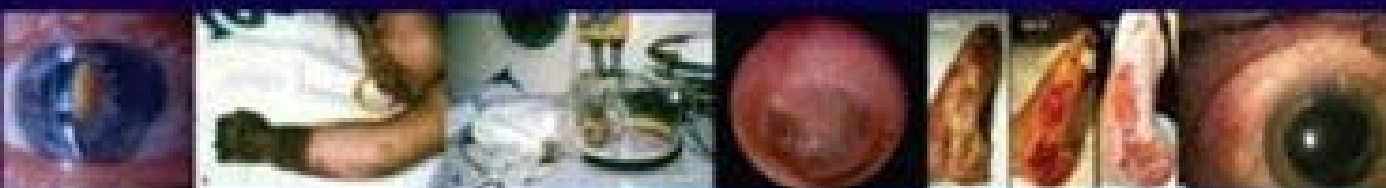


NEUMAN & THOM

PHYSIOLOGY AND MEDICINE OF HYPERBARIC OXYGEN THERAPY



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Dedication



To all of our colleagues in the practice of hyperbaric medicine who have worked so tirelessly to bring our specialty into the mainstream of medicine.

And, most importantly, to our best friends and wives—Doris and Lynne.

Preface



If one is to be candid, the field of hyperbaric medicine is a relatively new one. The biological effects of pressure were sporadically investigated in the 18th and early 19th centuries, but the first cohesive, scientific analysis was carried out by Paul Bert, who published *La Pression Barometrique* in 1878. Hyperbaric chambers were used initially to treat a variety of “humors,” but then interest began to focus on decompression sickness. It was not until the second half of the 20th century that hyperbaric chambers were used to treat conditions other than decompression illness on a more frequent basis. As such, early pioneers were clinically oriented and had their roots in either diving or aerospace medicine.

Thus hyperbaric medicine began as a clinical discipline. Early practitioners had a physiological rationale for hyperbaric oxygen therapy (HBOT), but clinical utilization was emphasized over basic science. It has been only recently that the basic science behind hyperbaric medicine has been explored, and this continues with ever-increasing sophistication. Of equal importance, it has been only recently that more rigor has been applied to the clinical situations in which HBOT might benefit patients. There is now a pool of knowledge concerning basic physiology and clinical outcomes that would benefit from being collected into one volume.

This was the purpose of this textbook. It was our goal to try to assemble all of the important physiological information, as well as the carefully conducted clinical investigations of HBOT. This text is meant to be a reference tool for researchers and clinicians to help them gain a better understanding of the fundamental mechanisms of HBOT; it also serves as a critical review of the indications for HBOT. It is not intended to be a simple

recitation of the virtues of hyperbaric medicine but rather an academic approach to the subject. With this in mind the book is organized to deal with the practical issues of HBOT and the physiology behind the treatment. It addresses each of the generally accepted indications for HBOT with what the editors hope is fair academic vigor.

We feel that two chapters deserve special mention. The first of these is the chapter devoted to “Fitness to Dive.” Because so many of the current clinicians practicing hyperbaric medicine no longer have their background in diving medicine, we felt this chapter was especially important. Practicing hyperbaric physicians are often called upon to examine commercial and sport divers to assess their fitness to dive, and at times to treat diving-related injuries. Our coverage of other diving medicine topics was limited, however, because there are several excellent texts in this area. The reader is referred to Bennett and Elliott’s *Physiology of Medicine and Diving* as well as Bove and Davis’s *Diving Medicine*. This text is not meant to replace those texts but rather to accompany them, and for all to be found side by side at any hyperbaric chamber installation. The second chapter that warrants special mention is devoted to the unconventional uses of hyperbaric medicine. In current times, with medicine being scrutinized carefully for its ever-increasing costs, this chapter turns a critical eye to conditions for which HBOT has been advocated without there being a firm rationale and/or data for its use. We make no apologies for the critical nature of this chapter. We believe such directness is overdue within the field of hyperbaric medicine.

