre in this field. The cost of this treatment at Indraprastha Apollo Hospitals will only be a fraction of international costs and will result in significant savings to the patient due to faster recovery and reduced hospital stay. Treatment is safe and has hardly any side-effects. Admission is not necessary for this therapy and most chronic care patients are treated as outpatients.

Dr Tarun Sahni is the Consultant in charge of the Department and is assisted by Jai Singh, the Hyperbaric Technician, both of whom have many years of experience in this field. Hyperbaric Oxygen Chamber at Indraprastha Apollo Hospitals is a state-of-art equipment focused at patient safety and comfort and will compare with the best centres in the world.

Sharing the experience: India and overseas

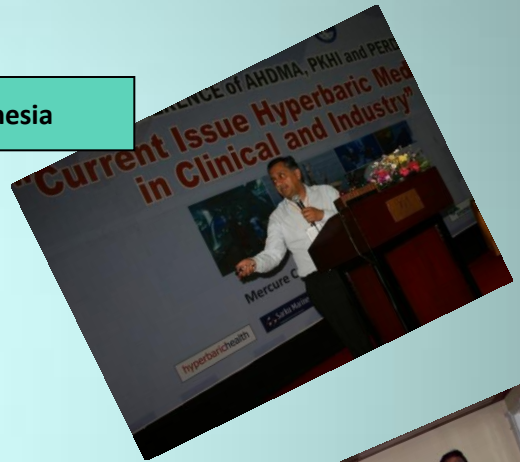
Manipal



Kanpur



Indonesia



Bangalore



Goa



Thailand



Publications

S.No	Publication	Journal
1	Case Study: a non healing wound treated with hyperbaric oxygen therapy	Elsevier Apollo Medicine Journal
2	Intensive rehabilitation combined with hyperbaric treatment in children with cerebral palsy: A controlled longitudinal study	Undersea & Hyperbaric Medicine Society (UHMS)
3	The Role of Hyperbaric Oxygen Therapy in Sudden Sensorineural Hearing Loss: A retrospective review of 50 patients	Elsevier Apollo Medicine Journal
4	Role of Hyperbaric Oxygen Therapy in Management of Complicated Case of Fournier Gangrene to Improve Patient Outcome	Journal of Clinical Case Reports
5	Use of hyperbaric oxygen therapy in Diabetic Wounds	Elsevier Apollo Journal
6	A retrospective study of outcomes in clients with head and neck cancer treated with Hyperbaric Oxygen Therapy for radiation induced Osteoradionecrosis of the Mandible at a tertiary care centre; an Indian experience.	Indian Journal of Oncology
7	Use of Hyperbaric Oxygen therapy in management of Orthopaedic Disorders	Elsevier - Apollo Medicine Journal, Orthopaedics
8	Role of Hyperbaric Oxygen Therapy in management of complicated case of Fournier Gangrene to improve patient outcome	Journal of Clinical Case Reports
9	Case Report – Use of Hyperbaric Oxygen therapy in management of Radiation Cystitis	Elsevier - Apollo Medicine Journal, Advances in Oncology
10	The Role of Hyperbaric Oxygen Therapy in Sudden Sensorineural Hearing Loss: A retrospective review of 50 patients	Submitted in European Archives of Oto-Rhino-Laryngology and Head & Neck – Publication awaited
11	A Case Of Neuropsychological Sequelae Of Carbon Monoxide Poisoning Treated With Hyperbaric Oxygen Therapy	Apollo Medicine Journal, Critical Care Medicine
12	Use of Hyperbaric Oxygen Therapy in Traumatic Brain Injury: Retrospective analysis of data of 20 patients treated at a tertiary care centre.	British Journal of Neurosurgery
13	Hyperbaric Oxygen Therapy - evidence based role in Diabetic Foot	Apollo Medicine Journal, Special Edition Endocrinology
14	Hyperbaric Oxygen Therapy- Research Indications & Emerging role in Neurological Illnesses	Apollo Medicine Journal, Special Edition Neurology
15	Role of Hyperbaric Oxygen Therapy in Oncology and Radiation induced tissue damage	Apollo Journal, Special Edition Endocrinology
16	Recent Advances in Hyperbaric Oxygen Therapy	Medicine Update, The Association of Physicians of India
17	Prevalence Of Gall Stone Disease And Its Relation To Hypercholesterolemia, Hypertension And Diabetes In Affluent North Indians: Population Based Study	Apollo Medicine
18	Hyperbaric Oxygen Therapy : Current Trends and Applications	Journal of Association of physicians of India
19	Status of Hyperbaric Oxygen Therapy in Neurological illnesses-Review of International and Indian Experience	Neurosciences Today
20	Hyperbaric Oxygen Therapy - A modern therapeutic tool in quality patient care: Review Article	Journal Of Association of Physicians of India
21	Challenges in creating an indigenous Hyperbaric oxygen unit in a fee for service tertiary care hospital in northern India	29th Annual meeting of the European Undersea and Baromedical Society
22	Hyperbaric oxygen therapy in parenchymal liver disease	Journal of Association of physicians of India
23	Renal Transplantation	Medical Journal Armed Forces India
24	Hyperbaric oxygen therapy in Crush Syndrome	British Medical Journal
25	Gas Poisoning with Freon	Medical Journal Armed Forces India
26	Antimicrosomal and antithyroglobulin antibodies in thyroid disorders	Journal of Marine Medical Society of India
27	Electrocardiographic Diagnosis- WPW Syndrome	Journal of Marine Medical Society of India
28	Localized obstructive pulmonary emphysema during diving training	Medical Journal Armed Forces India
29	Hyperbaric Oxygen Therapy in Hospital Practice	Bombay Hospital journal
30	Hyperbaric oxygen Therapy in acute cerebral edema	Journal of Marine Medical Society of India
31	High altitude divers from 7000 to 14200 feet in the Himalayas	Undersea Biomedical Research



