

**JOINT COMMITTEE ON SPECIALIST TRAINING**

**AVIATION MEDICINE SUBSPECIALTY  
TRAINING PROGRAMME**

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## 2 BACKGROUND

Worldwide, Aviation Medicine is a rapidly growing field. This is in response to the exponential growth in civil aviation and the rapid advancements made in military aviation. The growing public interest in space tourism has further prompted the development of this niche specialty. Today, the USA-based Aerospace Medical Association (AsMA) has grown its membership to over 3,200 Aviation Medicine practitioners, with approximately 25% being international members from over 70 countries. Other regions and developed countries are also well-represented by professional aviation medicine bodies, including the International Academy of Aviation and Space Medicine (IAASM), Asia Pacific Federation of Aerospace Medical Associations, the Royal Aeronautical Society Aerospace Medicine Group and the Australasian Society of Aerospace Medicine.

Aviation Medicine was first introduced to Singapore in 1968 with the creation of a centre providing aeromedical expertise to the fledgling Singapore Air Defence Command. Over the next few decades, the practice of Aviation Medicine in Singapore developed rapidly, both through the establishment of various centres of excellence for military and civil aviation, such as the Republic of Singapore Air Force Aeromedical Centre (ARMC), the Civil Aviation Authority of Singapore's Civil Aviation Medical Board (CAMB) and the Singapore Aeromedical Centre (SAC), as well as the training and qualification of successive generations of Aviation Medicine physicians. The training provided to aspiring Aviation Medicine physicians has also evolved into a structured programme involving both didactic teaching and experiential learning components.

Internationally, Singapore has developed a major footprint on the practice of Aviation Medicine. Through the RSAF Aeromedical Centre and the Singapore Aviation Academy, the country is recognised as a key provider of clinical Aviation Medicine and physiology training in the Asia Pacific region. Singapore is also well represented in key appointments for various international Aviation Medicine professional bodies, including the Vice Presidency of AsMA, the Presidency of IAASM, and the Global Lead for the International Civil Aviation Organisation's (ICAO) Collaborative Arrangement for the Prevention and Management of Public Health Events in Civil Aviation. It has also chaired ICAO's Medical Provisions Study Group, which is responsible for the continuous review and revision of existing international flight crew and Air Traffic Controllers licensing medical requirements based on the latest medical advancements and epidemiological data, since its inception in 2004. Finally, the

country successfully hosted the International Congress of Aviation and Space Medicine (ICASM) twice, in 1998 and 2010 respectively.

The Aviation Medicine Subspecialty Training Programme (AMSTP) is intended to be parallel to the established medical specialties and subspecialties training programmes. The competency-based training comprises a 30-month Aviation Medicine Subspecialty Training. The duration of training has been optimised while ensuring that the trainees have adequate time to acquire the necessary knowledge and skills to become a competent Aviation Medicine Specialist. After completing the training requirements and passing the exit examination, trainees shall exit as a subspecialist in Aviation Medicine and can apply to be included in the subspecialist register.

## **3 AVIATION MEDICINE SUBSPECIALTY TRAINING PROGRAMME**

### **3.1 INTRODUCTION**

Aviation Medicine is the specialty area of medicine concerned with the determination and maintenance of health, safety and performance of aviation personnel which include aviators, aircrew, air traffic controllers and other aviation-related operators. The practice of Aviation Medicine encompasses application of principles from clinical Aviation Medicine, Aviation Physiology, medical screening and certification, psychology as well as components of Public Health and Occupational Medicine. The scope of practice ranges from medical screening of applicants for entry into flying training to clinical care and assessment for fitness to fly for trained aviators to performance maximization research for military aviators. With the wide scope of practice, the Aviation Medicine Subspecialty Training Programme will need to be broad based; with knowledge and skill acquisition over a wide range of topics as well as the active practice of Aviation Medicine under direct supervision.

### **3.2 OVERVIEW OF TRAINING PROGRAMME**

The Aviation Medicine Subspecialty Training Programme (AMSTP) is a 30-month training programme, comprising a 6-month full-time course in Aviation Medicine and 24 months of practice focused on practical teaching and application of all aspects of Aviation Medicine practice under direct supervision. Trainees can undergo and fulfil the AMSTP requirements through either the medical practice tracks of Military Aviation Medicine or Non-military Aviation Medicine. Within the 30-month AMSTP period, trainees will be required to undergo a 6-month full-time course in Aviation Medicine from a recognised institution and obtain a recognised post-graduate qualification in Aviation Medicine; those who had completed a 6-month full-time course in Aviation Medicine from a recognised institution within 5 years prior to the commencement of their AMSTP will be exempted from having to attend the course again.

## **3.3 ELIGIBILITY**

### ***3.3.1 ELIGIBILITY FOR SUBSPECIALTY TRAINING***

Applicants for the subspecialty training will be selected through an interview process. Trainees, depending on their practice tracks of Military Aviation Medicine or Non-military Aviation Medicine, must meet the respective minimum entry requirements:

- a) AMSTP under Military Aviation Medicine Practice (See Annex A)
  - i) Basic medical degree recognised by the Singapore Medical Council (SMC); **AND**
  - ii) Successfully completed Transitional Year or Housemanship.
  
- b) AMSTP under Non-Military Aviation Medicine Practice (See Annex B)
  - i) Basic medical degree recognised by the Singapore Medical Council (SMC); **AND**
  - ii) Successfully completed Transitional Year or Housemanship; **AND**
  - iii) Completed Residency Training in Occupational Medicine, Internal Medicine or Family Medicine<sup>1</sup>.

### ***3.3.2 ELIGIBILITY FOR EXIT FROM SUBSPECIALTY TRAINING***

To be eligible to apply for exit from subspecialty training and obtain subspecialist accreditation in Aviation Medicine, the trainee must:

- a) Full or conditionally registered medical practitioner with the Singapore Medical Council.
- b) Fulfill the requirements of the 30-month AMSTP, comprising:
  - i) Successful completion of the 6-month Post-Graduate Course in Aviation Medicine (UK), or its equivalent (see Section 3.7); and
  - ii) Successful completion of 24 months of practice in Aviation Medicine (logbook to be signed off by Head of Department).