With so many individuals as authors, the editors have tried to the best of their abilities to create a more or less uniform style for the

chapters so that the reader may go from one chapter to another more easily. The symbols for respiratory abbreviations and concepts are those used by Elsevier throughout their publications. The units of pressure are those used most frequently in the field of hyperbaric medicine.

We hope this book meets the needs of our many colleagues.

TOM S. NEUMAN, MD, FACP, FACPM
STEPHEN R. THOM, MD, PhD

Contributors



Oskar Baenziger, MD

Professor
University of Zurich
Director, Department of Intensive Care
and Neonatology
University Children's Hospital
Zurich, Switzerland

Richard C. Baynosa, MD

Plastic Surgery Resident
University of Nevada School of Medicine
Las Vegas, Nevada

Michael H. Bennett, MBBS, MD, MM(Clin Epi), FANZCA

Associate Professor, Faculty of Medicine
The University of New South Wales
Senior Staff Specialist, Department of Diving
and Hyperbaric Medicine
Division of Anaesthesia
Prince of Wales Hospital
Sydney, Australia

Alfred A. Bove, MD, PhD

Emeritus Professor of Medicine
Chief, Section of Cardiology
Temple University School of Medicine
Medical Staff
Temple University Hospital
Philadelphia, Pennsylvania

Jon A. Buras, MD, PhD

Research Associate Professor
Northeastern University
New England Inflammation and Tissue
Protection Institute Consortium
Departments of Biology and Pharmaceutical
Sciences
Boston, Massachusetts
Staff Physician in Emergency Medicine,
Wound Care, and Hyperbaric Medicine
South Shore Hospital
Weymouth, Massachusetts
Consultant in Hyperbaric Medicine
Massachusetts Eye and Ear Infirmery
Boston, Massachusetts

Frank K. Butler, Jr., MD

Adjunct Associate Professor of Military
and Emergency Medicine
F. Edward Hebert School of Medicine
Uniformed Services University of the Health
Sciences
Medical College of Georgia
Augusta, Georgia
Staff Ophthalmologist
Naval Hospital
Pensacola, Florida

James M. Clark, MD, PhD

Clinical Associate Professor of Environmental
Medicine in Pharmacology
Institute for Environmental Medicine
University of Pennsylvania School of Medicine
Philadelphia, Pennsylvania

Dick Clarke

Director, The Baromedical Research
Foundation
Columbia, South Carolina

Dominic P. D'Agostino, PhD

Postdoctoral Fellow, Department of Molecular
Pharmacology and Physiology
University of South Florida
School of Basic Biomedical Sciences, College
of Medicine
Tampa, Florida

Jay B. Dean, PhD

Professor of Molecular Pharmacology
and Physiology
Head of Hyperbaric Biomedical Research
Laboratory
University of South Florida
Tampa, Florida

John J. Feldmeier, DO, FACRO

Professor and Chairman, Radiation Oncology
Department
University of Toledo
Chairman and Clinical Director, Department
of Radiation Oncology
University of Toledo Medical Center
Toledo, Ohio

Nachum Gall, MD

Director, Institute of Hyperbaric Medicine
and Wound Care Center
Assaf Harofeh Medical Center
Zerifin, Israel

Lisardo Garcia-Covarrubias, MD

Cardiothoracic Surgery Fellow
University of Miami/Jackson Memorial Hospital
Miami, Florida

Anthony J. Gerbino, MD

Clinical Assistant Professor
University of Washington School of Medicine
Head, Section of Pulmonary/Critical Care
Medicine
Virginia Mason Medical Center
Seattle, Washington

Peter Gilbey, MD

Head of Otolaryngology, Head and Neck Surgery
Sieff Medical Center
Zefat, Israel

Des F. Gorman, MBChB, MD, PhD

Head of the School of Medicine
The University of Auckland
Auckland, New Zealand

Catherine Hagan, MD

Senior Resident
Naval Medical Center
San Diego, California

Neil B. Hampson, MD

Clinical Professor of Medicine
University of Washington School of Medicine
Medical Director, Center for Hyperbaric
Medicine
Virginia Mason Medical Center
Seattle, Washington