From year 2003 to 2015

British Journal of Neurosurgery
 The Official Journal of the British Association of Neurological Surgeons
 Paul Fildes
 Editor

Use of Hyperbaric Oxygen in Traumatic Brain Injury: Retrospective analysis of data of 20 patients treated at a tertiary care centre

informa

British Journal of Neurosurgery, April 2012; 26(2): 202–207

UNDERSEA AND HYPERBARIC MEDICINE JOURNAL

Intensive rehabilitation combined with hyperbaric treatment in children with cerebral palsy: A controlled longitudinal study

UNDERSEA & HYPERBARIC MEDICAL SOCIETY

UHM 2014, Vol. 41, No. 2 – HBOT IN CHILDREN WITH CP

IJHNS
International Journal of Head & Neck Surgery

A Retrospective Study of Outcomes in Subjects of Head and Neck Cancer Treated with HBO for Radiation Induced ORN Mandible at a Tertiary Care Centre: An Indian Experience

Also available online at
www.ijhnsjournals.com
www.ijhns.com

Editor-in-Chief
Chris de Souza

Associate Editor
 Bibliographic Listing:
 Index Medicus, Ulrich, EMBASE

Indian J Otolaryngol Head Neck Surg DOI 10.1007/s12070-013-0640-z



Diving Illnesses

Medical Exam and treatment of Commercial divers

Dr. Tarun Sahni is Recognized by ONGC for examination and treatment of offshore divers is a IMCA approved Level 1 & II A dive physician have examined more than 500 divers in the year 2015.