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<sup>1</sup> For Family Medicine, an additional 2 years of clinical practice (minimum 30 hours per month) is required beyond the successful completion of the 3-year Family Medicine Residency Programme.

- c) Successfully achieve the Diploma that is awarded by the Faculty of Occupational Medicine of the Royal College of Physicians of London<sup>2</sup>, or its equivalent (see Section 3.7).
- d) Fulfill the requirement for a scientific dissertation.
- e) Complete and pass the Fundamental Critical Care Support Course (FCCS).
- f) Complete the Residency Training in the following fields (Refer to Annex A and B):
  - i) Occupational Medicine; or
  - ii) Internal Medicine; or
  - iii) Family Medicine<sup>3</sup>.

### 3.4 DURATION AND SCOPE

The 30-month AMSTP consists of a **minimum of 24 months** of training and hands-on aviation medicine practice. During this period, trainees are expected to acquire the knowledge and skills in practice of Aviation Medicine. Trainees will be trained to manage the health and well-being of aviation personnel, manage and work up complex medical cases for aeromedical disposition, certify aviation personnel fitness for applicable safety-critical aviation related duties, conduct the various aviation physiology training for aviation personnel, design and implement aeromedical/public health programmes and conduct/discuss complex medical cases requiring evacuation by air transportation. In addition, trainees will have actual flight experience in piloting an aircraft to appreciate the aeromedical issues in relation to the flying task.

As part of the AMSTP, trainees are also required to successfully complete a **6-month** full-time academic course in Aviation Medicine. They will also sit and attain a post-graduate qualification in Aviation Medicine. Presently, the academic course and qualification that is recognised is the 6-month Diploma in Aviation Medicine Course conducted by King's College London (KCL) and the DAvMed (UK) Diploma awarded by the Faculty of Occupational Medicine of the Royal College of Physicians of London. Trainees who had completed the 6-

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<sup>2</sup> The achievement of the Diploma has to be within the maximum of 3 attempts.

<sup>3</sup> For Family Medicine, an additional 2 years of clinical practice (minimum 30 hours per month) is required beyond the successful completion of the 3-year Family Medicine Residency Programme.

month Diploma in Aviation Medicine Course conducted by KCL within 5 years prior to the commencement of their AMSTP will be exempted from having to attend the course again.

After the completion of the AMSTP and the DAvMed (UK), trainees who have successfully exited from one of the main specialties of OM, Internal Medicine or Family Medicine (See Section 3.3.2) will be eligible to apply for the Aviation Medicine Subspecialty Exit Examination.

### **3.5 GOALS**

The Aviation Medicine subspecialty training must ensure that trainees attain competencies relevant to the diagnosis, prevention, treatment and aeromedical risk analysis of medical disorders associated with the unique aviation environment. The trainees will also attain competencies in identifying physiological and other human factors threats related to aviation environment, develop programmes and formulate policies to aid aviation personnel in mitigating these threats.

The goals of the AMSTP are to produce Aviation Medicine Specialist that are:

- a) Clinically competent to conduct an aviation medical examination.
- b) Clinically competent in the management of the health and fitness of aviation personnel in relation to their job.
- c) Possess adequate knowledge and competency in conducting aeromedical analysis for fitness for aviation duties determination.
- d) Possess essential knowledge in the task of flying to understand the physiological and other Human Factors threats posed to the aviation personnel.
- e) Able to apply the principles of Aviation Physiology and develop programmes to address physiological threats in flying.
- f) Able to apply the principles of Aviation Physiology and Human Factors in the areas of accident prevention and investigations.
- g) Able conduct Aviation Physiology Training. These include the conduct of Aviation Physiology lectures and operating Aviation Physiology Training equipment to conduct high-end physiology training for the aviation personnel.

- h) Able to apply the principles of travel medicine and public health issues in relation to aviation sector.
- i) Able to plan, prepare and execute of medical evacuations of sick/injured patients by air.
- j) Able to conduct research in the field of Aviation Medicine.

### **3.6 POSTINGS**

During the 24 months of Aviation Medicine Practice (military or non-military), trainees can be posted to one or more of the following training departments:

- a) RSAF Aeromedical Centre
- b) Civil Aviation Medical Board
- c) Singapore Aeromedical Centre

During the Aviation Medicine postings, the trainee will be supervised in running the Aviation Medicine clinics; performing diagnostic and therapeutic procedures; conducting medical examination for certification; determining aeromedical disposition; conducting Aviation Physiology Training; conducting occupational health assessments; research in aeromedical subjects; developing aeromedical programmes; and policy formulation.

### **3.7 POSTING EXEMPTIONS / PRIOR RECOGNITION**

Trainees who have obtained MSc in Aerospace Medicine or MSc in Aviation Medicine through a full-time course from a recognised institution in the US or UK may be given prior recognition equivalent to the 6-month Diploma in Aviation Medicine Course and DAvMed (UK) requirement (See Section 3.4), subject to SSTC's approval. If the above-mentioned MSc is obtained from other overseas institutions with established Aviation Medicine training programmes outside of US and UK, Trainees may submit the details of their course and post-graduate qualification to the Aviation Medicine SSTC for prospective consideration. The Aviation Medicine SSTC will then make recommendations to JCST for final approval before commencement of the course.

Based on its professional assessment and evaluation, Aviation Medicine SSTC may allow the recognition of the overseas course and/or post-graduate qualification towards the fulfilment of the eligibility requirements for exit from Aviation Medicine subspecialty training. Specifically, the overseas course will only be recognised in lieu of the 6-month full-time Aviation Medicine course component of the AMSTP, even if the overseas course is conducted over a period longer than 6 months full-time. It shall not be recognised in lieu of the 24-month Aviation Medicine practice component of the AMSTP, which must be conducted in its entirety in accredited training departments.

