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 Directorship of IAASM, and the Global Lead for the International Civil Aviation Organisation’s (ICAO) Cooperative Arrangement for Prevention of the Spread of Communicable Diseases through Air Travel. It has also chaired ICAO’s Medical Provisions Study Group, which is responsible for the continuous review and revision of existing international flight crew 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 residents have adequate time to acquire the necessary knowledge and skills to be become a competent Aviation Medicine Specialist. After completing the training requirements and passing the exit examination, residents 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. Residents 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, residents 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.
3.3 ELIGIBILITY

3.3.1 ELIGIBILITY FOR SUBSPECIALTY TRAINING

Applicants for the residency will be selected through an interview process. Residents, 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\(^1\).

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 resident 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 Programme Director).

\(^1\) 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\(^2\), or its equivalent (see Section 3.7).

d) Fulfill the requirement for a scientific dissertation (dissertation to be signed off by the Clinical Competency Committee) (see Section 3.12).

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\(^3\).

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, residents are expected to acquire the knowledge and skills in practice of Aviation Medicine. Residents 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, residents 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, residents 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 and the DAvMed (UK) Diploma awarded by the Faculty of Occupational Medicine of the Royal College of Physicians of London.

\(^2\)The achievement of the Diploma has to be within the maximum of 3 attempts.

\(^3\)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.
After the completion of the AMSTP and the DAvMed (UK), residents 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 residents attain competencies relevant to the diagnosis, prevention, treatment and aeromedical risk analysis of medical disorders associated with the unique aviation environment. The residents 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), residents can be posted to one or more of the following Participating Sites (See Section 3.16.2):

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

During the Aviation Medicine postings, the Resident 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

Residents 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, Residents 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 Participating Sites.

### 3.8 Allowable Absence From Training

The total number of days of absence\(^4\) from training should not exceed **38 days in a year**. In addition, Residents must not exceed the total number of days of absence per posting as shown in the table below. For days of absence, that are above the maximum number but within the threshold for repeat of posting, the Programme Director (PD) will assess and recommend remediation if necessary.

Training leave is defined as leave taken for activities\(^5\) relevant to AMSTP and approved by the Programme Director. The total number of days allowed for training is 12 per year. Training leave should not be taken to study for examinations.

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\(^4\) Days of Absence is defined as total number of days a Resident is absent from training whether from official leave entitlements or other reasons (e.g. Maternity Leave, No-pay Leave, etc.)

\(^5\) Activities include, but not limited to: Conferences/Symposiums, seminars, workshops, lectures, courses.
<table>
<thead>
<tr>
<th>Period of Posting (Months)</th>
<th>Maximum Days of Absence</th>
<th>Days of Absence beyond which posting will be repeated</th>
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<tbody>
<tr>
<td>2</td>
<td>6</td>
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<td>6</td>
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### 3.9 Specific Objectives and Minimum Requirements

<table>
<thead>
<tr>
<th>Specific Areas</th>
<th>Minimum no. required</th>
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<tbody>
<tr>
<td><strong>1. Clinical Aviation Medicine Practice</strong></td>
<td></td>
</tr>
<tr>
<td>A. Competency in the management of aviation personnel with the following conditions:</td>
<td></td>
</tr>
<tr>
<td>1. Cardiovascular conditions</td>
<td>5 cases</td>
</tr>
<tr>
<td>2. Metabolic and endocrine conditions</td>
<td>5 cases</td>
</tr>
<tr>
<td>3. Respiratory conditions</td>
<td>5 cases</td>
</tr>
<tr>
<td>4. Ophthalmological conditions</td>
<td>5 cases</td>
</tr>
<tr>
<td>5. Otorhinolaryngology conditions</td>
<td>5 cases</td>
</tr>
<tr>
<td>6. Orthopaedic conditions</td>
<td>5 cases</td>
</tr>
<tr>
<td>7. Neurological and Psychiatric conditions</td>
<td>5 cases</td>
</tr>
<tr>
<td>B. Competency in the medical assessment of aviation</td>
<td>100 cases</td>
</tr>
</tbody>
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personnel.

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

## II. Aviation Physiology Practice

A. Competency in conducting training for aviation personnel in:

1. Altitude Physiology  2 lectures
2. High G performance / Sustained Acceleration  2 lectures
3. Vibration, Noise and Communication  2 lectures
4. Spatial Orientation in Flight  2 lectures
5. Visual Sciences  2 lectures
6. Crash Dynamics  2 lectures

B. Competency in conducting practical training for aviation personnel in:

1. High Altitude Physiology  2 sessions
2. Night Vision Physiology  2 sessions
3. Spatial Orientation  10 cases
4. High G Performance / Sustained Acceleration  10 cases
5. Ejection Dynamics  10 cases

## II. Operational Aviation Medicine Practice

A. Competency in prescribing Aviation Physiology Rehabilitation/Treatment methods for:
1. Aviation personnel with poor G performance (physical conditioning and high G acclimatisation) 5 cases
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

III. Aviation Medicine Research

A. Ability to critically evaluate Aviation Medicine scientific literature. 5

B. Conduct applied research in Aviation Medicine. 1

3.10 COURSES

Residents 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)

Residents 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

3.11 TUTORIALS

Residents 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 Residents by the faculty.

