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AMERICAN OSTEOPATHIC ASSOCIATION

**BASIC STANDARDS
FOR
RESIDENCY TRAINING PROGRAMS
IN
OSTEOPATHIC AEROSPACE MEDICINE**

**American Osteopathic Association
and the
American Osteopathic College of Occupational and
Preventive Medicine**

Adopted 1985
Revised COPT 11/ 2008

1 **AMERICAN OSTEOPATHIC COLLEGE OF OCCUPATIONAL AND**
2 **PREVENTIVE MEDICINE (AOCOPM)**

3
4 **FOREWORD**

5 The establishment and maintenance of residency training programs in Aerospace
6 Medicine is one of the stated purposes and priorities of the American Osteopathic College
7 of Occupational and Preventive Medicine (AOCOPM). The Aerospace Medicine objectives
8 of the college are:

- 9
10 1. To promote Aerospace Medicine and encourage the practice of preventive
11 medicine.
12 2. To promote education and communication in Aerospace Medicine and preventive
13 medicine.
14 3. To encourage research in Aerospace Medicine, preventive medicine, occupational
15 medicine and public health.

16
17 Aerospace Medicine is the science and art of preventing disease, prolonging life and
18 promoting physical and mental health in aviation personnel and those engaged in ground
19 support of flight or aerospace operations. This includes protection from occupational
20 hazards unique to aerospace and aviation activities. The preventive medicine aspects of
21 Aerospace Medicine are solidly based upon all the basic sciences and medicine for health
22 planning, implementation and evaluation. Historically, medical input has been largely
23 responsible for many improvements in aviation safety and for increases in the health of
24 individuals engaged in aerospace and aviation occupations. The effectiveness of Aerospace
25 Medicine programs depend upon the competency of the physicians charged with
26 implementing and monitoring these programs. Therefore, it is essential that all Aerospace
27 Medicine programs have leaders who have received adequate training.

28
29 **Approved Program Requirements for Osteopathic Residency in Aerospace Medicine**

30 **Article I – Introduction**

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32
33 The following are the basic standards for residency training in Osteopathic
34 Aerospace Medicine as approved by the American Osteopathic Association (AOA), and the
35 American Osteopathic College of Occupational and Preventive Medicine (AOCOPM).

36
37 The purpose of an Aerospace Medicine residency is to provide selected osteopathic
38 physicians with advanced education and training in epidemiology, preventive medicine,
39 environmental health, medical care administration, statistics and risk assessment. The
40 educational experience should assure that the Aerospace Medicine resident possess mature
41 judgment, familiarity and interest in the special problems of aerospace personnel and related
42 occupations.
43

- 1
- 2 7. Aviation physiology to include the body's response to temperature extremes,
- 3 pressure changes, acceleration forces and other stress and illusions experienced in the
- 4 flight environment.
- 5
- 6 8. The concepts of aircrew selection, to include psychological testing and physical
- 7 examination.
- 8
- 9 9. Physical and psychological disorders unique to the aerospace environment.
- 10
- 11 10. The concepts of safety programs to include accident prevention and accident
- 12 investigation techniques.
- 13
- 14 11. The problems of the aerial transport of patients.
- 15
- 16 12. The practice of clinical Aerospace Medicine, including a broad-based, intense study
- 17 of the exposure to gravitational and barometric effects on human senses, hyperbaric
- 18 and hypobaric physiology, diving medicine, and clinical barometric medicine.
- 19
- 20 13. Emphasis on operational problems derived from excursions within the vertical
- 21 continuum of pressure, extending from the ocean floor to outer space.
- 22
- 23 14. Specialized training to select physicians in the discipline of Clinical and Operational
- 24 Aerospace Medicine, including aviation medicine as it relates to the interaction of
- 25 the human being relative to the normal and abnormal living and working
- 26 environments, the prevention or treatment of decompression sickness and bubble-
- 27 related diseases, fitness to fly considerations, flight operations, decompression
- 28 tables, and chamber safety.
- 29
- 30 15. In depth experience with clinical processes including the emergent care of carbon
- 31 monoxide poisoning, gas related injuries to boney cavities and hollow viscus among
- 32 others.
- 33
- 34 16. The opportunity to manage individual health status working in all aerospace
- 35 environmental aspects and provide primary and consultative hypobaric medical care.
- 36
- 37 17. Opportunities to be involved in teaching and research in the field of Aerospace and
- 38 hypobaric medicine.
- 39
- 40 18. In-depth knowledge of Aerospace and hypobaric medicine in a structured
- 41 environment that includes reading requirements, outside clinic rotations,
- 42 staff/fellow conferences, and formal courses. Practical patient management skills are
- 43 obtained through daily patient care, case presentations, new patient evaluations, and
- 44 on-call duties.
- 45
- 46