### 3.8 SPECIFIC OBJECTIVES AND MINIMUM REQUIREMENTS

Specific Areas	Minimum no. required
<b>I. <u>Clinical Aviation Medicine Practice</u></b>	
A. Competency in the management of aviation personnel with the following conditions:	
1. Cardiovascular conditions	5 cases
2. Metabolic and endocrine conditions	5 cases
3. Respiratory conditions	5 cases
4. Ophthalmological conditions	5 cases
5. Otorhinolaryngology conditions	5 cases
6. Orthopaedic conditions	5 cases
7. Neurological and Psychiatric conditions	5 cases
B. Competency in the medical assessment of aviation personnel.	100 cases
C. Competency in risk management of aviation personnel with complex medical conditions for certification.	10 cases
D. Competency in developing clinical protocols for a specific medical condition.	1

<p><b>II. <u>Aviation Physiology Practice</u></b></p> <p>A. Competency in conducting training for aviation personnel in:</p> <ol style="list-style-type: none"> <li>1. Altitude Physiology</li> <li>2. High G performance/ Sustained Acceleration</li> <li>3. Vibration, Noise and Communication</li> <li>4. Spatial Orientation in Flight</li> <li>5. Visual Sciences</li> <li>6. Crash Dynamics</li> </ol> <p>B. Competency in conducting practical training for aviation personnel in:</p> <ol style="list-style-type: none"> <li>1. High Altitude Physiology</li> <li>2. Night Vision Physiology</li> <li>3. Spatial Orientation</li> <li>4. High G Performance / Sustained Acceleration</li> <li>5. Ejection Dynamics</li> </ol>	<p>2 lectures</p> <p>2 lectures</p> <p>2 lectures</p> <p>2 lectures</p> <p>2 lectures</p> <p>2 lectures</p> <p>2 sessions</p> <p>2 sessions</p> <p>10 cases</p> <p>10 cases</p> <p>10 cases</p>
<p><b>III. <u>Operational Aviation Medicine Practice</u></b></p> <p>A. Competency in prescribing Aviation Physiology Rehabilitation/Treatment methods for:</p> <ol style="list-style-type: none"> <li>1. Aviation personnel with poor G performance (physical conditioning and high G acclimatisation)</li> </ol>	<p>5 cases</p>

2.	Aviation personnel with motion sickness	2 cases
3.	Aviation personnel with barotrauma	2 cases
B.	Competency in aircraft accident or incident investigation or analysis.	2 cases
C.	Competency in prescribing preventive medicine measures for travel or deployment.	2 cases
D.	Competency in conducting fitness to fly assessment for patients requiring aeromedical transfer.	2 cases
E.	Competency in conducting aeromedical transfer of patients.	2 cases
F.	Possess understanding in the task of flying and the flying environment through first-hand control of aircraft.	1
<b>IV.</b>	<b><u>Aviation Medicine Research</u></b>	
G.	Ability to critically evaluate Aviation Medicine scientific literature.	5
H.	Conduct applied research in Aviation Medicine.	1

### 3.9 COURSES

Trainees shall attend and pass the following compulsory courses:

- a) Diploma in Aviation Medicine Course (UK) or its equivalent (see Section 3.7), and
- b) Fundamental Critical Care Support Course (FCCS)

Trainees are highly encouraged to attend the following optional courses:

- a) Human Factors Course
- b) Aircraft Mishap Investigation Course

- c) Critical Care in Air Transportation Course
- d) Applied Physiology in High Performance Aircraft Course

### **3.10 TUTORIALS**

Trainees are required to attend at least 75% of the tutorials conducted within the AMSTP. These tutorials are conducted monthly and are specifically conducted for the Aviation Medicine Trainees.

### **3.11 SCHOLARLY ACTIVITIES AND RESEARCH**

The curriculum will advance trainees' knowledge of the basic principles of research, including how research is conducted, evaluated, explained to patients, and applied to patient care. Trainees should participate actively in such scholarly activities.

During the subspecialty posting, trainees are required to be involved in Aviation Medicine research. Each resident will be required to conduct research in a topic within the knowledge content areas in Aviation Medicine (See Section 3.14). The primary supervisor will be a practicing Aviation Medicine Specialist, however additional supervisor/s need not be an Aviation Medicine Specialist depending on the research topic. A dissertation should be completed and submitted to the Clinical Competency Committee (appointed by SSTC) as part of the formative evaluation. The dissertation that was submitted for the base specialty, Graduate Diploma or Masters in Aviation Medicine (if any) cannot be resubmitted. Trainees are encouraged to publish their research work in appropriate scientific journals.

### **3.12 MODES OF INSTRUCTION**

The modes of instruction include (not limited to):

- a) Direct responsibility for the clinical care of aviation personnel (under supervision)
- b) Direct responsibility for physiology training (under supervision)
- c) Specified courses
- d) Academic tutorials
- e) Scientific Meetings

### **3.13 DOCUMENTATION OF TRAINING**

The Trainee will maintain a logbook detailing clinical cases encountered, physiology training performed and other required activities. There will be 3-monthly review with the assigned supervisor who will discuss training targets and shortfalls.

### **3.14 KNOWLEDGE CONTENT AREAS IN AVIATION MEDICINE**

The knowledge to be covered as part of the AMSTP can be divided into 4 modules (See Annex C for details). Each module consists of various subject areas in Aviation Medicine and all will be covered in the 6-month Aviation Medicine Course phase. The Aviation Medicine practice phase sees the consolidation of knowledge in Aviation Medicine, with emphasis on competency in Clinical and Operational Aviation Medicine as the desired outcome:

- a) Basic Sciences in Aviation Physiology and Psychology. Covers general human physiology in the environment of flight, with particular emphasis on the respiratory and circulatory systems, the special senses, the control of body temperature, the human circadian rhythms, and the dynamic response of the body to forces.
- b) Applied Aviation Physiology and Psychology. Covers the application of the human physiology to flight tasks and the aviation environment. The topics studied include characteristics of the workspace and anthropometry, personal accoutrements and survival equipment, and environmental control and life-support systems
- c) Clinical Aviation Medicine. Covers aspects of the practice of clinical medicine and surgery of special significance in aviation, including the medical selection of aviation personnel, selection for special duties, air carriage of the sick or injured, medical waivers and disposition of aviation personnel, and routine clinical management of aviation personnel.
- d) Operational Aviation Medicine. Covers the operational aspects of Aviation Medicine in the training of aviation personnel in countering the physiological stressors associated with flying, enhancement of aviation personnel performance as well as fatigue countermeasures. Operational Aviation Medicine also entail the management of public health issues, including aircraft sanitation and hygiene, air travel and its impact on the spread of infectious diseases, as well as air accident investigation.