3.12 SCHOLARLY ACTIVITIES AND RESEARCH

The curriculum will advance residents' knowledge of the basic principles of research, including how research is conducted, evaluated, explained to patients, and applied to patient care. Residents should participate actively in such scholarly activities. The sponsoring institution and Programme Director should allocate adequate educational resources to facilitate resident involvement in scholarly activities. During the subspecialty posting, residents 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 3.15). 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. Residents are encouraged to publish their research work in appropriate scientific journals.

3.13 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

3.14 DOCUMENTATION OF TRAINING

The Resident 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.

3.15 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.

### 3.16 Institutions

**3.16.1 Sponsoring Institution**

National University Health System (NUHS), which runs the only Preventive Medicine Residency Programme in Singapore, will be the Sponsoring Institution for the programme.

**3.16.2 Participating Sites**

The 3 identified participating sites are: RSAF Aeromedical Centre (ARMC), Civil Aviation Medical Board (CAMB) and Singapore Aeromedical Centre (SAC). The RSAF Aeromedical Centre will serve as the main Participating Site in view of the availability of training facility and caseloads from the military aviation sector. There must be a programme letter of agreement (PLA) between the programme and each Participating Site providing a required assignment. The PLA will be renewed at least every 5 years and should:

- a) Identify the Associate Programme Director and the faculty who will assume both educational and supervisory responsibilities for residents.
b) Specify their responsibilities for teaching, supervision, and formal evaluation of residents.

c) Specify the duration and content of the educational experience.

d) State the policies and procedures that will govern resident education during the assignment.

3.17 PROGRAMME DIRECTOR AND ASSOCIATE PROGRAMME DIRECTORS

There will be a Programme Director (PD) who will have the authority and held accountable for the operation of the programme. Any change in the Programme Director will require the approval of NUHS’ Graduate Medical Education Committee (GMEC). An Associate Programme Directors (APD) for each of the three identified Participating Sites will be appointed. The APDs will be accountable to the PD for the operation of the training programme in their Participating Sites.

3.18 PRACTICE-BASED LEARNING AND IMPROVEMENT

Residents 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. Residents 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, residents and other health professionals.

3.19 **INTERPERSONAL AND COMMUNICATION SKILLS**

Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families and health professionals. Residents 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.

3.20 **PROFESSIONALISM**

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents 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.

3.21 EVALUATION OF TRAINING

The purpose of evaluation is to ensure that the residents progress towards accomplishing their professional development goals. The role of the faculty is to facilitate and document the progressive development of the competencies necessary for the residents to practice independently at the conclusion of the subspecialty training.

3.21.1 RESIDENT EVALUATION

3.21.1.1 Formative Evaluation

The faculty must evaluate resident 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 resident performance must be accessible for review by the resident, in accordance with the institutional policy.

3.21.1.2 Structured Exit Examination

Time and Venue

The examinations are held annually, 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:

a) Discussion of 2 Aviation Medicine Cases
b) Defense of dissertation
c) Paper critique
d) Conducting a Centrifuge Training or other equivalent physiology training as specified\(^6\)

The candidate is required to pass all 4 sections to successfully exit.

**Re-examination**

Candidates who fail only one section shall be required to repeat only the failed section of the examination. Candidates who fail two or more sections shall be required to repeat the entire 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.

**3.21.2 Faculty Evaluation**

At least annually, the faculty performance will be evaluated by the APD and PD. These evaluations should include a review of the faculty’s clinical teaching abilities, commitment to the educational programme, clinical knowledge, professionalism, and scholarly activities. This evaluation must include at least annual written confidential evaluations by the residents.

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\(^6\) Sections a, b and c should conduct together in one sitting. Section d can be on a separate sitting but no more than one month apart.
3.21.3  **Programme Evaluation and Improvement**

The programme must document formal, systematic evaluation of the curriculum at least annually. The programme must monitor and track each of the following areas:

a) Faculty Development;

b) Resident performance including performance of programme graduates on the exit examination; and,

c) Programme quality. Specifically:

i) Residents and faculty must have the opportunity to evaluate the programme confidentially and in writing at least annually.

ii) The programme must use the results of the residents’ assessments of the programme together with other programme evaluation results to improve the programme.

The SSTC, as an external body, complements the Graduate Medical Education Committee (GMEC), which serves to evaluate and support the residency from within the Sponsoring Institution.

