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AEROSPACE MEDICINE DOCTRINE

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NORTH ATLANTIC TREATY ORGANIZATION

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NORTH ATLANTIC TREATY ORGANIZATION (NATO)

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NATO LETTER OF PROMULGATION

15 December 2016

1. The enclosed Allied Aeromedical Publication (AAMedP-1) Edition A, Version 1, AEROSPACE MEDICINE DOCTRINE, which has been approved by the nations in the MCASB, is promulgated herewith. The agreement of nations to use this publication is recorded in STANAG 7212.

2. AAMedP-1, Edition A, version 1, is effective upon receipt.

4. This publication shall be handled in accordance with C-M(2002)60.

Edvardas MAŽEIKIS
Major General, LTUAF
Director, NATO Standardization Office

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RECORD OF RESERVATIONS

CHAPTER	RECORD OF RESERVATION BY NATIONS
Note: The reservations listed on this page include only those that were recorded at time of promulgation and may not be complete. Refer to the NATO Standardization Document Database for the complete list of existing reservations.	

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RECORD OF SPECIFIC RESERVATIONS

[nation]	[detail of reservation]

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CHAPTER 1 INTRODUCTION

1.1 SCOPE AND RESPONSIBILITIES

1. Aerospace medicine is the specialty of medicine concerning the determination and maintenance of the health, safety, and performance of those who fly or control systems in the air and space environments. It encompasses aspects of occupational, preventive, and primary care medicine. Aerospace medicine supports air operations and is especially effective when employed in a proactive manner; anticipating, recognizing, and controlling factors adversely impacting human health, safety and performance; and promoting those opportunities which may sustain and optimize performance.

2. The military applications of this specialty currently include the support of both manned and unmanned aircraft operations. This includes the aeromedical requirements for aviation personnel of all armed services, the medical risks for flight passengers, the standards for aeromedical evacuation, and the ergonomics and human factors applicable to health, fitness and safety in the air and space environments.

3. Within the context of NATO, member nations provide subject matter experts in the field of aerospace medicine to serve as delegates of the Aeromedical Working Group (AMDWG). This working group reports to the Military Committee Air Standardization Board. STANAGs promulgated through the AMDWG promote standardization and interoperability of aeromedical evacuation operations and equipment, in direct support of the military aviator and air operations. AMDWG coordinates and liaises with Committee of Chiefs of Military Medical Services (COMEDS) and the medical panels of other NATO medical working groups to ensure concordance with and support to the development of general medical standardization documents.

4. This doctrine is written to lay the foundation for what are considered to be the core components of an aerospace medicine capability expected for any NATO nation. This will allow for greater ease of interoperability and set the foundation for future operational partnerships. In furthering interoperability, NATO nations are working with nations involved in other international fora such as the European Air Group (EAG) and the Air and Space Interoperability Council (ASIC). This doctrine is subordinate to NATO Publication AJP-4.10(B) Allied Joint Medical Support Doctrine and amplifies Section 1.3.2 - Air Operations, paragraphs 1-4.

5. National military medical services are responsible for organizing, training, and equipping aeromedical evacuation forces to provide rapid and flexible response in support of their operational military aerospace commanders, across a broad range of air and space missions, to include expeditionary war-fighting, peacekeeping, and humanitarian assistance.

CHAPTER 2 AEROSPACE MEDICINE PERSONNEL

2.1 ROLES AND RESPONSIBILITIES

1. The National Chiefs of Military Medical Services are responsible for appointing a person to assume the role of a military Aerospace Medicine Authority and ensuring trained and experienced Aerospace Medicine personnel are available at all levels to fulfill the mandate of a national aerospace medicine programme. This designated authority will be located in a geographic position appropriate to his/her national military structure.

2. Aerospace Medicine Authority/Head of Aerospace Medicine - This person is a flight surgeon with advanced training in aerospace medicine and is responsible for the national aerospace medicine programme, including training of aerospace medicine personnel, oversight of support to air operations and the aeromedical evacuation system.

3. Flight Surgeon - A flight surgeon is a physician who has undergone a recognized training programme in aerospace medicine who is authorized to conduct aircrew medical examination, provision of day to day medical care of aircrew including determination of fitness to fly, and provide aerospace medical support to aircrew and their chain of command. In addition to having skills and knowledge in general and aerospace medicine, flight surgeons are also required to obtain and maintain knowledge and experience in the aviation environment. This should include the occupational stressors and hazards of the cockpit/aircraft interior as well as those of the missions flown by the aircrew. The flight surgeon should also spend sufficient time with the aircrew at the base or squadron level in the non-flying environment in order to develop and maintain situational awareness of the other issues affecting them. The local flight surgeon is part of the flight safety programme at base level and a flight surgeon should also be part of the national military flight safety programme. Flight surgeons may be augmented by other health care providers such as physician assistants who also have defined training in aerospace medicine. This will vary among nations.

