CURRICULUM

This will be covered throughout the Hyperbarics International program

Dick Rutkowski

Multi/Mono Chamber Course Outline for Diving & Clinical Medicine

This program is for
Physicians, PAs, Nurses, Paramedics, Military Medics, P-EMTS, DMTs, CHSs & CHMTs.
Others may apply.

Monday, Day One

Welcome/Introduction

Goal Establish an optimal learning environment for the course.

Objectives

Define the purpose and format of the course. (Diving & Clinical HBO) Define the resources to participants
Distribute training aids and schedules
Introduce any key staff members and participants

Objective This lecture will present the details of the history of the Undersea and Hyperbaric Medical Society (UHMS), the American Medical Association (AMA), US Navy BUMED, The American College of Hyperbaric Medicine (ACHM), The American Board of Wound Healing (ABWH), the International Board of Undersea Medicine (IBUM), the Baromedical Nurses Association (BNA), and Hyperbarics International CHMTs At the end of this lecture, students should be familiar with the history of these organizations and what these organizations and can do for them as applied to diving and HBO clinical medicine.

Introduction to Hyperbaric Chambers: Multi, Dual and Mono Place (Diving and Clinical)

Objective This presentation will include information about the various methods of administering hyperbaric oxygen therapy to diving and clinical patients. Examples of various mono-place, multi-place and transportation chambers will be noted. The advantages and disadvantages of each chamber will be discussed, both in the treatment of divers and hyperbaric oxygen therapy patients. At completion of this lecture, the students should have a good overview of the various types of hyperbaric chambers, offshore or hospital based, in current use around the world.

Calculation of Pressures in HBO Environment

Atmosphere Absolute
(ATA) Ambient BAR

mmHg
PSI
FSW

Bottom
Pressures
Hydrostatic
Pneumatic
Partial Pressures
Cylinder Pressure Conversions

Break

Mathematical Formulas of Dalton's Law

Dalton's Law as applied to calculations of partial pressures/fractions of gases

Depths for using gases ensuring the safe physiological limits of all treatment gases (CNS and pulmonary)

Decompression gases: Air, Oxygen, Nitrox, etc., for divers, patients and observer

Objective This lecture is designed to teach gas laws pertinent to the field of diving and clinical hyperbaric medicine. The physics involved in the gas laws and their relevance to the physiology of the human body transpiring will be detailed. Calculations of pressure and volume changes will be used to illustrate the gas laws and the pressure/volume effects of physiology and pathophysiology of diving accidents. HBO therapy will be taught during the lecture. At the completion of the lecture, students should have a good grasp of physics, and physiology as related to diving and hyperbaric medicine, and have a good working knowledge of the physical requirements for divers and clinical personnel. Students should also be able to perform volume/pressure/depth calculations.

Lunch

Barotrauma of Ears and Sinuses for Divers and Clinical Patients

Sinus Squeeze

Inner and Middle Ear Trauma
Alternobaric Vertigo

Oval and Round Window Rupture
Tympanic Membrane
Vestibular 8th Nerve DCS
Hemorrhage Along the 8th Nerve
P.E. Tubes

Barotrauma of the Lungs, Extra Alveolar Air (EAA.)

Arterial Gas Embolism

Tension Pneumothorax

Pneumopericardium

Pneumomediastinum

Subcutaneous

Emphysema

Extra Alveolar Air

Physical Requirements of Diving & HBO Chamber Attendants Factors that Predispose to

EAA. Primary Medical
Operational Environmental
Factors
Pulmonary Counter indications for Diving & Clinical Patients

Objective

During this presentation information regarding the effects of pressure changes of various body structures will be noted. The physics, physiology, pathophysiology and medical aspects leading to Arterial Gas Embolism (AGE), Pneumopericardium, Subcutaneous Emphysema and Pneumothorax will be presented. Also presented will be the indicators necessary to watch for in patients while ascending in chambers for EAA. At the end of this program students should be able to recognize the signs/symptoms, stabilization and field management required, treatment and treatment tables, medications and medical re-evaluation of these persons for future hyperbaric exposures.

Scene Management of EAA

On the Scene First Aid

Advantages and Disadvantages of the Head Down Left Lateral Position

The Use of Oxygen and Other Emergency Medical Procedures for Medical and Lay Personnel

Treatment of EAA

Treatment Protocol for Diving Medical Officers (DMOs)

USN, Commercial, NOAA, USAF and Foreign Treatment Tables

Philosophies

Medications and

Drugs Fluids

Critical Care

Management Pre/Post Treatment Evaluation

Retreatments

Objective The early recognition, stabilization, first aid, evacuation procedures, importance of protecting the airway, the use of oxygen, oxygen delivery systems and medications will be taught for the on-site management of EAA. Students will be able to demonstrate working knowledge for the field management of DCS and AGE. They should also be able to show knowledge in the methods of transportation for diving related trauma, especially air evacuation problems.