The Programme Director and the SSTC Chairperson must provide to the Director of GMEC at the Sponsoring Institution an annual report of the residency quality. The Programme Director and the SSTC Chairperson must provide a written plan of the corrective actions for any recommendations received from the Director of GMEC.
**ANNEX A**

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

1. **Base Specialty – Preventive Medicine**

<table>
<thead>
<tr>
<th></th>
<th>AMSTP (in SAF)</th>
<th>Residency Training (junior years)</th>
<th>Senior Residency Preventive Medicine</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2.5 Years</strong></td>
<td>2.5 Years</td>
<td>3 Years</td>
<td>2 Years</td>
</tr>
<tr>
<td></td>
<td>(including 6 month Diploma in Aviation Medicine)</td>
<td>(Preventive Medicine)</td>
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- Intermediate exams:
  - Master of Public Health

- Exit from Preventive Medicine followed by:
  - Exit from Aviation Medicine Subspecialty

2. **Base Specialty – Internal Medicine**

<table>
<thead>
<tr>
<th></th>
<th>AMSTP (in SAF)</th>
<th>Residency Training (junior years)</th>
<th>Residency training (senior years)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2.5 Years</strong></td>
<td>2.5 Years</td>
<td>3 Years</td>
<td>2 Years full time or 4 years part time</td>
</tr>
<tr>
<td></td>
<td>(including 6 month Diploma in Aviation Medicine)</td>
<td>(Internal Medicine)</td>
<td>(Internal Medicine)</td>
</tr>
</tbody>
</table>

- Intermediate exams:
  - MMed (Internal Medicine)
  - MRCP

- Exit from Internal Medicine followed by:
  - Exit from Aviation Medicine Subspecialty

*Last Updated 19 August 2014*
3. **Base Specialty – Family Medicine**

<table>
<thead>
<tr>
<th>AMSTP (in SAF)</th>
<th>Residency Training</th>
<th><strong>Family Medicine Practice + Aviation Medicine Practice</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 Years</td>
<td>3 Years (Family Medicine)</td>
<td>2 Years</td>
</tr>
<tr>
<td>(including 6 month Diploma in Aviation Medicine)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Intermediate exams

MMed (Family Medicine)

Exit point for Aviation Medicine
ANNEX B

Aviation Medicine Subspecialist Training Roadmap (NON-MILITARY ROUTE)

1. Base Specialty – Occupational Medicine

   Residency Training  
   5 Years  
   (Occupational Medicine)  

   AMSTP  
   2.5 Years  
   (including Diploma in Aviation Medicine)  

   Exit from Occupational Medicine Specialty  
   Exit from Aviation Medicine Subspecialty

2. Base Specialty – Internal Medicine

   Residency Training  
   5 Years  
   (Internal Medicine)  

   AMSTP  
   2.5 Years  
   (including Diploma in Aviation Medicine)  

   Exit from Internal Medicine Specialty  
   Exit from Aviation Medicine Subspecialty
3. **Base Specialty – Family Medicine**

<table>
<thead>
<tr>
<th>Residency Training</th>
<th>Clinical Practice</th>
<th>AMSTP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3 Years</strong></td>
<td><strong>2 Years</strong></td>
<td><strong>2.5 Years</strong></td>
</tr>
<tr>
<td>(Family Medicine)</td>
<td>(Family Medicine)</td>
<td>(including Diploma in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aviation Medicine)</td>
</tr>
</tbody>
</table>

- FM Residents
- Exit from Family Medicine Residency
- Exit from Aviation Medicine Subspecialty