Article III - Institutional Requirements

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- 2
- 3 A. To participate in Postgraduate specialty training in Osteopathic Aerospace Medicine and
- 4 hypobaric medicine, an institution must meet all of the requirements as formulated in the
- 5 *AOA Basic Document on Postdoctoral Training* and must have an AOA approved Aerospace
- 6 Medicine residency training program.
- 7
- 8 B. The institution must provide a sufficient patient load to properly train a minimum of two
- 9 physicians per year in Aerospace Medicine.
- 10
- 11 C. The institution shall maintain an adequate medical library containing carefully selected
- 12 texts, the latest editions of medical journals and other appropriate publications, in
- 13 various branches pertaining to training in Aerospace Medicine. The library shall be in the
- 14 charge of a qualified person who shall act as custodian of its contents and arrange for the
- 15 proper cataloging and indexing that will facilitate investigative work by the fellow.
- 16
- 17 D. The institution shall provide a documented self-evaluation mechanism to assure sufficient
- 18 appraisal of scope and volume, the educational curriculum, the faculty, the residents and
- 19 the quality of patient care.
- 20
- 21 E. The institution must provide a written policy and procedures manual for the selection of a
- 22 resident.
- 23
- 24 F. The institution shall execute a contract with each resident in accordance with the Training
- 25 Requirements of the AOA.
- 26
- 27 G. Upon the satisfactory completion of the training program, the institution and its related
- 28 OPTI shall award the resident an appropriate certificate, which shall confirm the
- 29 fulfillment of the program requirements, starting and completion dates of the program
- 30 and the name(s) of the training institution(s) and the program director(s).
- 31

Article IV - Program Requirements

- 32
- 33
- 34 A. The Aerospace Medicine residency will be based at an AOA-approved institution
- 35 and must meet the residency training requirements of the AOA.
- 36
- 37 ~~B. COMPLETION OF A MASTERS IN PUBLIC HEALTH OR ITS~~
- 38 ~~EQUIVALENT IS REQUIRED FOR ENTRY INTO THE AM RESIDENCY.~~
- 39 ~~€. B. THE AEROSPACE MEDICINE RESIDENCY SHALL BE AT LEAST~~
- 40 ~~TWELVE (12) MONTHS IN DURATION.~~
- 41 ~~Ⓓ. C. The governing department of an institution with an Osteopathic Aerospace~~
- 42 ~~Medicine. residency training program must be supported by an Aerospace~~
- 43 ~~Medicine. trained, licensed and certified faculty. The faculty shall include~~

1 osteopathic physicians certified or board eligible in preventive or Aerospace
2 Medicine., with adequate education and experience which clearly identifies them as
3 leaders in the field of Aerospace Medicine.

4 ~~E.~~ D. Non-physicians who hold advance degrees in areas pertinent to Aerospace
5 Medicine may serve as faculty, providing they show evidence of continuing
6 education, are able to supervise Aerospace Medicine residents' activities, and are
7 willing to conduct evaluations of the residents.

8 F. E. Training in the ambulatory or medical center must be offered in licensed facilities,
9 as required and defined by local, state or federal authorities. The focus of the
10 training will be the acquisition of skills in the Aerospace Medicine assessment of
11 patients and the therapeutic management of these patients. Continuity of patient
12 care shall be emphasized.

13 G. F. The facilities and equipment shall include, but not limited to:

- 14
- 15 1. Adequate library materials available to resident(s) containing literature
16 relevant to preventive and Aerospace Medicine.
 - 17 2. Clinical facilities for the evaluation and treatment of aviation/aerospace
18 personnel.
 - 19 3. Exposure and actual experience in the operation of hypobaric chambers,
20 resigned and ejection seat simulators.
 - 21 4. The training program shall have and maintain in good working condition
22 Hyperbaric Oxygen chambers capable of providing therapeutic
23 hyperbaric oxygen.
 - 24 5. Training shall include: Diagnosis, therapeutic plan, treatment and follow-
25 up of gravity induced illness or injuries, air or gas embolism; carbon
26 monoxide poisoning; decompression sickness; and all hazardous
27 environmental exposures.

28 H. G. **Curriculum:** The program curriculum must address, as a minimum, the following
29 content and skill areas:

- 30
- 31 I. Administrative medicine programs
 - 32 II. Aviation safety programs
 - 33 III. Environmental health programs
 - 34 IV. Preventive medicine programs
 - 35 V. Medical care programs