Break

Practical Use of Hyperbaric Chambers

Objective During this program students will apply all knowledge as presented during practical sessions each afternoon. Each day there will be three to four hours of chamber operations to employ all equipment, techniques, medical equipment, IVs, ET Tubs, Ventilators, BIB and hoods, vitals (blood pressure, pulse, respiration), gases, venting, air supply and scenarios of critical patients. Chamber dives will range from scf to 30 fsw.

End of day one

Tuesday, Day Two

Homework Review

Topic: Physiological Implications of Oxygen as a therapy agent to get O^2 into tissues and tissue beds starved of O^2, Oxygen Life Support Ranges for Diving and Recompression Therapy (Patient/Observer)

Physiological Implications and Side Effects of Clinical Hyperbaric Oxygen Therapy

1 Clinically, oxygen is administered to get oxygen in to the cells and tissues of the body that are starving for oxygen.

2 We must know the dosage of oxygen at any depth (dosage meaning the partial pressure of the gas) and understand the benefits and side effects, as well as other physiological implications, of the dosage.

3 We must also understand the duration of which we are going to administer the dosage and select the correct treatment table for the problem we are treating.

4 We must know what we can treat in either a multi or mono place chamber and the implications of treatment. Some patients that have medical problems with indications that they should not be placed in a mono place chamber. These patients should be placed in a chamber with an inside attendant who can manage the patient if something serous happens.

5 Oxygen is an extreme respiratory depressant. Caution must be used when giving oxygen in conjunction with other drugs, especially forms on benzodiazepines. This subject will be covered in more detail during our lectures.

6 Be aware or agents that have enhanced toxicity because of HBO.

7 Be aware of agents that cause oxygen to be more toxic.

8 Be aware of physical events that can occur which will limit the ability to use oxygen.

9 Be aware and understand central nervous system 02 toxicity and pulmonary oxygen toxicity when treating patients.

10 Normal oxygen tissue tensions are between 40 mmHg and 70 mmHg. Wounds should normally heal between 4-6 weeks. If taking longer than 4-6 weeks to close the gap, the

patient should be referred to a hyperbaric physician. Hyperbarics will be another adjunct to help close the wound gap.

11 Wounds that are chronic, refractory, or partially ischemic definitely need to be referred to a hyperbaric physician.

12 Isobaric counter diffusion is the fastest way to counter diffuse the inert gas out of bubbles or tissue at 2.8 ata.

13 When on higher PO2s there are dormant nerves and cells that can be recharged electrically and cause paresthesias and some pain.

14 PULMONARY OXYGEN TOXICITY: The pathology and the problems involved with the use of oxygen both for pulmonary and CNS oxygen toxicity is not always understood. This will be fully covered so that one understands totally how the pulmonary vital capacity diminishes with treatment tables and saturation diving. One must understand how the vital capacity begins to diminish under low dose, long-term use of oxygen.

15 CENTRAL NERVOUS SYSTEM O2 TOXICITY: The causes, signs, symptoms and prevention will be covered in this program.

16 Why some benzodiazepines are absolute counterindications and other drugs in the hyperbaric environment (mono chambers.)

17 Relative counter indications: upper respiratory infections, seizure disorders, emphysema, high fevers, history of spontaneous pneumos, history of thoracic surgery, otosclerosis, viral infections, congenital spherocytosis, history of optic neuritis, progressive myopia, and other relative counter indications will be discussed.

18 COMPLICATIONS AND SIDE EFFECTS OF HBO: Barotrauma of the ear, round window rupture, sinus squeezes, reverse block, visual refractive changes, dental problems, claustrophobia, high anxiety, central nervous system O2 toxicity, and pulmonary oxygen toxicity will be included during lectures throughout the course.

19 SUBJECTS COVERED: All approved 15 clinical indication by the AMA, FDA, UH MS, USN BUMED will be lecture upon. Also, many of the non-approved indications will be discussed, including off label/nonapproved and unreimburseable protocols by insurance carriers.

20 Understanding how oxygen, antibiotics, and surgery act as an adjunct for refractory clinical problems (wounds/gangrene and toxins.)

