

SPACE MEDICINE BRANCH REPORT

Aerospace Medicine Training in Support of Manned Space Exploration

This article is the fourth in a series on Space Medicine, and was written by Stanley R. Mohler, M.D.

The aerospace medicine residency program at Wright State University (WSU) was initiated in 1978 by Dr. Arnauld Nicogossian of NASA. He took note of the disappearance of four prior civilian programs: Ohio State University, Harvard School of Public Health, University of Oklahoma—in connection with the FAA, and Stanford University—this latter not quite getting airborne. He also foresaw the growing NASA needs in regard to trained civilian aerospace medicine specialists. The U.S. Air Force and Navy conducted aerospace medicine residency programs, but these were limited to uniformed personnel and the training was tailored to specific military needs.

Dr. Nicogossian approached Dr. John Beljan, Dean of the new (1976) medical school at WSU, and proposed that an aerospace medicine residency program be established. Dr. Beljan concurred, agreeing that there existed a high potential for an aerospace medicine training program at WSU. The University is located in a geographic area that is rich in aerospace, medical, and scientific resources. A major asset for a WSU-based aerospace medicine training program is the adjacent Wright-Patterson Air Force Base (WPAFB), with its outstanding medical and clinical facilities. The Base is adjacent to the campus and has affiliation agreements with WSU and the medical school. Another asset is the rich civilian aerospace heritage (for example, the Wright brothers' papers and other memorabilia) and military documents and aircraft (the U.S. Air Force Museum) in the area. In addition, the on-going aerospace research and development programs, both civilian and military are important additional resources.

The Wright State aerospace medicine residency program was developed as an integral part of the Department of Community Medicine. The program is based at Good Samaritan Hospital, which is affiliated with WSU, and received provisional approval from the Preventive Medicine Residency Review Committee in 1978. The first resident and a permanent director (Dr. Mohler) were brought on board. Although the program is primarily for civilian candidates, it also began accepting active duty candidates from the U.S. Air Force, Army, Navy, and Coast Guard uniformed services. In addition, at an early stage, the program began accepting candidates from other countries, who, following training, would return to their home country as key leaders in their aerospace medicine programs. They are proving to be a valuable resource for NASA with respect to its international collaborative activities. One fourth of the international candidates have been military officers. International

candidates have come from Japan, Taiwan, Peoples' Republic of China, South Korea, Australia, South Africa, Germany, Jordan, Portugal, Brazil, Canada, and Mexico.

To date, NASA, or its primary contractors, have hired 17 graduates who have assumed a variety of roles within the NASA life sciences programs.

The current full-time on-site faculty for the program consists of Stanley R. Mohler, M.D., Program Director, Kenneth N. Beers, Sr., M.D., Robin E. Dodge, M.D., Winslow Bashe, M.D., and Satya P. Sangal, Ph.D. There are 90 clinical faculty members providing lectures, seminars and research guidance to the residents. In July 1989, 12 candidates were accepted for year-1 training. One of these, not a physician, is the first in a "non-MD" track, participating as a "resident fellow," and will obtain the M.S. in Aerospace Medicine degree (equivalent to the Master of Public Health degree that non-MDs may obtain in various programs).

The academic curriculum of the training covers 2 years, with the first year incorporating courses in biostatistics, epidemiology, environmental health, and administrative health management principles. Biostatistics and epidemiology are important cognitive tools for understanding scientific publications and conducting medical research. During the first year, hypo- and hyperbaric medicine training are undertaken at WPAFB. Scuba diving is offered at WSU as an option during the first or second year, as is flight training.

The second year is dedicated to original thesis research for the Master of Science degree, and/or, clinical rotations. The research may be conducted at the Armstrong Aeromedical Research Laboratory, WPAFB, a WSU affiliated hospital, or other suitable activity. It is possible for the candidate to complete the degree program during the first year, should 1 year be an individual's time limit for training. This does of course, require a great deal of concentrated study and activity. Ideally, 2 years constitute the time recommended.

A third year is available at certain NASA installations, including the Johnson Space Center, the Kennedy Space Center and the Ames Research Laboratory. Graduates must complete a minimum of 46 graduate hours plus the research thesis. The Master of Science in Aerospace Medicine degree is awarded when all requirements are met.

The WSU program has been contrasted with that of a Soviet program, the latter concentrating on civil aviation medicine aspects of flight (1). The WSU program provides training on both space and aviation medicine, and graduates are prepared to work in both fields.

The WSU program is providing NASA and other organizations with highly trained

medical support personnel necessary for current and planned manned spaceflight missions. Examples include operations with the Orbiters, the Space Station Freedom, manned lunar bases, and asteroid and Mars manned missions.

In September 1989, the resources available to the aerospace medicine program became enlarged and enhanced as Dean Stephen Kaplan combined various medical school components into a new Department of Community Health. These include the elements of the Community Medicine Department, the Medicine in Society Department, the Human Biology Division in Yellow Springs, the Department of Post Graduate Medicine and other organizations. The aerospace medicine program, thus, thrives within a new enlarged Department that is active in research areas of human growth and development, aging, alcohol, and substance abuse studies, disease prevention, and health promotion.

Those interested in learning more about the WSU Aerospace Medicine training program should write to:

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REFERENCE:

1. Tokarev V, Razsolov N, Mohler S, Nicogossian A. Training of aerospace medicine physicians in the Soviet Union and the United States of America. *Aviat. Space Environ. Med.* April, 1986; 57:376-80.

ASMA FUTURE MEETINGS

May 5-9, 1991
Cincinnati Convention Center
Cincinnati, OH

May 10-14, 1992
Fontainebleau Hilton
Miami Beach, FL

May 23-27, 1993
Sheraton Centre Hotel
Toronto, Ont., Canada

May 8-12, 1994
Convention Center
San Antonio, TX