CAR PART II

CAR MEDICAL PROVISIONS

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FOREWORD

1 The UAE General Civil Aviation Authority, known in these regulations as the "Authority".

2 ICAO Annex 1 has been selected to provide the basic structure of CAR–MED.

3 The Authority has adopted associated compliance or interpretative material wherever possible and, unless specifically stated otherwise, clarification will be based on this material or other documentation such as EASA regulatory material and ICAO Documents.

4 Future development of the requirements of CAR–MED will be in accordance with Notice of Proposed Amendment (NPA) procedure, if the GCAA thinks an NPA is required. These procedures allow for the amendment of CAR–MED to be harmonized with amendments to EASA and ICAO Annexes in a timely manner. Typographical errors, or minor changes that do not affect the industry will be published and introduced without NPA (Notice of Proposed Amendment).

5 Definitions and abbreviations of terms used in CAR–MED that are considered generally applicable are contained in CAR Part 1- Definitions and Abbreviations. However, definitions and abbreviations of terms used in CAR–MED that are specific to a Subpart of CAR–MED are normally given in the Subpart concerned or, exceptionally, in the associated compliance or interpretative material.

6 Conformity with the advisory material (AC and AMC) is mandatory unless there exist alternative means of compliance (i.e. AltMoC) to meet the equivalent level of safety, acceptable to the Authority.

7 Guidance Material (GM) is non-binding material that helps to illustrate the meaning of a requirement or specification and is used to support the interpretation of regulations or AMCs.

Note: Any person who considers that there may be alternative AMCs or GMs to those published should submit details to the Authority, for alternatives to be properly considered. Should there be an error, inform Policy and Regulations section regulations@gcaa.gov.ae or obtain clarification through aeromedical@gcaa.gov.ae.

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RECORD OF ISSUE

Issue	Date	Changes introduced	Date of applicability
Issue 00 Rev. 00	September 2015	Initial	
Issue 01	February 2020	See highlight of change table below	April 2020
Issue 02	December 2022	See highlight of change table below	January 2023

HIGHLIGHT OF CHANGE

ISSUE 01

MED.A.028 Drug and alcohol testing program	Chapter deleted, please refer to CAR-PSMP
AMC2 MED.A.045 Validity, revalidation and renewal of medical certificates	Change in wording
GM1 MED.B.060 Psychology	Change in wording
SUBPART D - AERO-MEDICAL EXAMINERS (AME), SENIOR AEROMEDICAL EXAMINERS (SAME), Approved GCAA Specialists & Approved GCAA Psychologist	Section 4- Psychologist is added
Appendix 5	Changes for approved GCAA physiologist

ISSUE 02

MED.A.005 Scope	LSA is added
MED.A.010 Definitions	Misuse of substances & Psychoactive substances are added
GM2 MED.A.020 Decrease in Medical Fitness	Medication – Guidance for Pilots, Air Traffic Controller and Cabin Crew Members added
GM1 MED.A.020 Decrease in medical fitness	Changes in wording and automation of the medical application process is added
AMC1 MED.A.025 Obligations of AeMC and AME	Amended
GM1 MED.A.025 Obligations of AeMC and AME	Amended
MED.B.001 Limitations to Medical Certificates	LSA is added

GM2 MED.B.010 Cardiovascular system (Class 1 & 2)	Valvular Heart Disease amended
AMC2 MED.C.025 Cardiovascular system	Thromboembolic disorders and Syncope added

SUBPART A - GENERAL REQUIREMENTS

SECTION 1 - GENERAL

MED.A.001 GCAA

For the purpose of this Chapter, the GCAA shall be the competent authority:

(a) for aero-medical centres (AeMC);

(b) for aero-medical clinics;

(c) for aero-medical examiners (AME); and

(d) for specialist-medical examiners (Sp.AME).

MED.A.005 Scope

This Chapter establishes the requirements for:

(a) the issue, validity period, revalidation and renewal of the medical certificate required for exercising the privileges of a pilot licence, foreign validated pilot licence, or of a student pilot;

(b) the medical fitness of cabin crew and LSA;

(c) the issue, validity period, revalidation and renewal of the medical certificate required for exercising the privileges of an air traffic controller licence or of a student air traffic controller licence with the exception of synthetic training device instructor;

(d) the certification of AMEs to issue Class I, II, III, cabin crew and LSA medical certificates;

(e) the certification of senior AME;

(f) the certification for specialist AME; and

(g) the requirements for AeMC in conjunction with CAR-ORA Subpart AeMC.