21 Understanding how oxygen works in DNA replication to produce osteoblast, fibroblast, and angiogenesis as an adjunct to help close the gap on the wounds and to stimulate angiogenesis growth.

22 Hyperbaric physician medical evaluation and patient selection before HBO treatment series.

23 Clinical technician hyperbaric training to ensure all patients entering the chamber meet medical and safety standards before going in to an oxygen enriched environment.

24 Training included for all hyperbaric oxygen facility personnel for chamber fire safety standards, oxygen and oxygen safety, HBO facility management and facility safety.

Oxygen Life Support Limits (Operational/Therapeutical)

Underlying Pathophysiology of CNS Oxygen Toxicity, Pulmonary Oxygen Toxicity, Hypoxia and Limits as Applied to Patients and Observers

Break

Central Nervous System Toxicity (CNS O^2 Toxicity)

Pathophysiology of the Signs and Symptoms
Underlying Mechanisms of the
Off Phenomenon Oxygen Delivery Systems

Ventilation Rate Requirements for Chambers, Hood Systems, Masks and Ventilators, Mono Chambers

Factors that Reduce Tolerance to Oxygen for Patients and Observer Care

Oxygen Exposure Limits and Their Use, Chambers and In Water

The Use of Oxygen for Decompression of Observers

Protocol for Seizures in a Multi, Dual or Mono Place Chamber

Pros and Cons of In Water Use of Oxygen for Therapy and Decompression

Safety Considerations for Using Oxygen Enriched Air Mixtures for Therapy

History of Oxygen Tolerance Tests and their Discontinued Use

CNS Oxygen Toxicity and the Oxygen Treatment Tables

Objective

The development of both central nervous system and pulmonary oxygen toxicity will be noted. The underlying pathophysiology will be stressed for the operational/therapy use to prevent pulmonary oxygen toxicity for diving accident victims, observers and other persons subjected to the hyperbaric environment. Also stressed will be the prevention of CNS O2 toxicity for both patients and observers. Various methods for administering oxygen at the scene of a dive accident and during medical therapeutics will be discussed and the advantages/disadvantages of each method of administration will be noted, such as: masks, ventilation, hood systems, and multi-place vs. mono-place chambers. At the completion of this program, the student should have a thorough working knowledge of oxygen use by BIB, hood, ventilators or mono O2 chambers and its complications

Lunch

Pulmonary Oxygen Toxicity

Pathophysiology of Pulmonary Oxygen Toxicity

Understanding the Pulmonary O^2 Clock for Operational Diving and Therapy for Patients

Preventing Damage to the Lungs of Patient Observers

Using the Unit Pulmonary Toxicity Dose

Determining the Net Effect of a Specific Duration of Breathing Oxygen at Pressure

Converting the UPTD to Percentage of Vital Capacity Decrement (%Vc)

Determining the Percentage of Vital Capacity Decrement at the Dive Site

O^2 Consumed During the Dive During Decompression Treatment at the Dive Site

Evacuation on O^2

Amount of Oxygen Giving During Treatments With or Without Extensions

Can Oxygen be Given on Ward After

Treatment? When to Bring Patient Back for Re-treatment

Signs and Symptoms of Pulmonary O^2 Toxicity

Pathophysiology of Pulmonary O^2 Toxicity

Arithmetic Method for Predicting Percentage of Vital Capacity Decrement

Pulmonary Symptom Reversal and Restart Times of the Pulmonary O^2 Clock

Way of Lowering the Partial Pressure of Oxygen on the Pulmonary Clock

Open Circuit Air

Closed Circuit Mixed Gas

Change Gas Mixtures

Objective The development of both central nervous system and pulmonary oxygen toxicity will be noted. The underlying pathophysiology will be stressed for the operational/therapy use to prevent pulmonary oxygen toxicity for diving accident victims, observers and other HBO patients subjected to the hyperbaric environment, multi-or mono-place chambers. Also stressed will be the prevention of CNS O2 toxicity for both patients and observers. Various methods for administering oxygen at the scene of a dive accident during medical therapeutics will be discussed and the advantages/disadvantages of each method of administration will be noted, such as: masks, ventilation, hood systems, and multi-place vs. mono-place chambers. At the completion of this program, the student should have a thorough working knowledge of oxygen use and complications.

Break

Practical Use of Hyperbaric Chambers

Objective During this program students will apply all knowledge as presented during practical sessions each afternoon. Each day there will be three to four hours of chamber operations to employ all equipment, techniques, medical equipment (IVs, BIBs, hood, E.T. tubs, vitals, neuro exam), gases, venting, air supply and scenarios of critical patients. Chamber dives will range from sfc to 60 fsw.