4. Flight Nurse- A flight nurse is a nurse who is specially qualified to provide safe medical care to patients in the aeromedical evacuation environment.

5. Flight medic- A flight medic is a medical technician who is utilized in aeromedical evacuation teams. In those nations that use them, flight medics have defined roles and responsibilities in the aeromedical evacuation environment.

6. Specialist physicians and nurses (anaesthesiologists, intensivists, critical care nurses, pediatricians, etc.)- These specialist personnel augment aeromedical evacuation teams when dealing with seriously ill patients during flight. These specialists may also be used as augmentees to standing AE teams or may be part of a defined Critical Care Air Transport Team/Critical Care Air Support Team (CCATT/CCAST). These specialist teams are sometimes augmented by respiratory technicians and other personnel as required, depending on national policy and resources.

7. Physiologists- Physiologists may be military or civilian personnel. They may have varying degrees of formal military and flying roles depending on their nation's policies. Aerospace physiologists may be involved in research, human factors analysis and aeromedical training. In some nations, these roles are conducted by flight surgeons.

8. Nations may have other personnel, military and civilian, that are involved in the support of aerospace medicine. They may work in a variety of areas including but not confined to noise and vibration, psychology, physiology, equipment design, test and evaluation (e.g., helmet, night vision systems, oxygen systems), anthropometry, bio-dynamics and CBRN.

CHAPTER 3 SUPPORT TO AIR TRAINING AND OPERATIONS

3.1 TYPES OF SUPPORT

1. Clinical support: Flight surgeons apply aeromedical risk assessment in determining fitness to fly at aircrew selection and throughout service, including follow up after illness or injury. An effective aerospace medicine programme ensures a fit and healthy force, timely treatment of illness and injury, and management of hazards and risks to health in the air and space environments. It should be emphasized that minor medical conditions, when exposed to the aviation environment, may have a significant impact on flight safety or mission success.

2. Medical Advice to the chain of Command: Flight surgeons provide advice to the operational chain of command on matters related to health, safety, and well being of aircrew. This advice should help identify and mitigate operational risk in areas such as fatigue, night operations, life support equipment and special operational environments (high altitude, cold, heat, etc). It is essential that the flight surgeon be able to liaise closely and authoritatively with both medical and air operations chains of command.

3. Planning: Aeromedical input must be provided early in the operations planning process on such matters as, provision of healthcare, aeromedical evacuation, aircrew performance optimization, clinical timelines, CBRN, multinational coordination/interoperability, and emergency support to airfield operations.

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CHAPTER 4 ORGANIZATIONAL STRUCTURE

4.1 CONSIDERATIONS FOR THE ORGANIZATION OF AN AEROSPACE MEDICINE SERVICE

1. Each member nation will have its own organizational structure to oversee and administer aeromedical policy and standards. Policy and standards development should, at a minimum, include, medical aspects of flight safety, aircrew medical standards (selection and retention), approved medications, aircrew preventive medicine, and aeromedical evacuation.

2. Additionally, the organizational structure should provide the following:

   a. A system of clinical governance/oversight. This would be included in the wider, national military medical governance and oversight system but should have aerospace medicine specialists overseeing the aerospace medicine programme.

   b. Consultation Service - This is a group of specialist physicians, who should have training in aerospace medicine and who have experience in the disposition of aircrew with complex pathology. They may work together in the same geographic location or work as a virtual group.

   c. Center's of Aviation Medicine - Some nations have research institutions to promote and support specialist knowledge, research and development in areas important to aerospace medicine. Additionally, nations may have schools for the training of aeromedical personnel and aircrew.

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CHAPTER 5 AEROSPACE MEDICINE PERSONNEL TRAINING

5.1 OVERVIEW

Aerospace medicine personnel require specialized training in order to fulfill their duties. This training will provide these personnel with the competencies to perform their specific duties in the air and space environments. In all cases, appropriate evaluation procedures (formal written and/or practical exams, assignments etc) will be utilized to confirm personnel have attained the expected standards. Ongoing clinical and practical evaluation will continue throughout the individual's service including participation in exercises in the operational context.

5.2 AEROSPACE MEDICINE/FLIGHT SURGEON TRAINING

1. Flight surgeons must demonstrate satisfactory completion of a nationally recognized aerospace medicine course covering physiological, clinical and psychological factors that impact on the ability of aircrew to operate in an air or space environment. It should also include familiarity with aircrew life support and safety equipment and air operations.

2. It should be emphasized that flight surgeons should become more familiar with life support and safety systems peculiar to the aircraft types which are at the bases to which they are assigned. Any nation that has aircrew CBRN systems should include training in the operation and potential problems of these systems for their flight surgeons (or military aerospace physiologists for those nations that have them).

3. To maintain competency, a system of refresher training should be provided. It should emphasize the practical application of basic principles and provide updates on the clinical management of conditions relevant to aerospace medicine. It should be conducted on a regular basis as per national standards or requirements.