### **3.15 TRAINING DEPARTMENT AND EMPLOYING INSTITUTION**

The following are the accredited training departments:

- a) RSAF Aeromedical Centre (ARMC),
- b) Civil Aviation Medical Board (CAMB) and
- c) Singapore Aeromedical Centre (SAC).

The training department and employing institution of the trainees must be responsible for ensuring the trainees meet all the posting requirements, training and exit requirements stipulated by SSTC and JCST/SAB.

### **3.16 PRACTICE-BASED LEARNING AND IMPROVEMENT**

Trainees must demonstrate the ability to evaluate their care of patients, to assimilate scientific evidence, to apply aeromedical risk assessment principles and to continuously improve patient care based on constant self-evaluation and life-long learning. This applies to other aspects of Aviation Medicine practice such as Aviation Physiology Training, Aeromedical Programme Development, Aeromedical Policy Formulation and Research. Trainees are expected to develop skills and habits to be able to meet the following goals:

- a) Identify strengths, deficiencies and limits in one's knowledge and expertise;
- b) Set learning and improvement goals;
- c) Identify and perform appropriate learning activities;
- d) Systematically analyse practice using quality improvement methods, and implement changes with the goal of practice improvement;
- e) Incorporate formative evaluation feedback into daily practice;
- f) Locate, appraise, and assimilate evidence from scientific studies related to their patient's health problems and other aircrew physiological threats;

- g) Use information technology to optimize learning; and
- h) Participate in the education of patients, families, students, trainees and other health professionals.

### **3.17 INTERPERSONAL AND COMMUNICATION SKILLS**

Trainees must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families and health professionals. Trainees are expected to:

- a) Communicate effectively with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds;
- b) Communicate effectively with physicians, other health professionals, and health related agencies;
- c) Work effectively as a member or leader of a health care team or other professional group;
- d) Act in a consultative role to other physicians and health professionals; and
- e) Maintain comprehensive, timely, and legible medical records, if applicable.

### **3.18 PROFESSIONALISM**

Trainees must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Trainees are expected to demonstrate:

- a) Compassion, integrity, and respect for others;
- b) Responsiveness to patient needs that supersedes self-interest;
- c) Respect for patient privacy and autonomy;
- d) Accountability to patients, society and the profession; and,
- e) Sensitivity and responsiveness to a diverse patient population, including but not limited to a diversity in gender, age, culture, race, religion and disabilities.

### **3.19 EVALUATION OF TRAINING**

The purpose of evaluation is to ensure that the trainees progress towards accomplishing their professional development goals.

#### **3.19.1 FORMATIVE EVALUATION**

The faculty must evaluate the trainee performance in a timely manner during each rotation or similar educational assignment and documents this evaluation at completion of the assignment.

Appointed supervisors must:

- a) Provide objective assessments of competence in patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice.
- b) Document progressive resident performance improvement appropriate to educational level; and
- c) Provide each resident with documented semi-annual evaluation of performance with feedback.

The evaluations of trainee performance must be accessible for review by the trainee, in accordance with the institutional policy.

#### **3.19.2 EXIT EXAMINATION**

##### **Time and Venue**

The examinations are held twice a year, not earlier than 3 months before the end of training and not more than 3 months after the end of training. The venue shall be the RSAF Aeromedical Centre and other venues that will be specified.

**Eligibility**

As stated in Section 3.3.2.

**Syllabus**

As stated in Annex C.

**Format**

The format of the exit examination will consist of:

1. Written Component  
10 Short Answer Questions (40%)
  
2. Clinical Component – Clinical/OSCE/Viva
  - a) Aeromedical Case discussion – 2 cases (20%)
  - b) Mini-CET for Aviation Physiology Case – 1 case (20%)
  - c) Paper Critique – 1 paper (20%)

Total Marks: 100%

Passing Marks: 60%

**Re-examination**

The re-examination shall be taken at an interval no earlier than 6 months from the date of the last exit examination.

Any additional training requirements recommended by the Board of Examiners must be completed prior to re-examination.