Kevin Hardy, MD

Assistant Professor, Department of Emergency
Medicine
University of Pennsylvania
Attending Physician in Emergency Medicine
Attending Physician in Hyperbaric Medicine
Hospital of the University of Pennsylvania
Philadelphia, Pennsylvania

Harriet W. Hopf, MD

Professor, Director of Translational Research
University of Utah School of Medicine
Medical Director, Wound Care Services
LDS Hospital/Urban Central Region
Salt Lake City, Utah

Irving Jacoby, MD, FACP, FACEP, FAAEM

Clinical Professor of Medicine and Surgery
University of California, San Diego, School
of Medicine
La Jolla, California
Attending Physician
Hyperbaric Medicine Center and Department
of Emergency Medicine
University of California, San Diego, Medical
Center
San Diego, California

Sarah H. Kagan, PhD, RN

Professor of Gerontological Nursing, School of
Nursing and Secondary Faculty
Department of Otorhinolaryngology: Head and
Neck Surgery
University of Pennsylvania School of Medicine
Clinical Nurse Specialist
Abramson Cancer Center
University of Pennsylvania
Philadelphia, Pennsylvania

Matthew Kelly, MD

Hyperbaric and Wound Care Physician
St. Francis Hospital
San Francisco, California

Jan P. Lehm, MD, FANZCA, DipDHM

Conjoint Senior Lecturer
The University of New South Wales
Sydney, Australia
Senior Staff Specialist, Department of Diving
and Hyperbaric Medicine
Division of Anaesthesia
Prince of Wales Hospital
Senior Visiting Medical Officer, Department of
Anaesthesia
Royal Hospital for Women
Randwick, Australia

D. Mathieu, MD, PhD

Professor of Critical Care Medicine
University of Lille
Head of the Critical Care and Hyperbaric
Medicine Department
University Hospital
Lille, France

**Simon J. Mitchell, MBChB, PhD, DipDHM,
DipOccMed, FANZCA**

Senior Lecturer, Department of Anaesthesia
School of Medicine, Faculty of Medicine and
Health Sciences
The University of Auckland
Consultant Anaesthetist
Auckland City Hospital
Auckland, New Zealand

Richard E. Moon, MD, FACP, FCCP, FRCPC

Professor of Anesthesiology, Professor of Medicine
Duke University
Medical Director, Center for Hyperbaric
Medicine and Environmental Physiology
Duke University Medical Center
Durham, North Carolina

Tom S. Neuman, MD, FACP, FACPM

Emeritus Professor of Medicine
University of California, San Diego
San Diego, California

Herbert B. Newton, MD, FAAN

Professor of Neurology and Oncology,
Department of Neurology and
Hyperbaric Medicine Program
Ohio State University Medical Center and
James Cancer Hospital
Ohio State University College of Medicine and
Public Health
Columbus, Ohio

Juha Niinikoski, MD, PhD

Professor of Surgery and Chairman, Department
of Surgery
University of Turku
Turku, Finland

Claude A. Piantadosi, MD

Professor of Medicine
Director, Center for Hyperbaric Medicine and
Environmental Physiology
Duke University Medical Center
Durham, North Carolina

Dag Shapshak, MD

Assistant Professor, Department of
Medicine
Division of Emergency Medicine
Medical University of South Carolina
Charleston, South Carolina

Avi Shupak, MD

Head, Unit of Otoneurology
Carmel Medical Center
Lin Medical Center
Haifa, Israel

Michael B. Strauss, MD, FACS, AAOS

Clinical Professor, Orthopaedic Surgery
University of Irvine College of Medicine
Irvine, California
Clinical Associate Professor, Orthopaedic
Surgery
Harbor/UCLA Medical Center
Torrance, California
Active Staff, Departments of Orthopaedic
Surgery and Hyperbaric Medicine
Long Beach Memorial Medical Center and
Miller Children's Hospital
Attending Physician PACT (Preservation-
Amputation, Care and Treatment) Clinic
Veterans Agency Medical Center
Long Beach, California