36 **Aerospace Medicine Curriculum Outline**

37 **HISTORY** The Beginnings: Past and Present

38 **PHYSIOLOGY, ENVIRONMENT, HUMAN FACTORS**

1 Respiratory Physiology and Protection Against Hypoxia

2 Physiology of Decompressive Stress

3 Human Response to Acceleration

4 Vibration and Acoustics

5 Spatial Orientation in Flight

6 Thermal Stress

7 Cosmic Radiation

8 Aerospace Toxicology

9 Space Environments

10 **CLINICAL**

11 Pilot Health and Aeromedical Recertification

12 Respiratory Diseases: Aeromedical Implications

13 Clinical Aerospace Cardiovascular Medicine

14 Ophthalmology in Aerospace Medicine

15 Otolaryngology in Aerospace Medicine

16 Aerospace Neurology

17 Aerospace Psychiatry

18 Endocrine System and Nephrology

19 Infectious Diseases

20 Dental Considerations in Aerospace Medicine

21 **OPERATIONS**

22 Occupational and Environmental Medical Support to the Aviation Industry

- 1 Women's Health Issues in Aerospace Medicine
- 2 An Introduction to Human Factors in Aerospace
- 3 Space Operations
- 4 Aircraft Accidents: Investigation and Prevention
- 5 Aviation Medicine in Unique Environments
- 6 Aerospace Medicine Issues in Unique Aircraft Types
- 7 The Practice of International Aerospace Medicine
- 8 Aviation, Government Space, Biomedical Innovations, and Education
- 9 Commercial Human Space Flight

10 **Aerospace Medicine Competencies:**

11
12 Specialty training for the physician in aerospace medicine must provide for the
13 attainment of competencies relevant to the diagnosis, prevention, and treatment of disorders
14 associated with the unique aerospace environments and with the adaptive systems designed
15 to enhance performance and support life under such conditions.

- 16 1. Manage the health status of individuals working in all aspects of the
17 aerospace environment
- 18
- 19 a. Adequate supervised time in direct clinical care of aerospace medical
20 problems must be provided to assure competency in managing aerospace
21 and general medical problems in aerospace personnel.
- 22
- 23 b. The resident is expected to develop and apply medical standards and
24 grant exceptions and to facilitate prevention, early diagnosis, and
25 treatment of health hazards.
- 26
- 27 c. *For programs with a training track in space medicine:* The resident is expected to
28 perform all activities of a crew surgeon for a space flight, develop and
29 apply medical care standards and programs, evaluate the physiologic
30 effects of spaceflight on crewmembers, and conduct and evaluate
31 longitudinal studies on astronauts.
- 32
- 33 2. Promote aerospace passenger health, safety, and comfort. The resident is
34 expected to acquire skills to educate passengers and physicians about the
35 hazards of flight with certain medical conditions and to serve as passenger
36 advocates in order to promote flight safety.
- 37

- 1 3. Facilitate optimum care of patients transported in the aerospace
2 environment. The resident is expected to identify appropriate patients for
3 aeromedical transport and to provide guidance for safe aeromedical transport
4 of patients with common medical problems.
5
- 6 4. Apply human factors/ergonomic concepts to the aerospace environment:
7 The resident will acquire skills to advise in the development of air and space
8 flight equipment, biomedical equipment, and vehicles for flight and space
9 flight; techniques for enhancing performance; and techniques of crew
10 resource management
- 11
- 12 5. Promote aerospace operational safety and mishap prevention: The resident
13 will acquire skills to provide appropriate safety information and education
14 and to conduct the medical aspects of any mishap investigation, including
15 recommendations to prevent recurrences.
16
- 17 6. Interpret, integrate, and/or perform aeromedical research: The resident will
18 acquire skills to effectively conduct aeromedical research into health, safety,
19 human factors, and biomedical engineering aspects of the flight
20 environment.
21
- 22 H. Residents shall be required to complete a formal research program regarding
23 Aerospace and/or Hypobaric medicine, which shall incorporate the elements of
24 research design including the development of hypothesis, methods, statistical analysis
25 of results, and conclusions. The program shall encourage the incorporation of
26 osteopathic principles and practices in the research effort.
27
- 28 I. Non-Federal Aerospace Medicine Residency Training Programs shall be a member
29 of an OPTI – Institutional requirement
30
- 31 J. The teaching and evaluation of the AOA's Aerospace Medicine Core Competencies,
32 which are required to be validated during all specialty residency programs, shall be
33 continued during this program.
34
35

Article V - Program Director

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- 37
- 38 A. Qualifications of the Aerospace Medicine Program Director
39
- 40 1. The program director must be certified by the American Osteopathic Association,
41 through the American Osteopathic Board of Occupational and Preventive Medicine
42 (AOBPM), or an osteopathic physician certified by the American Board of
43 Preventive Medicine (ABPM) in Aerospace Medicine.
44
- 45 2. Maintains Membership in the AOA.