MED.A.010 Definitions

For the purpose of this chapter, the following definitions apply:

Accredited medical conclusion: the conclusion reached by one or more medical experts acceptable to GCAA, on the basis of objective and non-discriminatory criteria, for the purposes of the case concerned, in consultation with flight operations or other experts as necessary.

Aeromedical examiner: A physician with training in aviation medicine, practical knowledge and experience of the aviation environment, who is designated by the GCAA to conduct medical examinations of fitness of applicants for licences or ratings for which medical requirements are prescribed.

Assessment: the conclusion on the medical fitness of a person based on the evaluation of the person's medical history and/or aero-medical examinations as required in this chapter and further

examinations as necessary and/or medical tests such as but not limited to ECG, blood pressure measurement, blood testing and radiographic imaging.

Colour safe: the ability of an applicant to readily distinguish the colours used in air navigation and correctly identify aviation coloured lights.

Eye specialist: an ophthalmologist or a vision care specialist qualified in optometry and trained to recognise pathological conditions.

Examination: an inspection, palpation, percussion, auscultation or other means of investigation especially for diagnosing disease.

Investigation: the assessment of a suspected pathological condition of an applicant by means of examinations and tests in order to verify the presence or absence of a medical condition.

Licensing authority: the GCAA that issued the licence, or to which a person applies for the issue of a licence or when a person has not yet applied for the issue of a licence, the GCAA in accordance with this chapter.

Limitation: a condition placed on the medical certificate, licence that shall be complied with whilst exercising the privileges of the licence.

Aeromedical Inspector: A physician, appointed by the Licensing Authority, qualified and experienced in the practice of aviation medicine and competent in evaluating and assessing medical conditions of flight safety significance.

Misuse of substances: the use of one or more psychoactive substances by an aviation personnel in a way that:

a) Constitutes a hazard to flight safety or other aviation personnel or endangers the lives, health, or welfare of others; or

b) Causes or worsens an occupational, social, mental, or physical order or disorder.

Psychoactive substances: alcohol, opioids, cannabinoids, sedatives and hypnotics, cocaine, other psychostimulants, hallucinogens, and volatile solvents, with the exception of caffeine and tobacco.

Refractive error: the deviation from emmetropia measured in diopters in the most ametropic meridian, measured by standard methods.

MED.A.015 Medical Confidentiality

All persons involved in medical examination, assessment and certification shall ensure that medical confidentiality is respected at all times and accessibility restricted to personnel authorised by the GCAA.

AMC1.MED.A.015.Medical Confidentiality

To ensure medical confidentiality, all medical reports and records should be securely held with accessibility restricted to personnel authorised by the GCAA, where applicable, by the head of the aero-medical centre (AeMC), or the aero-medical examiner (AME).

MED.A.020 Decrease in medical fitness

(a) Licence holders shall not exercise the privileges of their licences and related ratings or certificates at any time when they:

(1) Are aware of any decrease in their medical fitness which might render them unable to safely exercise those privileges.

(2) Take or use any prescribed or non-prescribed medication which is likely to interfere with the safe exercise of the privileges of the applicable licence.

(3) Receive any medical, surgical or other treatment that is likely to interfere with flight safety.

(4) Have any incapacitating injury or illness that has resulted in grounding of 20 consecutive days or more.

(b) In addition, Medical Certificate holders shall, without undue delay, seek aero-medical advice when they:

(1) Have undergone a surgical operation or invasive procedure.

(2) Have commenced the regular use of any medication.

(3) Have suffered any significant personal injury involving incapacity to exercise the privileges of the licence;

(4) Have been suffering from any significant illness involving incapacity to exercise the privileges of the licence; Pregnant.

(5) Have been admitted to hospital or medical clinic.

(6) First require correcting lenses.

