Basic Standards for Fellowship Training in Undersea and Hyperbaric Medicine

American Osteopathic Association
and
American College of Osteopathic Family Physicians,
American College of Osteopathic Internists, and
American Osteopathic College of Occupational and Preventive Medicine

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Article I – Introduction
These are the basic standards for subspecialty training in as established by the American College of Osteopathic Family Physicians (ACOFP), the American College of Osteopathic Internists (ACOI), and the American Osteopathic College of Occupational and Preventive Medicine (AOCOPM) as approved by the American Osteopathic Association (AOA). These standards are designed to provide osteopathic physicians with advanced and concentrated training in hyperbaric medicine and to prepare the physician for an examination of Certificate of Added Qualifications in Osteopathic Undersea and Hyperbaric Medicine.

Article II - Mission
The mission of the Osteopathic Undersea and Hyperbaric Medicine (UHM) fellowship training program is to provide fellows with comprehensive structured education to prepare them to become Undersea and Hyperbaric Medicine specialists to meet the needs of the United States and the world, and to prepare osteopathic physicians to become eligible for certification in Undersea and Hyperbaric Medicine.

Article III- Educational Program Goals
The goals of an undersea and hyperbaric medicine training program are to:

A. Prepare physicians for the practice of clinical hyperbaric medicine. The program includes a broad-based, intense study of hyperbaric and hyperbaric physiology, diving medicine, and clinical hyperbaric medicine. In addition, there is emphasis on operational problems derived from excursions within the vertical continuum of pressure, extending from the ocean floor to outer space.

B. Provide specialized training to select physicians in the discipline of Clinical and Operational Hyperbaric Medicine. This includes diving and aviation medicine as it relates to decompression sickness and bubble-related diseases, fitness to dive considerations, dive operations, decompression tables, and chamber safety. In depth experience with clinical processes are covered in the fellowship including the emergent care of acute soft tissue infections (i.e., necrotizing infections), carbon monoxide poisoning, chronic radiation-related necrosis, and complicated non-healing wounds, among others.

C. Provide fellows with the opportunity to manage complex wounds and provide primary and consultative hyperbaric medicine care.

D. Provide opportunities for fellows to be involved in teaching and research in the field of undersea and hyperbaric medicine.

E. Provide in-depth knowledge of undersea and hyperbaric medicine in a structured environment that includes reading requirements, outside clinic rotations, staff/fellow conferences, and formal courses. Practical patient management skills are obtained through daily patient care, case presentations, new patient evaluations, and on-call duties.

Article IV - Institutional Requirements
4.1. The training institution shall have and maintain in good working condition Hyperbaric Oxygen chambers capable of providing therapeutic hyperbaric oxygen.
4.2 The institution must provide the time and resources for each fellow, based upon his/her primary specialty, to attend the annual convention and scientific sessions or another educational program sponsored by the ACOFP, ACOI, or AOCOPM at least once during their fellowship.

**Article V - Program Requirements and Content**

5.1. The training program in hyperbaric medicine must be 12 months in duration. The training program in hyperbaric medicine must be supported by a hyperbaric medicine trained and certified faculty.

5.2. Training shall include diagnosis, therapeutic plan, treatment and follow-up of air or gas embolism; carbon monoxide poisoning; decompression sickness; gas gangrene; crush injury; selected problem wounds; exceptional anemia; intracranial abscess; necrotizing soft tissue infections; refractory osteomyelitis; delayed radiation injury; skin grafts and flaps; and thermal burns.

5.2. Curriculum. The program curriculum must address, as a minimum, the content and skill areas of Appendix A.

**Article VI - Program Director/Faculty**

6.1. Qualifications of the Program Director

a. The program director must be certified by the American Osteopathic Association, through the Conjoint Board of Undersea and Hyperbaric Medicine (UHM) with a Certificate of Added Qualification in Undersea and Hyperbaric Medicine, or an osteopathic physician certified by the American Board of Preventive Medicine (ABPM) or the American Board of Emergency Medicine (ABEM) in Undersea and Hyperbaric Medicine.

b. The program director must be actively involved in the delivery of hyperbaric care, have sufficient training and experience in academic medicine and have administrative ability and expertise to direct and supervise a fellowship program.

c. Licensed to practice medicine in the state where the institution that sponsors the program is located. (Certain federal programs are exempted)

d. Appointed in good standing to the medical staff of an institution participating in the program.

e. Actively participate and serve as a mentor in scholarly professional activities such as research, presentations, publications, local, regional, and national specialty societies.

6.2. The program director shall provide the fellow with all documents pertaining to the training program as well as the requirements for satisfactory completion of the program.

6.3. The program director shall be required to submit quarterly program reports to the Director of Medical Education. Annual reports shall be submitted to the appropriate specialty colleges.

**Article VII – Fellow Requirements**

7.1. Applicants for training in hyperbaric medicine must:

a. Be AOA board certified/eligible in any participating conjoint specialty.