**Criteria for Panel of Examiners**

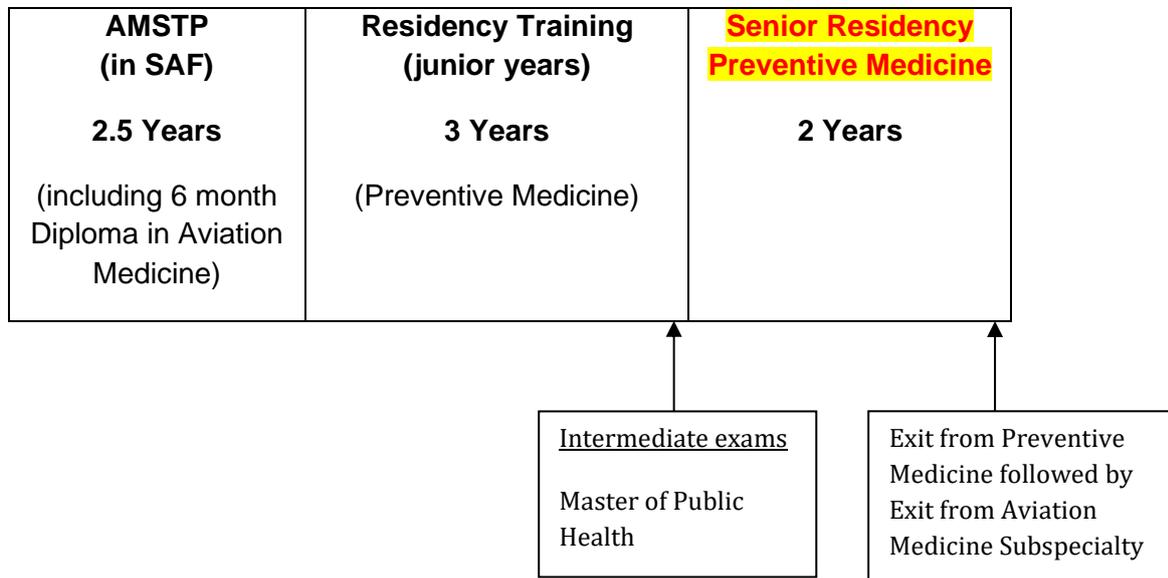
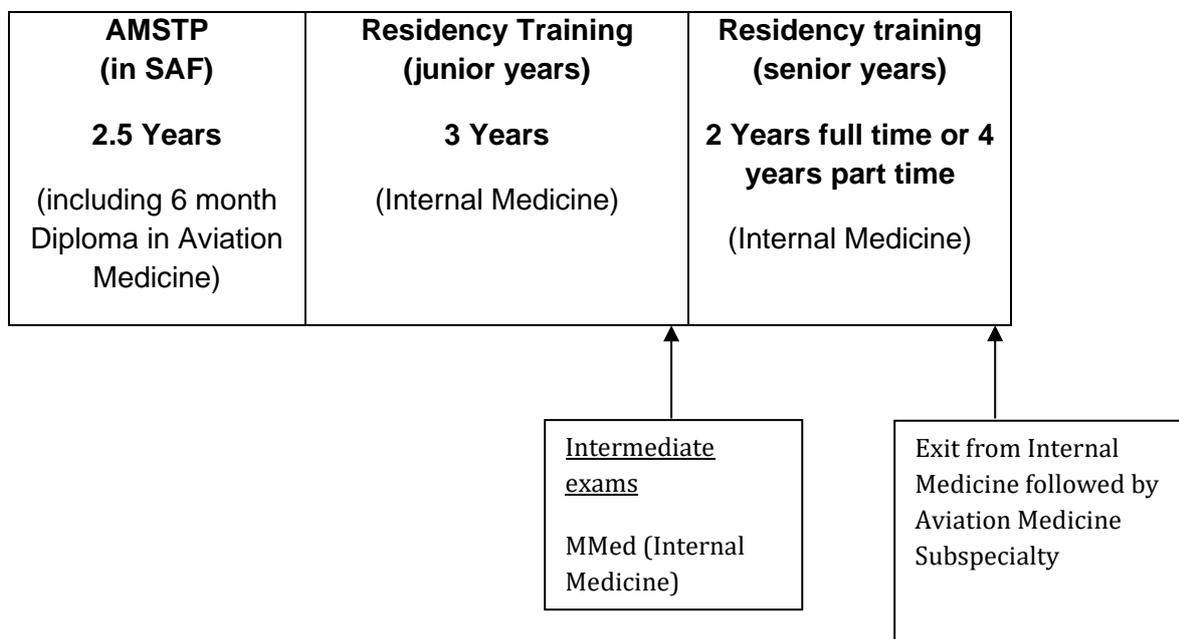
The SSTC will appoint suitable Aviation Medicine Specialists as Examiners for the exit examination in accordance to the JCST Exit Examination Guidelines on Board of Examiners. In addition, overseas Aviation Medicine Specialists may be appointed as external examiners.

### **3.20 GENERAL GUIDELINES**

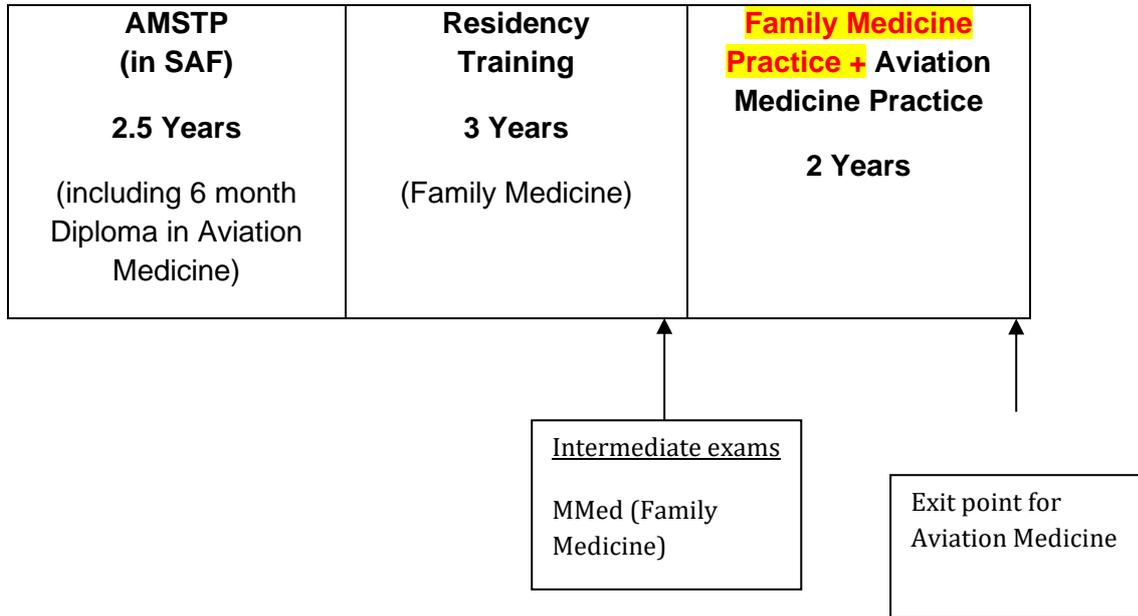
**Please refer to Annex D for General JCST Guidelines on the following:**

- Leave Guidelines
- Training Deliverables
- Retrospective Recognition
- Changes to Training Period
- Part-time Training
- Overseas Training
- Withdrawal of Traineeship
- Exit Certification