End of day two

Wednesday, Day Three

Homework Review

Decompression Sickness (DCS)

Physiological Considerations Found in the Development of

DCS History of DCS

Factors that Predispose Certain Tissues to

DCS Types, Signs and Symptoms of DCS

Scene Management of DCS

Break

Factors that Contribute to DCS

Primary

Medical
Operational
Environmental

Clinical Manifestations and Diagnosis of DCS

Physiological Basis for Dive Table

Development Critical Care of DCS in the

Hyperbaric Chamber

Treatment Table Selection for All Types of DCS (Type I, Type II and Type III) Multi & Mono Place Chambers With or Without Air for Breaks for Air BIBs

Objective Students will be taught the various physiological considerations found in the development of DCS. The predisposition of certain tissues toward DCS, especially the spinal cord and central nervous system will be stressed. Clinical manifestations and diagnosis of DCS will be discussed. At the end of this session, students should have a thorough working knowledge of the causes, diagnosis and treatment of DCS.

Lunch

Introduction to Hyperbaric Oxygen Indications: Approved and Non Approved Uses

Carbon Monoxide Poisoning and Smoke Inhalation Carbon Monoxide complicated by Cyanide Poisoning

Clostridia Myonecrosis (gas gangrene)

Crush Injury, Compartment Syndrome, and other Acute Traumatic Ischemias

Enhancement of Healing in Selected Problems
Exceptional Blood Loss (anemia)

Necrotizing Soft Tissue Infections (subcutaneous tissues, muscle, fascia) Osteomyelitis (refractory)

Systemic of Local Factors that affect Immune Surveillance, Metabolism and Local Vasculary

Radiation Tissue Damage
(osteoradionecrosis) Skin Grafts and Flaps
(compromised)

Thermal Burns

Adjunctive Hyperbaric Oxygen and Intracranial Abscesses
Brown Recluse Spider Infections

Medications for Field and Hyperbaric Treatment of DCS

Fluids

Drugs
Steroids,
etc.

Medications in Diving and Hyperbaric Environments

Medications and Underlying Diseases that Disqualify Divers
Medications Used in Hyperbaric Therapy (EAA and DCS)

Common Medications Used for Field Management of Diving Accidents

Objective A listing of common medications used by both sport and commercial divers, including medications used in hyperbaric oxygen therapy and field management will be stressed. The effects of pressure and oxygen with medications, and the effect of medication on the patient or diver will be noted. At the completion of the program, students should have a working knowledge of common medications used in hyperbaric diving and field management of diving accidents and their contraindications for use.

Break

Physical Fitness for Diving

An Overview of the Physical Requirements for Divers in Water and Multi Place Air Chamber Attendants

Physical Conditions and Medical Problems Which Present Hazards to Divers and Chamber Operators

Practical Use of Hyperbaric Chambers (Multi and Mono Place)

Objective During this program students will apply all knowledge as presented during practical sessions each afternoon. Each day there will be three to four hours of chamber operations to employ all equipment, techniques, medical equipment, gases, venting, air supply and scenarios of critical patients. Chamber Dives will range from 30 fsw to 60 fsw.

Transcutaneous Oxygen (T-Com) Training

Objective During this program, students will identify whether or not local hypoxia is a factor in healing compromise, determine the physiologic capacity to respond locally (the wound) to centrally (the lungs) delivered increases in oxygen delivery. Students will also learn how to provide an early indication of therapeutic response and how to identify a therapeutic end point.

Transcutaneous Oxygen (tcpO^2) technology

- ✓ Principals of transcutaneous oximetry
- ✓ Applications of transcutaneous oximetry

Transcutaneous oxygen monitor and related equipment

- ✓ Operating functions of the monitor
- ✓ Calibration procedure
- ✓ Sensor electrode care and maintenance
- ✓ Monitor care
- ✓ Operational troubleshooting

End of Day Three

Thursday, Day Four

Homework Review

Physiological and Operational Implications of Carbon Dioxide (CO^2)

Covering the Following:

Carbon Dioxide Life Support Ranges Maximum

PCO^2 for Patients on 2-3 ATA or O^2

Mechanism of PCO^2 and PO^2 Contributing to Convulsions

Ventilation Rate Requirements

Multi, Dual and Mono Place Chambers
Hoods, Masks and Ventilators
(ACFM vs SCFM)