Last Updated 19 August 2014
## ANNEX C

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

<table>
<thead>
<tr>
<th>BASIC SCIENCES IN AVIATION PHYSIOLOGY AND PSYCHOLOGY</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ THE EARTH’S ATMOSPHERE</td>
<td>o MOTION SICKNESS</td>
</tr>
<tr>
<td>✓ PRESSURE CHANGES AND GAS LAWS</td>
<td>o OPTICS AND VISION</td>
</tr>
<tr>
<td>✓ COSMIC RADIATION</td>
<td>o SPATIAL ORIENTATION</td>
</tr>
<tr>
<td>✓ BASIC RESPIRATORY PHYSIOLOGY</td>
<td>o THERMAL PHYSIOLOGY</td>
</tr>
<tr>
<td>✓ HYPOXIA AND HYPERVENTILATION</td>
<td>o SHORT DURATION</td>
</tr>
<tr>
<td>✓ BASIC CARDIOVASCULAR PHYSIOLOGY</td>
<td>ACCELERATION AND CRASH DYNAMICS</td>
</tr>
<tr>
<td>✓ FUNDAMENTALS IN:</td>
<td>o LONG-DURATION ACCELERATION</td>
</tr>
<tr>
<td>o Noise</td>
<td></td>
</tr>
<tr>
<td>o VIBRATION</td>
<td>✓ PRINCIPLES OF AVIATION PSYCHOLOGY</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CLINICAL AVIATION MEDICINE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ INTERNATIONAL REGULATIONS OF MEDICAL STANDARDS</td>
<td>o NEUROLOGICAL DISEASE</td>
</tr>
<tr>
<td>✓ MEDICAL SCREENING FOR AIRCREW</td>
<td>o OPHTHALMOLOGY</td>
</tr>
<tr>
<td>✓ ASSESSMENT OF FITNESS TO FLY OF AIRCREW</td>
<td>o OTORHINOLARYNGOLOGY</td>
</tr>
<tr>
<td>✓ UNDERSTANDING MEDICAL CONDITIONS AND THEIR IMPACT ON FLYING:</td>
<td>o ORTHOPAEDICS</td>
</tr>
<tr>
<td>o CARDIOVASCULAR DISEASE</td>
<td>o PSYCHIATRY</td>
</tr>
<tr>
<td>o RESPIRATORY DISEASE</td>
<td>✓ MEDICATION AND AIRCREW</td>
</tr>
<tr>
<td>o METABOLIC AND ENDOCRINE DISORDERS</td>
<td>✓ COMMERCIAL PASSENGER FITNESS TO FLY</td>
</tr>
<tr>
<td>o HAEMATOLOGY</td>
<td>✓ CLINICAL CONSIDERATIONS IN AEROMEDICAL EVACUATION OF SICK PATIENTS</td>
</tr>
<tr>
<td></td>
<td>✓ CONDUCT AEROMEDICAL TRANSFER OF THE CRITICALLY ILL/STABLE PATIENT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>APPLIED AVIATION PHYSIOLOGY AND PSYCHOLOGY</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ TYPES OF AIRCRAFT CABIN PRESSURIZATION</td>
<td>✓ AIRCREW ANTHROPOMETRY AND EQUIPMENT INTEGRATION</td>
</tr>
<tr>
<td>✓ HYPOXIA AND HYPERVENTILATION IN FLIGHT</td>
<td>✓ THERMAL AND ENVIRONMENTAL PROTECTION HEAD INJURY PROTECTION AND BODY RESTRAINT SYSTEMS</td>
</tr>
<tr>
<td>✓ AIRCRAFT OXYGEN EQUIPMENT AND SYSTEMS</td>
<td>✓ EGRESS/ESCAPE FROM AIRCRAFT</td>
</tr>
<tr>
<td>✓ LONG-DURATION ACCELERATION AND DEVELOPMENT OF PROTECTIVE EQUIPMENT</td>
<td>✓ APTITUDE AND PERSONALITY ASSESSMENT IN SELECTION OF AIRCREW</td>
</tr>
<tr>
<td>✓ TRAINING MANOEUVRES IN MITIGATING EFFECTS OF SUSTAINED ACCELERATION</td>
<td>✓ HUMAN FACTORS APPLICATION</td>
</tr>
<tr>
<td>✓ HEARING PROTECTION AND COMMUNICATIONS</td>
<td>✓ ACCIDENT INVESTIGATION</td>
</tr>
<tr>
<td>✓ MOTION SICKNESS IN FLIGHT</td>
<td>✓ UNDERSTANDING AVIATION PATHOLOGY AND TOXICOLOGY</td>
</tr>
<tr>
<td>✓ SPATIAL DISORIENTATION IN RELATION TO FLIGHT</td>
<td>✓ UNDERSTANDING CREW RESOURCE MANAGEMENT AND COCKPIT GRADIENT</td>
</tr>
<tr>
<td></td>
<td>✓ IMPACT OF STRESS ON PERFORMANCE</td>
</tr>
<tr>
<td><strong>OPERATIONAL AVIATION MEDICINE</strong></td>
<td><strong>OPERATIONAL AVIATION MEDICINE</strong></td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>✓ Training aircrew in the recognition of hypoxia and aircraft oxygen systems</td>
<td>✓ Conduct aircraft accident investigations</td>
</tr>
<tr>
<td>✓ Con duct high G training for aircrew</td>
<td>✓ Understanding international travel and disease spread, including infectious diseases</td>
</tr>
<tr>
<td>✓ Conduct spatial disorientation awareness training for aircrew</td>
<td>✓ Understanding passenger safety and health in commercial aircraft</td>
</tr>
<tr>
<td>✓ Management of decompression illness</td>
<td>✓ Understanding aircraft hygiene</td>
</tr>
<tr>
<td>✓ Management of motion sickness</td>
<td></td>
</tr>
<tr>
<td>✓ Awareness of fatigue and countermeasures</td>
<td></td>
</tr>
</tbody>
</table>