7.2. During the training program, the fellow must:
a. Submit an annual report to the Conjoint Evaluating Committee
b. Submit a scientific paper and/or research paper, suitable for publication and pertaining to undersea and/or hyperbaric medicine.
c. Keep a log, recording each case and procedures assigned for all treatment settings, identified by the institution number. This log shall be submitted each quarter to the program director and Director of Medical Education for review and evaluation.

**ARTICLE VIII – Evaluation**

8.1. The program must maintain a file for each fellow containing, at minimum:
   a. Ambulatory logs;
   b. Procedure logs;
   c. Rotation evaluation forms;
   d. Quarterly program director evaluations;
   e. Semi-annual reviews

8.2. The program director must provide a written evaluation that documents the fellow’s knowledge, skills and overall performance at regularly scheduled intervals throughout the training period and a final evaluation which documents satisfactory completion of all program requirements for each fellow at the end of training. The evaluation must include a review of the fellow’s performance during the final period of training and should verify that the fellow has demonstrated sufficient professional ability to practice competently and independently. This final evaluation should be part of the fellow’s permanent record maintained by the institution.

* Fellow is used in this document as follows:
Fellow implies that the one year of training is a “stand alone” year not linked to any other training requirements and can be used in conjunction with another Osteopathic board certification to be eligible for a certificate of added qualification in Undersea and Hyperbaric Medicine.
Appendix A: Sample Curriculum: Undersea and Hyperbaric Medicine Outline

1) Fundamentals
   a) Physics
      i) Units
      ii) Gas law, buoyancy
      iii) Vision and acoustics
      iv) Physical properties of gases (density, solubility, thermal conductivity etc.)
   b) Recognition and treatment of physiological/pharmacological effects/toxicity of gases
      i) Oxygen
         (1) CNS
         (2) Pulmonary
         (3) Ocular
         (4) Blood
      ii) Carbon Dioxide
      iii) Other gases (helium, argon, etc.)
   c) Equipment
      i) Chamber systems design, construction & maintenance, operations
      ii) ASME and NFPA regulations
   d) Decompression Theory
      i) Decompression tables
      ii) Decompressing chamber attendants
      iii) Altitude effects of decompression
      iv) Saturation
      v) Repetitive
      vi) Bubble detection
   e) Pathophysiology and clinical manifestations of dysbarism
      i) Barotrauma (otic, sinus, pulmonary, GI, other)
      ii) DCS
      iii) AGE
      iv) Venous gas embolism
      v) Long-term diving effects (dysbaric osteonecrosis, etc.)
      vi) Management of pressure related diving chamber accidents
      vii) Effects of bubbles
      viii) Mechanism of gas entry and distribution
      ix) Diving casualties

2) Diving Medicine
   a) Physiological effects of diving
      i) High pressure nervous syndrome
      ii) Breath-hold diving
      iii) Physiology of immersion
      iv) Surface decompression
      v) Mixed gas diving
   b) Diving Operations
      i) Bounce diving
      ii) Saturation diving
      iii) Caisson and tunnel work
      iv) Surface decompression
v) Flying after diving  
vi) Mixed gas diving  
c) Medical and technical support of diving  
   i) Medical standards for diving and chamber personnel (return to work)  
   ii) Hazardous marine life  
   iii) Other medical disorders  
   iv) Psychology of closed spaces  
v) Chambers, bells, habitats, and saturation systems  
vi) Underwater breathing apparatus  

3) Clinical Hyperbaric Medicine - Including the incorporation of osteopathic principles and practice  
a) Indications for hyperbaric oxygen therapy  
   i) Carbon monoxide poisoning – carbon monoxide complicated by cyanide poisoning  
   ii) Clostridial myositis and myonecrosis (gas gangrene)  
   iii) Crush injury, compartment syndrome  
   iv) Enhancement of healing in selected problem wounds  
v) Exceptional anemia  
vi) Intracranial abscess  
vii) Necrotizing soft tissue infections  
viii) Osteomyelitis (refractory)  
ix) Delayed radiation injury (soft tissue and bony necrosis)  
x) Skin grafts and flaps (compromised)  
xii) Thermal burns  
ixii) Air or gas embolism  
xiii) Decompression sickness  
xiv) Other  
b) Patient Management  
   i) Patient selection and care  
   ii) Treatment protocols  
   iii) The physiological effect of hyperbaric oxygen  
   iv) Pharmacological effects of HBO  
v) Management of Oxygen toxicity  
vi) Patient monitoring and equipment  
vii) Complications of hyperbaric oxygen therapy  
   viii) Ethical and legal issues including competency, guardianship, advance directives, right to refuse treatment, wills, and informed consent  
ix) Osteopathic Principles and Practices  

4) Research  
a) Research Methodologies related to Undersea and Hyperbaric Medicine  
   i) Biostatistics, epidemiology, medical information sciences, decision analysis, critical literature review, and research design