Ventilation or Respiratory Dead Space

How the Mechanical Dead Space or Mechanical Resistance to Breathing Can Contribute to CNS O^2 Toxicity

Ventilation Rate Requirements for Chamber With or Without Overboard Dump

Continuous and Interrupted Venting Procedure

Venting ACF, SCF and Liters to Ensure Adequate Flow

Break

Chamber Life Support Duration Without Venting Before Physiology Becomes Life Threatening

Chamber Gas Supply Requirements (Free Flow System)

Determining Internal Volume of Chamber, Cylinder, Flasks in Cubic Feet, Gallons and Liters

Determining How Many Actual Cubic Feet (ACF) are Required to Pressurize Chamber

Determining Compressor Output (SCF)

Determining Volume of Gas Required to Pressurize Chamber at Least Twice

Determining Primary/Secondary Gas Supply Requirements for Treatment

Tables How CO^2 Scrubbers Can Assist Primary and Secondary Air Supply

Emergency Procedures for Storing Personnel in Chambers in the Event Primary and Secondary Air Supplies are Lost

Chamber Cylinder Gas Supply Requirements for Mask, Hoods, Ventilators (Open Circuit Demand/Free Flow)

Determining SCF of Gas to Conduct a Diver Operation in Water or Chamber for All Demand and Free Flow Systems

Determining How Many Cylinders of O^2 are Needed to Conduct a Treatment or Decompression of Observers

Determining How Many SCF of Air, O^2, or Nitrox are Required by Mask for Emergency Breathing

Determining How Many SCF of Air or Nitrox are Required for Observers to Make Bounce Dives in the Chamber

Lunch

Nitrox Therapy Gas Mixtures

Why Diving Accident Victims May Require Nitrox vs Heliox

The Advantage of N^2/O^2 for Therapy Deeper than 60 fsw

The Advantage of N^2/O^2 for Observers and Offshore Diving

Nitrox Mixtures

Nitrox Tables

Physiological Implications of N_2/O^2

Avoiding CNS and Pulmonary O^2 Toxicity

Nitrox Advantages for Decompression of Observers

Equating a N_2/O^2 Observer to the USN Deco Tables

Therapeutical and Operational Advantages for 60/40 Nitrox Mixtures and 50/50 Nitrox Mixtures

Nitrox (N^2/O^2) vs Heliox (He/O^2)

Isobaric Bubble Growth

Isobaric Gas Switching Resulting in Super Saturation and Life Threatening Symptoms

Switching to He/O^2 While Increasing and Decreasing Pressure.

Objective

An overview of the use of Nitrox and Heliox gas mixtures for therapy purposes. The pros and cons of these mixes will be stressed, both for operational and therapy advantages in chambers. At the completion of this program students should be able to outline the advantages/disadvantages of Nitrox or Heliox for operational and therapy use. They should also demonstrate a superficial knowledge of other types of mixed gases in use in commercial diving and therapy.

Objective During this program students will apply all knowledge as presented during practical sessions each afternoon. Each day there will be at least three hours of chamber operations to employ all equipment, techniques, IVs, BIBs, ventilators, hoods, ET tubes, vitals (blood pressure, pulse rate, breath sounds), accident scenarios, medical equipment, gases, venting, air supply and scenarios of critical patients. Chamber dives will range from 30 fsw to 60 fsw.

End of day four

Friday, Day Five

Homework Review

Decompression of Observers from Air or Oxygen Treatment Tables

Decompression of

Observers

Using

Oxygen

Nitrox

Ensuring the Hydrostatic and Off Gassing Components are Met

Using Standard USN Decompression Tables When Locking Attendants In/Out of Air Chambers

Using Surface Decompression
Oxygen Using the EAD Concept

Staying from One Minute to Two Hours at 165 GSW and Coming Out on a USN O^2 TT6 or Extended 6
For 165 to 60 FSW on a USN Air TT4 to 60 FSW, then out on a USN O^2 TT6 or Extended 6

Objective This presentation is designed to teach all concerned how to decompress attendants/observers sitting all treatment tables out.

Break

Treatment Tables and Viable Treatment Table Options for DMO's

Pros and Cons of USN, USAF, NOAA, Commercial and Foreign Treatment Tables

Objective This portion of the program describes how to successfully treat a patient and observer when the patient loses vital signs and it becomes necessary to increase pressure to restore vital signs. Ideally, we would recompress the patient on a single treatment table. However, it is important to know the next slower table to use to ensure the safety of the patient and observer sitting out all Tx Tables on air. The deeper the recompression depth is, the faster the CNS, pulmonary oxygen and decompress clocks are running, therefore it is necessary to know other treatment table options.

