

the United States Surgeon General adopted the "lifestyle theory of illness etiology." The mechanistic, physician-directed medical paradigm described by the editors inhibits advances in rehabilitation by ignoring advances in other disciplines.

Fortunately, a number of disciplines have traditionally approached human beings as complex, whole persons and do not share the mechanistic medical model that has a microscopic view of people through a disease or an organ. Some of these disciplines such as psychology, sociology, and theology have a vast body of knowledge on the "psychosocial-spiritual" aspects of the human being. Other health care disciplines, such as nursing, have a long history of integrating "biopsychosocial-spiritual" needs in the promotion of optimal health (a balance of physical, emotional, social, spiritual, and intellectual health) and do not focus only on the treatment of the disease.

The editors should be congratulated for their call for an openness to think more broadly about rehabilitation. The traditional topics of pharmacology, technology, exercise protocols and prescription, and physiologic abnormalities were well presented and offer a nice overview. However, since physicians were over-represented as contributors to the chapters, it was unlikely that there would be much depth of perspective from the disciplines that can advance the psychosocial-spiritual aspects of rehabilitation. The chapters addressed the usual topics in pulmonary rehabilitation, but the book falls short in moving towards the paradigm of integration.

This paperback book has a reasonable price and offers a quick reference on several cardiopulmonary rehabilitation issues. The text is easy to read and formatted much like journal articles, which adds familiarity for the reader. The incidence of typographic errors was low and the clarity of the illustrations was excellent. Overall this book is a useful beginning resource for health care professionals working in cardiopulmonary rehabilitation.

**Amy H Tsang PhD**  
Practice Division  
College of Nursing  
University of Arizona  
Tucson, Arizona

**Hyperbaric Surgery: Perioperative Care.** Dirk Jan Bakker MD PhD and Frederick S Cramer MD, Editors. Flagstaff, Arizona: Best Publishing. 2002. Hard cover, illustrated, 459 pages, \$154.

When I first saw the title of this book I assumed it would be a treatise on anesthesia and surgery performed in the hyperbaric environment: an interesting but rare occurrence. Instead, though it does cover that topic, primarily the book is a broad overview of the history of hyperbaric oxygen (HBO) therapy and its modern indications.

The first chapter, by Dirk J Bakker, which provides a history of hyperbaric therapy, is a standout chapter. It summarizes the use of high ambient pressure, dating back to the 17th century, when Henshaw constructed a chamber in which environmental pressure could be manipulated: high pressure for treating acute diseases and low pressure for chronic ones. The modern era of hyperbaric therapy started in the 19th century, when compressed air was used to prevent the work environment from flooding during tunnel excavation and bridge tower construction in marshy ground. Men exiting the compressed air environment often suffered joint pain, spinal cord injury, or death (which became known as caisson disease, the bends, or decompression sickness). Investigations by Paul Bert in Paris revealed the cause to be in situ bubble formation caused by nitrogen supersaturation. It was recognized that recompression using air could cure this disease or at least reduce its mortality. Using animals, Bert showed that oxygen was also effective, although he didn't try it under pressure because he believed that at high concentrations it was toxic, even at 1 atmosphere. It was not until the 1930s that Behnke, working for the United States Navy, demonstrated in humans that using HBO at 2.8 atmospheres was highly effective and safe for decompression sickness.

In parallel with sharply focused investigations into its use for decompression sickness were several well-intentioned but misguided efforts to promote hyperbaric air, then oxygen therapy, for a variety of diseases for which there is neither evidence of efficacy nor rationale. The most dramatic example was a 60-foot diameter hyperbaric chamber built in 1928, outfitted with bedrooms, lounges, a library, and a smoking room.

Though some practitioners continued to promote HBO as a panacea, Behnke's work was followed by careful studies designed to

elucidate its physiologic, pharmacologic, and clinical effects. In the 1950s cardiac surgery in hyperbaric chambers was tried on both sides of the Atlantic in an attempt to prolong the safe period of total circulatory arrest. Though this was quickly supplanted by cardiopulmonary bypass, intermittent application (1-3 times daily) of HBO was shown to be effective as an adjunct to antibiotic and surgical therapy in gas gangrene (clostridial myonecrosis) and several other clinical situations in which tissue oxygen delivery is impaired. For example, HBO appears to be uniquely able to improve perfusion in tissues previously irradiated for cancer, which may then facilitate wound healing. Recent studies appear to indicate that HBO reduces the effects of ischemia-reperfusion injury in muscle flaps.

Undersea and hyperbaric medicine is evidence-based, and trained physicians can be credentialed by an American Board of Medical Specialties subspecialty board examination process. In that spirit, **Hyperbaric Surgery's** introduction promises evidence-based reviews, which, in addition to containing a good bit of personal observation and experience, it largely delivers.