(c) In these cases:

All medical certificates holders shall seek the advice of an AeMC or AME. The AeMC or AME shall assess the medical fitness of the medical certificates holder and decide whether they are fit to resume the exercise of their privileges in accordance with the process established by the GCAA.

GM1 MED.A.020 Decrease in medical fitness

(a) Temporary suspension of medical certificates

Any significant injury or illness resulting in incapacity as crew member and any injury or illness that has resulted in sickness of more than 20 consecutive days should be notified to the GCAA through temporary suspension of the medical certificate on E-medical with the appropriate

CAR MED reference. The GCAA subsequently notifies the medical certificate holder by electronically issuing a letter to confirm the same.

(b) Reinstatement process after inter-current illness, injury/or pregnancy:

(1) As soon as it is ascertained by the AME that the applicant is medically fit to discharge his duties safely (a process which may need expert advice, series of medical investigations etc.), he/she should immediately inform the GCAA using the GCAA E-Medical service for reinstatement and send all the supporting documents.

(2) The GCAA will process the re-instatement request received from the AME within 15 working days, provided all the medical reports submitted are acceptable.

(3) The GCAA will make the re-instatement decision and determine if any further investigation is required. In such cases, the applicant's medical will be kept pending until it is resolved.

(c) Reinstatement Process after Confirmation of Pregnancy:

(1) The suspension of the licence may be lifted by the GCAA after the first trimester, when the obstetrician -who is aware of all aviation activities-, certifies that the licence holder has no significant medical contraindications related to pregnancy, and the AME confirms her as meeting the standards. The reinstatement of the licence depends on the duties of the licence holders and also on the aircraft type, the type of the operation and nature of cockpit duties. The exercise of the licence privileges in such circumstances may involve imposition of operational limitation. The risk of acute incapacitation from premature labour exceeds 1% after 26 weeks gestation, consequently all medical certificates holders are advised not to exercise licence privileges after 26 weeks gestation.

(2) Class 1 and 2 medical certificate holders are formally deemed medically unfit to exercise licence privileges from 26 weeks gestations until cleared by post-partum assessment by appropriate obstetrician with the following:

(i) The Obstetrician supervising the pregnancy certifies that the licence holder is fit for duties during this period and

(ii) Suitable administrative arrangements are made which ensure that sudden incapacitation of an affected licence holder due to premature labour will not adversely affect the safety of air navigation.

(iii) Following delivery, applicants are required to obtain a clearance from the AME before returning to their duties. Depending on the stage of a pregnancy at which the event occurs, such clearance may be required following a miscarriage, still birth or termination of the pregnancy. Following a normal delivery, clearance to resume duties should be appropriate at six weeks post-partum.

(3) Class 3 medical certificate holders are formally deemed medically unfit to exercise licence privileges from 34 weeks gestation until cleared by post –partum assessment by appropriate

obstetrician with the following:

(i) The Obstetrician supervising the pregnancy certifies that the licence holder is fit for duties during this period and

(ii) Suitable administrative arrangements are made which ensure that sudden incapacitation of an affected licence holder due to premature labour will not adversely affect the safety of air navigation.

(iii) Following delivery, applicants are required to obtain a clearance from the AME before returning to their duties. Depending on the stage of a pregnancy at which the event occurs, such clearance may be required following a miscarriage, still birth or termination of the pregnancy. Following a normal delivery, clearance to resume duties should be appropriate at six weeks post-partum.

(4) Cabin crew class medical certificate holders are formally deemed medically unfit to exercise licence privileges from 16 weeks gestations until cleared by post-partum assessment by appropriate obstetrician with the following:

(i) The Obstetrician supervising the pregnancy certifies that the licence holder is fit for duties during this period and

(ii) Suitable administrative arrangements are made which ensure that sudden incapacitation of an affected licence holder due to premature labour will not adversely affect the safety of air navigation.

(iii) Following delivery, applicants are required to obtain a clearance from the AME before returning to their duties. Depending on the stage of a pregnancy at which the event occurs, such clearance may be required following a miscarriage, still birth or termination of the pregnancy. Following a normal delivery, clearance to resume duties should be appropriate at six weeks post-partum.

Note: Following termination of pregnancy or abortion the applicants are required to obtain a clearance from the AME before returning to their duties.