Lunch

Critical Care and Medical Equipment in the Hyperbaric Environment

Fluid Management (IVs), Catheters, Suction, EKGs, Hoods, Ventilators,

Masks, ET Tubes

Neurological Evaluation

Adjusting Treatment Tables for Reoccurrence of Symptoms

Tension Pneumothorax, Pneumopericardium and Pneumomediastinum

Awareness
Treatment
Stabilization

Protocol for Placing Persons in a Coma or with Life Threatening Vital Signs Under Pressure

Protocol for Prescreening Patients for Safety Before Placing in a Chamber to Prevent Injury

Topic: Recompression Chamber Safety

Prescreening Medical Equipment for Hyperbaric Environment Chamber

Life Support Systems

Preventing Chamber Fibers

fO_2 < .25 USN, < .23 NFPA 99
Burnables
Electronics
Types and Causes of Previous Chamber Fires
Oxygen Safety, Handling and Analyzation

Types of Cleaning Materials, Clothing and Painting for Interior Chamber Safety

Pressure Vessel Integrity

Viewports Piping
Filters

Emergency Breathing Gases and Their Importance

Objective This program will include presentations pertaining to chamber safety.

Chamber fire safety will be stressed, with films showing chamber fires at various depths. Also, electrical, oxygen, pressure integrity, equipment and operational safety standards/codes: National Fire Protection Agency (NFPA 99), Pressure Vessel for Human Occupancy (PVHO), American Society for Mechanical Engineers (ASME), USCG, OSHA, FDA 510 and CGA. At the completion of this program, students will have the knowledge to ensure each of the codes are applied as needed for the facility.

Break

Final Exam

Exam Review

The following subjects will be covered during the week, scheduled where appropriate.

Introduction to Hyperbaric Oxygen Indications: Approved Uses

Carbon Monoxide Poisoning and Smoke Inhalation Carbon Monoxide Complicated by Cyanide Poisoning

Clostridial Myonecrosis (gas gangrene)

Crush Injury, Compartment Syndrome, and other Acute Traumatic Ischemias

Enhancement of Healing in Selected Problems

Exceptional Blood Loss (anemia)

Necrotizing Soft Tissue Infections (subcutaneous tissues, muscle, fascia) Osteomyelitis (refractory)

Systemic or Local Factors that Affect Immune Surveillance, Metabolism and Local Vascularity

Radiation Tissue Damage (osteoradionecrosis)
Skin Grafts and Flaps (compromised)

Thermal
Burns

Adjunctive Hyperbaric Oxygen in Intracranial Abscess

Operational Hyperbaric Medicine

Discussion of Current Indications for Hyperbaric Oxygen

Therapy Discussion of Investigational Hyperbaric Oxygen

Indications Hyperbaric Chamber Operations

Governing and Regulating Organizations and Entities

Hyperbaric Chamber Safety

Hyperbaric Emergency Procedures
Hyperbaric Oxygen Treatment

Tables
Clinical Hyperbaric Oxygen - Other Treatment Tables
Hyperbaric Contingency Tables
Evaluating the Hyperbaric Patient
Contraindications for Hyperbaric Oxygen Treatment
Special Considerations During Hyperbaric Oxygen Treatment
Hyperbaric Oxygen Delivery Systems
Homodynamic Monitoring
Pumps and Infusers
Other Hyperbaric
Equipment Hyperbaric
Staffing Hyperbaric Team
Approach Hyperbaric
Billing
Professional Society and
Resources Hyperbaric Patient
Care Guidelines Hyperbaric
Oxygen Care Plans
Psycho-Social Interventions for Hyperbaric Patients
Transcutaneous Oximetry Module (Required for CHT)

This activity has been planned and implemented in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint sponsorship of the Undersea & Hyperbaric Medical Society (UHMS) and Hyperbarics International.
The UHMS is accredited by the ACCME to provide continuing medical education for physicians.
The Undersea & Hyperbaric Medical Society designates this live activity for a maximum of 40 *AMA PRA Category 1 Credit(s)*^{TM}. Physicians should claim only the credit commensurate with the extent of their participation in the activity.
All faculty members and planners participating in continuing medical education activities sponsored by Hyperbarics International are expected to disclose to the participants any relevant financial relationships with commercial interests. Full disclosure of faculty and planner relevant financial relationships will be made at the activity.