5.3 ADVANCED AEROSPACE MEDICINE/FLIGHT SURGEON TRAINING

This training is defined as higher training in aerospace medicine which gives a broader and more in-depth education in the academic and practical aspects of aerospace medicine. There are various courses worldwide which provide this type of training. This training will allow these practitioners to hold more senior and advanced positions in the aerospace medicine community providing higher levels of advice and oversight. Ideally, this training should include some level of flying exposure including ground school and basic hands-on flying training.

5.4 FLIGHT NURSE/MEDIC TRAINING

This training includes instruction on stressors of flight, theoretical and practical aspects of medical care in the air and aircraft safety systems, and safe egress of patients. Instruction is in accordance with AAMedP-1.1, Chapter 6.

5.5 EXERCISES

In all cases it should be emphasized that part of the ongoing training of aerospace medicine personnel should include participation in national and international exercises that will allow them to practice their disciplines. Participation in international exercises will foster interoperability.

5.6 ADDITIONAL TRAINING

When appropriate, aerospace medicine personnel should receive land and sea survival, aircraft escape and survival, evasion, resistance and escape (SERE) training as per national doctrine.

CHAPTER 6 AIRCREW AEROMEDICAL TRAINING

6.1 COMPONENTS OF AN AIRCREW AEROMEDICAL TRAINING PROGRAMME

1. The goal of aircrew aeromedical training is to protect health, promote flight safety and optimize performance. Components of an aircrew aeromedical training program should include:

   a. Aeromedical training as described in STANAG 3114. It should be noted that there should be medical oversight of aeromedical training, program development and review. Not all nations may have all components of a full aeromedical training program (e.g. centrifuge).

   b. Human Factors training - Many nations mandate human factors training for aircrew and ground crew. The thrust of this training is to recognize errors in procedures, policies etc, in order to prevent accidents.

2. Special areas such as CBRN and night vision devices, if used by a given nation, will necessitate specialized training as required. Such specialized training is defined in different STANAGs. It should be emphasized that aerospace medicine personnel should be involved in this type of training but are not necessarily overall responsible for it.

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CHAPTER 7 FLIGHT SAFETY

7.1 ROLES OF AEROSPACE MEDICINE PERSONNEL IN A FLIGHT SAFETY PROGRAMME

Aerospace medicine plays a vital role in achieving and maintaining the highest level of military aviation safety. Medical certification and management of aircrew and maintenance personnel are key aerospace medicine activities that influence flight safety. Further, aerospace medicine should be integrated into formal flight safety programs to include accident/incident investigations, flight safety promotion and education, and provide independent review/advice on policy, standards and procedures. To be most effective, aerospace medicine personnel must be well integrated into line unit activities and actively participate in the unit flying mission.

7.2 ACCIDENT/INCIDENT INVESTIGATION

The aerospace medicine component of aviation accident/incident investigations considers the medical and human factors, survivability, performance of life support systems, escape systems, and aircrew equipment assemblies. The primary goal of investigations is to develop effective and practical preventive measures that will reduce the risk of a reoccurrence or decrease the severity of consequences and injury. All flight surgeons must have an understanding of the principles of accident/incident investigation and evidence preservation. Investigating flight surgeons must have additional formal training and practical experience to develop the required level of competency to participate in or provide advice to the flight safety investigation board. Flight surgeon consultation with experts in human factors (physiologists, psychologists), safety equipment, and engineering is essential in gaining an understanding of critical factors related to the accident/incident.

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CHAPTER 8 AEROMEDICAL EVACUATION

8.1 CONCEPTS AND REFERENCES

1. Knowledge of the physiological stresses of flight on casualties being transported by air and knowledge of aircraft capabilities and air operating procedures enables aerospace medicine personnel to plan, support, and deliver a safe aeromedical evacuation service. Personnel and equipment interoperability in aeromedical evacuation improves efficiency within joint and multinational operations. For further information on aeromedical evacuation refer to:

a. AJMed-P-2 (Allied Joint Doctrine for Medical Evacuation),

b. STANAG 3204 (Aeromedical Evacuation),

c. STANAG 2087(Medical Employment of Air Transport in the Forward Area).

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CHAPTER 9 RESEARCH, TEST AND EVALUATION

9.1 ROLE OF RESEARCH, TEST AND EVALUATION IN AEROSPACE MEDICINE

Aerospace medicine is underpinned by a strong research capability that advances fundamental aerospace medicine knowledge, enabling development and evaluation of equipment and development of contemporary evidence-based policy and standards. Aerospace medicine personnel should be engaged in all phases of aviation system acquisitions to provide consultation and design expertise to optimize the interface between the human and the system. Specifically, human systems integration principles should be utilized early in the design and acquisition of new aircraft systems including unmanned aircraft systems. Aerospace medicine personnel need to keep abreast of novel concepts in manned and unmanned aerospace platforms in order to ensure they continue to be able to deliver their mandate in this rapidly expanding area of air operations.

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