Updated as @ January 2017

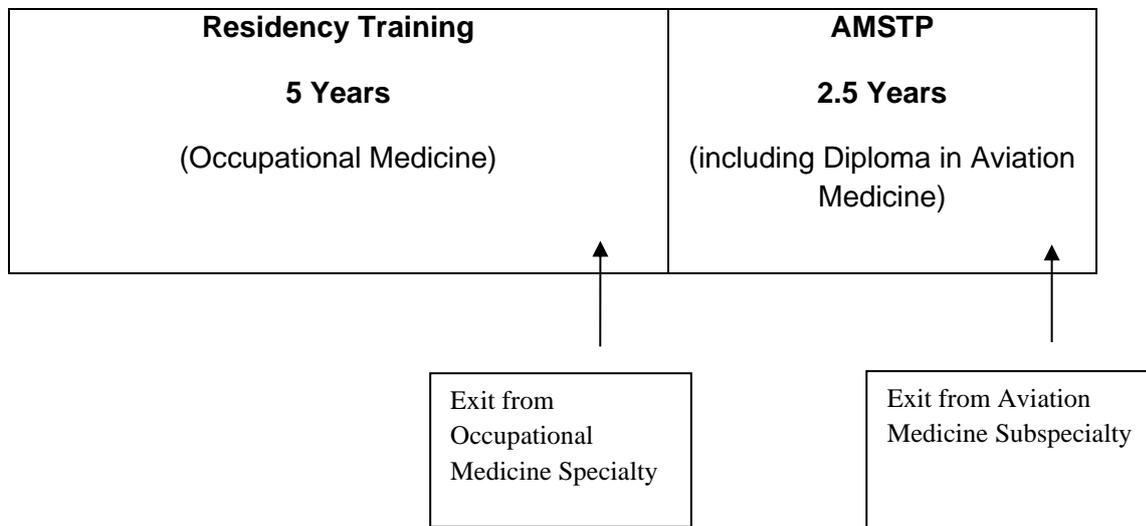
**Aviation Medicine Subspecialist Training Roadmap (MILITARY ROUTE)****1. Base Specialty – Preventive Medicine****2. Base Specialty – Internal Medicine**

3. Base Specialty – Family Medicine

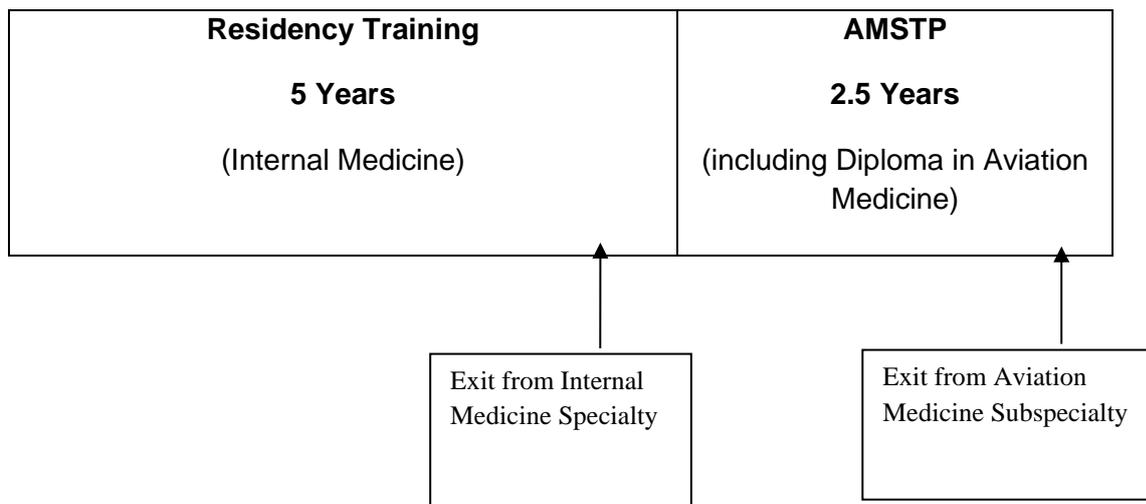


**Aviation Medicine Subspecialist Training Roadmap (NON-MILITARY ROUTE)**

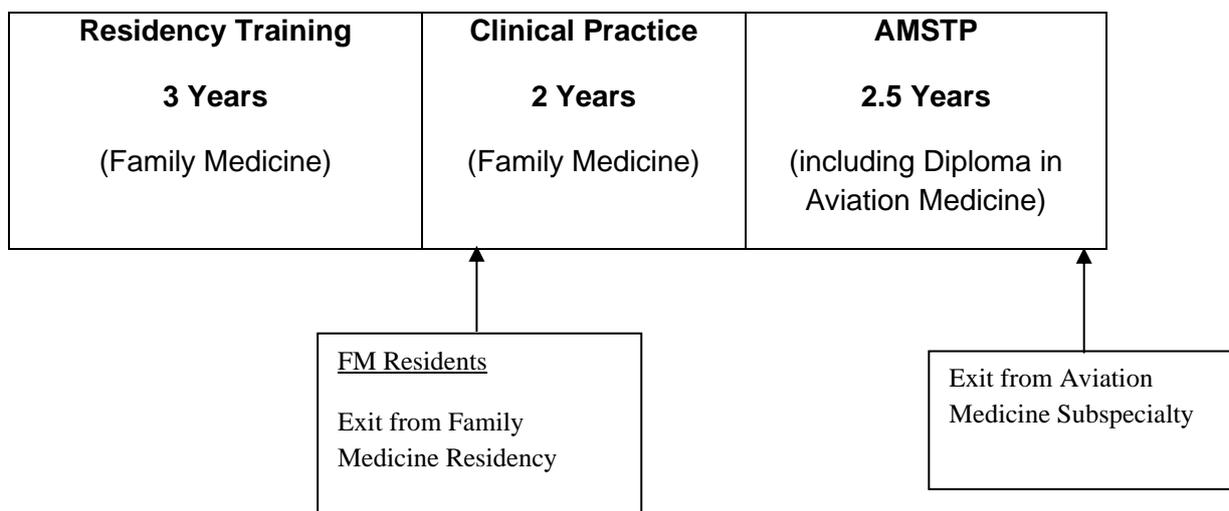
**1. Base Specialty – Occupational Medicine**