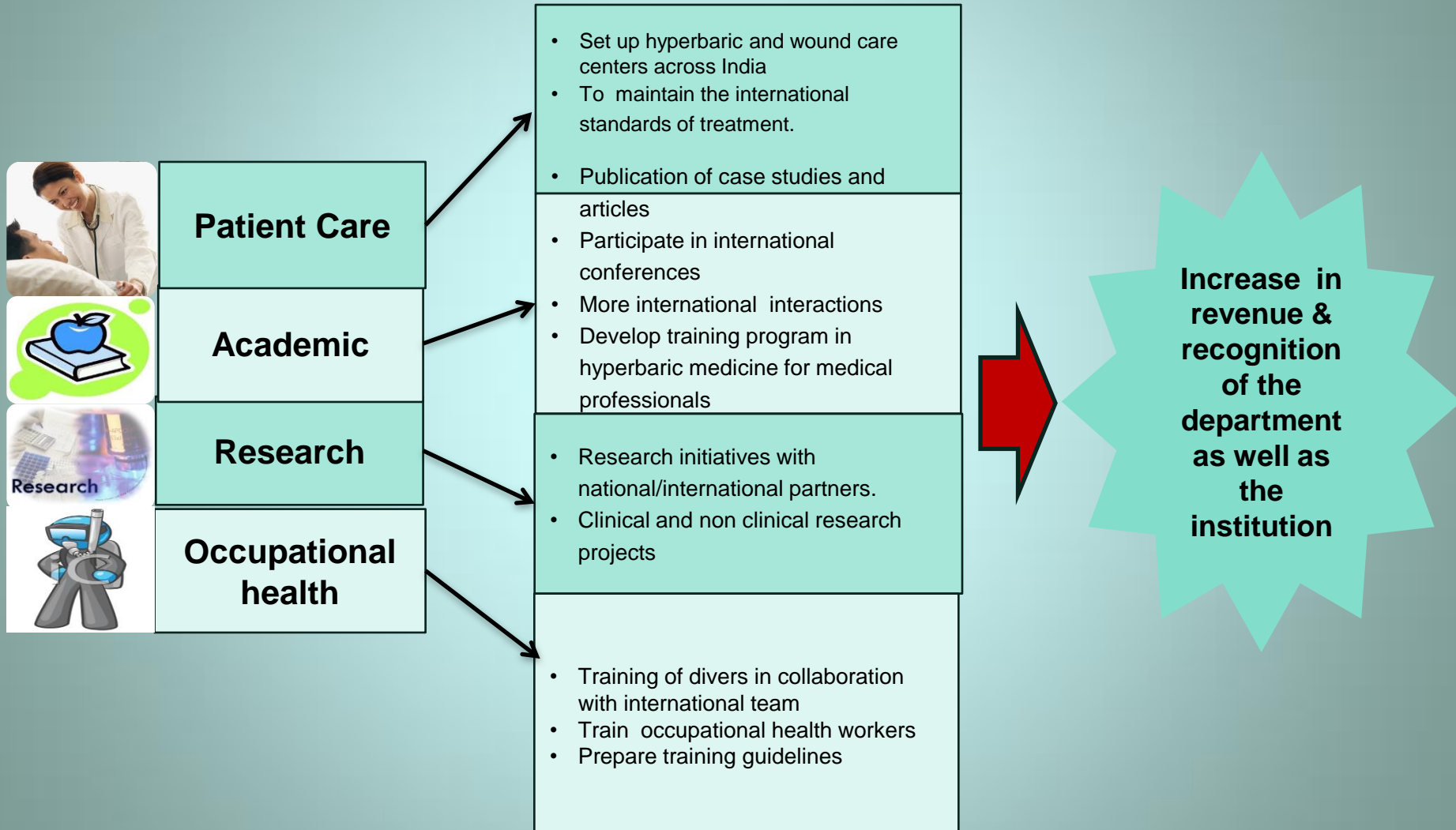
Compressed Air Works



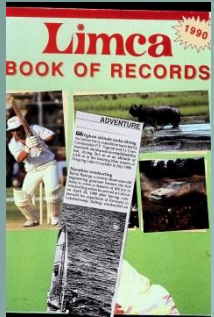
Dr Tarun Sahni and his team at The Hyperbaric Medicine Department, Indraprastha Apollo Hospital, New Delhi, has provided Medical support to compressed air workers working in Delhi metro projects in 2002, 2009, 2014 and currently in 2015.



Future Plans - The Path Ahead



THANK YOU



Latest Technology

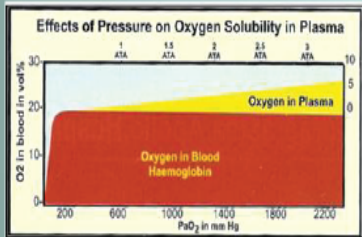
International Standards

Trained & Certified Team

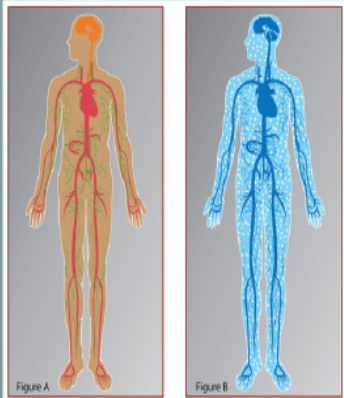
1st Private Hyperbaric Treatment Centre (2000) Recognized in Limca Book of Records

Hyperbaric ('hyper' meaning 'over' and 'baric' meaning 'pressure') literally translates to 'over pressure'.
HBOT delivers pure oxygen in a pressurized cabin where the patients breathe 100% oxygen.

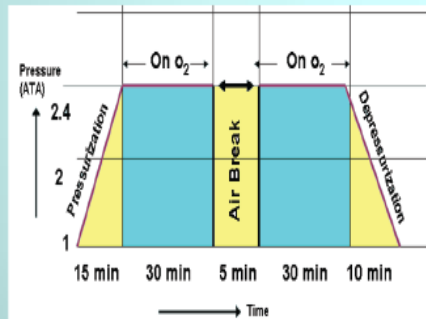
How Does it Work



Transportation of Oxygen in the Human Body Under Hyperbaric Conditions



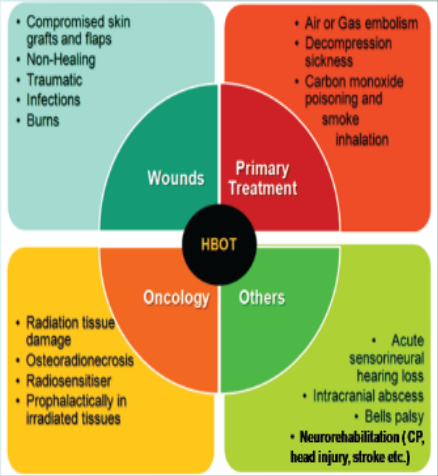
Treatment Protocol



How is it administered



HBOT - Single treatment with many actions



For further information on the therapy and our unit, kindly visit:
www.apollohospdelhi.com, www.hyperbaricindia.com