Stephen R. Thom, MD, PhD

Professor of Emergency Medicine
Chief, Hyperbaric Medicine
University of Pennsylvania
Philadelphia, Pennsylvania

Robert J. Turner, MBBS, FANZCA, DipDHM

Conjoint Lecturer
The University of New South Wales
Sydney, Australia
Senior Staff Specialist, Department of Diving
and Hyperbaric Medicine
Division of Anaesthesia and Intensive Care
Prince of Wales Hospital
Randwick, Australia

Karen Van Hoesen, MD

Clinical Professor of Medicine, Department of
Emergency Medicine
Director, Undersea and Hyperbaric Medicine
Fellowship
Director, Diving Medicine Center
University of California, San Diego (UCSD)
San Diego, California

Dan Waisman, MD

Lecturer, Faculty of Medicine
Technion–Israel Institute of Technology
Director of the Newborn Unit, Department of
Neonatology
Carmel Medical Center
Member, Reserve Medical Team
Israel Naval Medical Institute (INMI)
Haifa, Israel

Lindell Weaver, MD

Professor, Department of Medicine
University of Utah School of Medicine
Medical Director, Hyperbaric Medicine
LDS Hospital
Salt Lake City, Utah
Medical Director, Hyperbaric Medicine
Medical Co-director, Shock Trauma ICU
Intermountain Medical Center
Murray, Utah

William A. Zamboni, MD, FACS

Professor and Chairman, Department of Surgery
Chief, Division of Plastic Surgery
Program Director, Plastic Surgery Residency
Program
University of Nevada School of Medicine
Las Vegas, Nevada

Section III: Physiology

- Chapter 8 - Pulmonary Gas Exchange, Oxygen Transport, and Tissue Oxygenation
- Chapter 9 - Ischemia-Reperfusion Injury and Hyperbaric Oxygen Therapy: Basic Mechanisms and Clinical Studies
- Chapter 10 - Pressure Effects on Human Physiology
- Chapter 11 - Oxygen and the Basic Mechanisms of Wound Healing

Section IV: Indications


- Chapter 12 - Hyperbaric Oxygen Therapy for Delayed Radiation Injuries
- Chapter 13 - Gas Embolism: Venous and Arterial Gas Embolism
- Chapter 14 - Decompression Sickness
- Chapter 15 - Carbon Monoxide Pathophysiology and Treatment
- Chapter 16 - Management of Chronic Wounds
- Chapter 17 - Compromised Grafts and Flaps
- Chapter 18 - Clostridial Myositis, Necrotizing Fasciitis, and Zygomycotic Infections
- Chapter 19 - Hyperbaric Oxygen Therapy in Chronic Osteomyelitis
- Chapter 20 - Crush Injuries: Justification of and Indications for Hyperbaric Oxygen Therapy
- Chapter 21 - Evidence and Hyperbaric Oxygen Therapy: Summarizing the Literature and a Review of Some Unconventional Indications

Section V: Side Effects and Complications

- Chapter 22 - Effects of Pressure
- Chapter 23 - Oxygen Toxicity
- Chapter 24 - Ocular Complications in Hyperbaric Oxygen Therapy
- Chapter 25 - Cardiovascular Aspects of Hyperbaric Oxygen Therapy
- Chapter 26 - Contraindications to Hyperbaric Oxygen Therapy

Index

Physiology and Medicine of Hyperbaric Oxygen Therapy

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 Dedication

 Preface

 Contributors

 **- Color Plates**


Section I: History


 Chapter 1 - History of Hyperbaric Therapy


Section II: Technical Aspects

 Chapter 2 - Monoplace Hyperbaric Chambers

 Chapter 3 - Multiplace Hyperbaric Chambers

 Chapter 4 - The Physics of Hyperbaric Oxygen Therapy

 Chapter 5 - Clearance to Dive and Fitness for Work

 Chapter 6 - Hyperbaric Oxygen Therapy in Newborn Infants and Pediatric Patients

 Chapter 7 - Critical Care of Patients Needing Hyperbaric Oxygen Therapy