**2. Base Specialty – Internal Medicine**



**3. Base Specialty – Family Medicine**



#### 4 Training Modules in Aviation Medicine Subspecialist Training Programme

<b>BASIC SCIENCES IN AVIATION PHYSIOLOGY AND PSYCHOLOGY</b>	
<ul style="list-style-type: none"> <li>✓ THE EARTH'S ATMOSPHERE</li> <li>✓ PRESSURE CHANGES AND GAS LAWS</li> <li>✓ COSMIC RADIATION</li> <li>✓ BASIC RESPIRATORY PHYSIOLOGY</li> <li>✓ HYPOXIA AND HYPERVENTILATION</li> <li>✓ BASIC CARDIOVASCULAR PHYSIOLOGY</li> <li>✓ FUNDAMENTALS IN:               <ul style="list-style-type: none"> <li>○ NOISE</li> <li>○ VIBRATION</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>○ MOTION SICKNESS</li> <li>○ OPTICS AND VISION</li> <li>○ SPATIAL ORIENTATION</li> <li>○ THERMAL PHYSIOLOGY</li> <li>○ SHORT DURATION ACCELERATION AND CRASH DYNAMICS</li> <li>○ LONG-DURATION ACCELERATION</li> <li>✓ PRINCIPLES OF AVIATION PSYCHOLOGY</li> </ul>
<b>CLINICAL AVIATION MEDICINE</b>	
<ul style="list-style-type: none"> <li>✓ INTERNATIONAL REGULATIONS OF MEDICAL STANDARDS</li> <li>✓ MEDICAL SCREENING FOR AIRCREW</li> <li>✓ ASSESSMENT OF FITNESS TO FLY OF AIRCREW</li> <li>✓ UNDERSTANDING MEDICAL CONDITIONS AND THEIR IMPACT ON FLYING:               <ul style="list-style-type: none"> <li>○ CARDIOVASCULAR DISEASE</li> <li>○ RESPIRATORY DISEASE</li> <li>○ METABOLIC AND ENDOCRINE DISORDERS</li> <li>○ HAEMATOLOGY</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>○ NEUROLOGICAL DISEASE</li> <li>○ OPHTHALMOLOGY</li> <li>○ OTORHINOLARYNGOLOGY</li> <li>○ ORTHOPAEDICS</li> <li>○ PSYCHIATRY</li> <li>✓ MEDICATION AND AIRCREW</li> <li>✓ COMMERCIAL PASSENGER FITNESS TO FLY</li> <li>✓ CLINICAL CONSIDERATIONS IN AEROMEDICAL EVACUATION OF SICK PATIENTS</li> <li>✓ CONDUCT AEROMEDICAL TRANSFER OF THE CRITICALLY ILL/STABLE PATIENT</li> </ul>
<b>APPLIED AVIATION PHYSIOLOGY AND PSYCHOLOGY</b>	
<ul style="list-style-type: none"> <li>✓ TYPES OF AIRCRAFT CABIN PRESSURIZATION</li> <li>✓ HYPOXIA AND HYPERVENTILATION IN FLIGHT</li> <li>✓ AIRCRAFT OXYGEN EQUIPMENT AND SYSTEMS</li> <li>✓ LONG-DURATION ACCELERATION AND DEVELOPMENT OF PROTECTIVE EQUIPMENT</li> <li>✓ STRAINING MANOEUVRES IN MITIGATING EFFECTS OF SUSTAINED ACCELERATION</li> <li>✓ HEARING PROTECTION AND COMMUNICATIONS</li> <li>✓ MOTION SICKNESS IN FLIGHT</li> <li>✓ SPATIAL DISORIENTATION IN RELATION TO FLIGHT</li> </ul>	<ul style="list-style-type: none"> <li>✓ AIRCREW ANTHROPOMETRY AND EQUIPMENT INTEGRATION</li> <li>✓ THERMAL AND ENVIRONMENTAL PROTECTION HEAD INJURY PROTECTION AND BODY RESTRAINT SYSTEMS</li> <li>✓ EGRESS/ESCAPE FROM AIRCRAFT</li> <li>✓ APTITUDE AND PERSONALITY ASSESSMENT IN SELECTION OF AIRCREW</li> <li>✓ HUMAN FACTORS APPLICATION</li> <li>✓ ACCIDENT INVESTIGATION</li> <li>✓ UNDERSTANDING AVIATION PATHOLOGY AND TOXICOLOGY</li> <li>✓ UNDERSTANDING CREW RESOURCE MANAGEMENT AND COCKPIT GRADIENT</li> <li>✓ IMPACT OF STRESS ON PERFORMANCE</li> </ul>
<b>OPERATIONAL AVIATION MEDICINE</b>	
<ul style="list-style-type: none"> <li>✓ TRAINING AIRCREW IN THE RECOGNITION OF HYPOXIA AND AIRCRAFT OXYGEN SYSTEMS</li> <li>✓ CONDUCT HIGH G TRAINING FOR AIRCREW</li> <li>✓ CONDUCT SPATIAL DISORIENTATION AWARENESS TRAINING FOR AIRCREW</li> <li>✓ MANAGEMENT OF DECOMPRESSION ILLNESS</li> <li>✓ MANAGEMENT OF MOTION SICKNESS</li> <li>✓ AWARENESS OF FATIGUE AND COUNTERMEASURES</li> </ul>	<ul style="list-style-type: none"> <li>✓ CONDUCT AIRCRAFT ACCIDENT INVESTIGATIONS</li> <li>✓ UNDERSTANDING INTERNATIONAL TRAVEL AND DISEASE SPREAD, INCLUDING INFECTIOUS DISEASES</li> <li>✓ UNDERSTANDING PASSENGER SAFETY AND HEALTH IN COMMERCIAL AIRCRAFT</li> <li>✓ UNDERSTANDING AIRCRAFT HYGIENE</li> </ul>

## GENERAL JCST GUIDELINES FOR BST/AST/SEAMLESS TRAINEES

### 1) Leave Guidelines

As a guide to ensure that trainees receive adequate training and are prepared for examinations in their 6-monthly posting, a trainee should not be away for more than 34 days (in totality) from training. For NS men, due to national service, they may be away for an additional 14 days from training.