There are chapters on most of the accepted indications for HBO, including chronic refractory osteomyelitis, osteoradionecrosis, soft tissue radiation injury, necrotizing soft tissue infections, crush injuries, and hypoxic non-healing wounds. Bakker's extensive experience with gas gangrene and mixed aerobic/anaerobic soft tissue infections remains an international "yardstick" in the management of these deadly diseases. There are chapters on the physiologic and pharmacologic effects of HBO, hyperbaric chamber design and safety, and the basic mechanisms underlying the effect of HBO on wound healing. A chapter on care of critically ill patients in the hyperbaric environment is the best review of its kind that I have seen. There is also a chapter on conditions (eg, thermal burns and frostbite) for which there is a rationale for HBO and supportive evidence but as yet no consensus as to whether HBO should be routinely used. Although there are sections dedicated to the nonsurgical indications of air embolism and decompression illness, the book lacks a chapter on carbon monoxide poisoning.

The authors include many eminent and well-published surgeons and investigators in the field of soft tissue infections, wound management, and radiation-induced tissue damage, such as Bakker, Thomas K Hunt, John

J Feldmeier, Michael B Strauss, and William A Zamboni. Though some of the material consists of personal experience, the text is well referenced. Some of the information is dated, such as that pertaining to the use of corticosteroids for air embolism. However, most of the book's recommendations are up to date.

Though **Hyperbaric Surgery** is a good overview, it is difficult to use as a reference book. There is quite a bit of overlap among chapters. For example, fundamental mechanisms of wound healing and the effects of oxygen are covered in 5 chapters. That is not a major fault, but it is a major fault that the book—inexplicably—has no index.

Except for carbon monoxide poisoning, the book summarizes very well the clinical aspects and scientific underpinnings of hyperbaric medical practice. Despite its few shortcomings, it is a volume that will be useful to both the clinician interested in reading more about the field and the hyperbaric specialist. The format is exceptionally "high class." Glossy pages make the many excellent photographs and radiographs outstanding. For anyone even slightly interested in hyperbaric medicine, the illustrations alone make the book worth owning.

**Richard E Moon MD**

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

**Hyperbaric Nursing.** Valerie Larson-Lohr and Helen C Norvell, Editors. Flagstaff, Arizona: Best Publishing, 2002. Hard cover, illustrated, 400 pages, \$73.

**Hyperbaric Nursing** is a textbook that fills a long-standing need within the community. The editors, Valerie Larson-Lohr and Helen C Norvell, spent many long hours pulling this major project together, and they are to be commended for their superb effort. Twenty-eight dedicated baromedical professionals contributed to the text.

The target audience is presumed to be baromedical nurses. However, this book is an excellent reference for hyperbaric technicians who manage programs or for organizations considering instituting new programs.

Each chapter's table of contents is presented in short form in the beginning of the book and in a longer, very detailed form at the beginning of each chapter. The detailed chapter tables are a useful feature in that they enable the reader to quickly access information. However, concordance between the tables of contents and the index is lacking. For example, from the index one would assume that the only mention of the Baromedical Nurses Association Standards of Care is on page 279, but the standards are actually spelled out beginning on page 85.

The editors have done a superb job of gathering useful baromedical information that has previously been available only from scattered sources. Editing problems, such as content overlap, inconsistent writing style, differing methods of citation, and differing approaches to the target audience, are evident to a degree in the book. Some source references, such as the list of Internet sites contained of page 377, have erroneous information.

Neither the list of contributors nor any of the chapters list the writers' credentials. Knowing the background and training of the authors would help the reader

understand the perspective and focus of the chapter.

The book is comprehensive and can serve as an excellent guide for program coordinators and staff members from all disciplines. Section II is a comprehensive review of documentation. It includes fundamentals of documentation and current requirements and standards. The examples of documentation and assessment forms that are included will be very helpful for programs that need to institute new forms or modify current ones. The source and copyright information for the forms are not always present, nor are the sources of the photographs.

Section III contains information specific to care of hyperbaric therapy patients. There are sections addressing generic issues, the multiplace environment, age-specific, critical care, and diabetic considerations. This section also includes the current approved indications for hyperbaric therapy, with reviews of each condition.

Other sections in the book address hyperbaric nursing research, patient education, regulatory requirements, and safety considerations. These sections are comprehensive, and the authors have excellent credentials even though these credentials are not given in the book. The section on transcutaneous oximetry and laser Doppler studies is a comprehensive reference for hyperbaric care providers.

Overall, this first-edition textbook on hyperbaric nursing is an exceptional addition to the professional literature.

**Kathy Furnas RN BSN A-CHRN**

Hyperbaric Medicine Department  
Presbyterian/St Luke's Medical Center  
Denver, Colorado