- 1
- 2 3. Demonstrated evidence of continuing medical education in Aerospace Medicine.
- 3
- 4 4. The program director must be actively involved in the delivery of Aerospace
- 5 Medicine care, have sufficient training and experience in academic medicine and have
- 6 administrative ability and expertise to direct and supervise a residency program.
- 7
- 8 5. Licensed to practice medicine in the state where the institution that sponsors the
- 9 program is located. (Certain federal programs are exempted)
- 10
- 11 6. Appointed in good standing to the medical staff of an institution participating in the
- 12 program.
- 13

14 B. Program Director Responsibilities include, but are not limited to the following:

- 15
- 16 1. Will be the person who has primary responsibility for directing program training.
- 17 2. Role shall be outlined in program documents.
- 18
- 19 3. Actively participate and serve as a mentor in scholarly professional activities such as
- 20 research, presentations, publications, local, regional, and national specialty societies.
- 21
- 22 4. Responsible for the introduction osteopathic principles and practices as it applies to
- 23 preventive and Aerospace Medicine.
- 24
- 25 5. Provide a comprehensive Aerospace Medicine training program.
- 26
- 27 6. Arranging for affiliations when deemed necessary to supplement residency training.
- 28
- 29 7. Preparing a written statement outlining the educational goals of the program with
- 30 respect to knowledge, skills, and other attributes of residents at each level of training
- 31 and for each major rotation or other program assignment.
- 32
- 33 8. Supervising the recruitment and appointment process for all applicants. This will
- 34 include written communication with the applicant's prior program director to verify
- 35 satisfactory completion of all educational requirements for graduation.
- 36
- 37 9. Provide the Aerospace Medicine resident with all documents pertaining to the
- 38 training program as well as the requirements for satisfactory completion of the
- 39 program as required by American Osteopathic Association (AOA).
- 40
- 41 10. Ensure that Aerospace Medicine residents are provided written descriptions of the
- 42 departmental policies regarding academic, discipline, grievance, due process,
- 43 sickness, vacation and other leaves at the time of appointment to the program.
- 44
- 45 11. Providing for the proper supervision and clinical teaching of residents for all training
- 46 assignments.

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12. Conducting an ongoing evaluation of the program and its resident(s).
13. Monitoring the progress of each Aerospace Medicine resident, including the maintenance of a training record that documents completion of all required components of the program. This record shall include a patient log, which shall document that each resident has completed all clinical experiences required by the program.
14. Providing written evaluation that documents the resident'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 resident at the end of training. The evaluation must include a review of the resident's performance during the final period of training and should verify that the resident has demonstrated sufficient professional ability to practice competently and independently. This final evaluation should be part of the resident's permanent record maintained by the institution.
15. Monitoring resident stress, including mental or emotional conditions inhibiting performance or learning. Program directors and teaching staff should be sensitive to the need for timely provision of confidential counseling and psychological support services to residents. Training situations that consistently produce undesirable stress on residents must be evaluated and modified.
16. Monitoring the quality of all didactic and clinical experiences, including the collection and review of periodic written evaluation by the resident of all such experiences and supervision.
17. In cooperation with the AOA Department of Education, prepare required materials for inspections.
18. Required to submit quarterly program reports to the Director of Medical Education. Annual reports shall be submitted to the AOCOPM .

Article VI – Resident Requirements

- A. Applicants for training in Aerospace Medicine must:
 1. COMPLETION OF A MASTERS IN PUBLIC HEALTH OR ITS EQUIVALENT IS REQUIRED FOR ENTRY INTO THE AEROSPACE MEDICINE RESIDENCY.
 - 1.2. Have graduated from ~~an AOA~~ A COMMISSION ON OSTEOPATHIC COLLEGE ACCREDITATION (COCA) accredited college.

1 2.3. Have satisfactorily completed an AOA approved 4th TRADITIONAL ROTATING
2 INTERNSHIP (OGME 1-T) training year.

3
4 3.4. Be and remain members in good standing of the AOA during the resident's training.

5
6 4.5. Hold an unrestricted valid state license to practice osteopathic medicine and
7 must meet the federal, state, and local rules and regulations regarding Aerospace
8 Medicine residents

9
10 5.6. The applicant must apply in writing to the program director and complete the
11 necessary forms and requested documentation.

12
13 B. During the training program, the resident must:

14
15 1. Submit an annual report to the American Osteopathic College of Occupational and
16 Preventive Medicine (AOCOPM).

17
18 2. Submit a scientific paper and/or research paper, suitable for publication and
19 pertaining to Aerospace Medicine and/or hypobaric medicine. Established
20 guidelines shall be used in preparation of the paper.

21
22 3. Keep a log, recording each case and procedures assigned for all treatment settings,
23 identified by the institution number. This log shall be submitted each quarter to the
24 program director and Director of Medical Education for review and evaluation.

25
26 * Aerospace Medicine Resident is used in this document as follows:

27 Aerospace Medicine Resident implies that the two years of training are "stand alone" years
28 not linked to any other training requirements to be eligible for full board certification in
29 Aerospace Medicine, and that the MPH year may be used in conjunction with other
30 Osteopathic board certifications.