In the event where excessive leave has been taken, the STCs/ SSTCs shall determine:

- if make-up training is required; and
- whether it is an essential posting that may render extension of traineeship, or
- can the make-up be carried out in future postings

The guidelines shall apply to postings with effect from November 2008.

Trainees are advised to discuss their training requirements with their supervisors before taking any extended leave. If extended leave needs to be taken, the trainees are required to seek approval from the Training Committee and JCST via JCST Secretariat.

### 2) Training Deliverables

All training units must provide all trainees, including trainees under the SAF and G-to-G arrangement, (irrespective of the specialties pursued) with the training deliverables, as follows:

- (a) At least 16 hours of protected training time (PTT) per month. The activities which can be counted as protected training time are simulation training, sub-specialty teaching, case-based teaching, journal watch, core lectures, tutorials, conferences, workshops and operative simulation.
- (b) At least 1 day of study leave per month of training. Study leave can be used for studying exams, self-study, taking relevant exams, attending conferences or for extra training.

### 3) Changes to Training Period

Specialty training should be continuous. If a training programme is interrupted for any reason whatsoever, the RAC/STC/JCST may, at its discretion, require the trainee to undergo a further period of training in addition to the minimum requirements of the programme or terminate the traineeship altogether.

All trainees are required to conform to the traineeship period and training plan as approved by RAC/STC and JCST. If the trainee wishes to change to part-time training or defer traineeship, approval is to be sought prospectively from JCST through RAC/STC.

Deferment of training will only be allowed up to a maximum of 1 year except in special circumstances.

### 4) Part-Time Training

Although basic and seamless specialist training should be undertaken full-time, part-time training is an acceptable option, subject to the approval of the RAC/STC/JCST and provided that the position is equivalent to at least half of a full-time position. The duration of training will be increased to provide the same overall training time as for full-time basic trainees. However, all part-time training must meet the same standards as for full-time training. The total period for part-time training is 3 years. This part-time training can be counted towards a maximum of 1.5 year full-time equivalent training. The 1.5 year full-time equivalent training is to be defined by the STC and approved by JCST. Any changes to the part-

time training programme is to be submitted to RAC/STC and JCST for approval before actual implementation.

Guidelines on Part-time training:

- A part-time trainee should engage in a minimum of 0.5 FTE in training.
- The duration of the part-time training should not exceed 3 years.
- The entire traineeship should not be done on a part-time basis as the trainee would still need to meet the basic requirements.
- Trainees on part-time training should fulfil the same or more requirements than trainees on full-time training, e.g. number of calls.
- The traineeship should be completed within the stipulated time period as specified by the RAC/STC.

### 5) Overseas Training

(Ref: JCST Cir114-14)

With effect from 1<sup>st</sup> January 2015, **ALL** overseas attachment / postings during AST or Senior Residency Training are not permitted with the exception of Radiation Oncology, Neurosurgery, Forensic Pathology and Intensive Care Medicine. However, short overseas' attachment/courses which is self-funded during their elective posting period might be allowed on a case by case basis, if such educational exposure / experience could not be gained in Singapore. Prospective approval should be obtained from JCST at least 3 months before the commencement of overseas' attachment/courses.

Observership posting is not allowed to be recognised towards the training.

Radiation Oncology, Neurosurgery, Forensic Pathology and Intensive Care Medicine trainees/residents are required to seek prospective approval on their overseas postings at least 3 months before commencement of overseas postings.

### 6) Maximum Candidature

All trainees must complete training requirements, requisite examinations, and obtain their exit certification from JCST not more than 3 years beyond the standard length<sup>1</sup> of their training programme (except 2<sup>nd</sup> specialty or subspecialty training). This policy applies to all programmes, regardless of whether the programmes comprise of basic and advanced phases or are "seamless" programmes.

Residents/Trainees commencing second specialty<sup>2</sup> or subspecialty<sup>3</sup> training will be given an additional two years (instead of three years) beyond the standard duration of their training period to complete the respective training and obtain the exit certification.

Statutory leave due to SAF liabilities and entitled maternity leave (currently four months) will be excluded in the computation of the maximum allowable period, and the maximum allowable period would be extended accordingly to allow the trainees to make up the equivalent period of statutory leave.

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<sup>1</sup> The standard length of training for each specialist training programme is determined by the Specialists Accreditation Board and is made known to all its programmes.

<sup>2</sup> Second specialty training must be approved by the SAB. Examples are Internal Medicine (IM) and Advanced IM+ IM-related specialties(selected), General Surgery + Approved Surgical Specialties

<sup>3</sup> Aviation Medicine, Intensive Care Medicine, Neonatology, Palliative Medicine, Sports Medicine and Paediatric Medicine Subspecialties (Paediatric Cardiology, Paediatric Haematology & Oncology, Paediatric Nephrology and Paediatric Gastroenterology and Paediatric Intensive Care)

All other leave including leave for research for trainees is counted into the three year allowable extension of traineeship.

### **7) Withdrawal of Traineeship**

Upon appointment as trainee, should you decide to withdraw from traineeship, you are required to submit a withdrawal letter to JCST indicating your reasons for withdrawal. There is no automatic reinstatement of traineeship. The candidate has to re-apply in the next traineeship exercise.

### **8) Exit Certification**

On successful passing of the exit exam, completion of all training requirements and the mandatory SMA's Medical Ethics, Professionalism and Health Law Course, trainees are required to submit the pass letter/ scroll to the JCST secretariat. Upon RAC/STC's review and recommendation and JCST certification for exit from specialist training, the doctor may apply to SAB and SMC for specialist accreditation and specialist register.

As @ 21 May 2019