(d) Reinstatement of medical certificate by senior AME:

The senior AME may be delegated the task of direct reinstatement of medical certificate for all classes of medical applications.

(1) The procedure of reinstatement through SAME

(i) Initial examination by designated examiners;

(ii) Complete Re-instatement of Candidate (Fitness to work) application form online using E-Medical Service;

(iii) Attach all investigations and relevant reports;

(iv) The request along with all the reports will be reviewed by the senior AME who will recommend the reinstatement and sign after the AME, by this, the medical certificate holder may be returned to aviation duties;

(v) The request form will be sent to AMS through the electronic system for final review;

(vi) In case where the Senior AME requires the addition of certain limitation or remarks on the Medical certificate, they can do so and then they should print new Medical certificate which reflects new changes along with the temporary reinstatement letter if required signed by the Senior AME. All the documentations- request/reports/copy of reinstatement letter should be sent to AMS for review.

(vii) Following review, the AMS reserves the right to request further information or a change to limitations imposed by the Senior AME.

(2) Fast track procedure

(i) This procedure is applied to all GCAA medical applications received through E-Medical Service (initial, revalidation or renewal medical certificates, referred medical applications, Reinstatement request and Medical Board review documents).

(ii) The AMS will process all above applications as a routine application in accordance with the licensing internal procedure which may take up to one month to be reviewed and finalised; if the licence holder /or his company prefer to process it at the earliest time then a procedure of fast tract should be applied.

(iii) For the fast tract request, the AMS will process the request within 5 working days.

(iv) The Aeromedical Inspectors and or /Head of AMS **will not process** any request of re-instatement through their e-mails, all applications should be submitted through E-Medical Service.

(v) The payment should be submitted before the initiation of the fast track process, and the 5 days process will start from date of payment. Companies that already have an invoice system with the GCAA will be invoiced by end of the month.

(vi) During public holidays – the GCAA AMS will not process any re-instatement requests.

(vii) For any urgent request **ONLY THE SENIOR AMEs** can review the request, and return the licence holder to aviation duties. In this case the senior AME should carry the responsibility before the GCAA, and the AMS will review same reinstatements request thereafter.

Note: Facility or individual applications requests whether initial or renewal will follow the same process.

GM2 MED.A.020 Decrease in Medical Fitness

Medication – Guidance for Pilots, Air Traffic Controller, Cabin Crew Members and LSA

(a) Any medication can cause side effects, some of which may impair the safe performance of flying duties. Equally, symptoms of colds, sore throats, diarrhoea and other abdominal upsets may cause little or no problem whilst on the ground but may distract the pilot, ATCO or cabin crew member and degrade their performance whilst on duty. The in-flight environment may also increase the severity of symptoms which may only be minor whilst on the ground. Therefore, one issue with medication and flying is the underlying condition and, in addition, the symptoms may be compounded by the side effects of the medication prescribed or bought over the counter for treatment. This guidance material provides some help to pilots, ATCOs , cabin crew and LSA in deciding whether expert aero-medical advice by an AME, AeMC, or Aeromedical Inspector is needed.

(b) Before taking any medication and acting as a pilot, ATCO, cabin crew member or LSA, the following three basic questions should be satisfactorily answered:

(1) Do I feel fit to fly/ for controlling duties?

(2) Do I really need to take the medication at all?

(3) Have I given this particular medication a personal trial on the ground while am off duty to ensure that it will not have any adverse effects on my ability to fly or control?

(c) Confirming the absence of adverse effects may well need expert aero-medical advice.

(d) The following are some widely used medicines with a description of their compatibility with Aviation duties:

(1) Antibiotics: Antibiotics may have short-term or delayed side effects which can affect pilot, ATCO, cabin crew or LSA performance. More significantly, however, their use usually indicates that an infection is present and, thus, the effects of this infection may mean that a pilot, ATCO, cabin crew member or LSA is not fit for aviation duties and should obtain expert aero-medical advice.

(2) Anti-malaria drugs: The decision on the need for anti-malaria drugs depends on the geographical areas to be visited, and the risk that the pilot ATCO, LSA or cabin crew member has of being exposed to mosquitoes and of developing malaria. An expert medical opinion should be obtained to establish whether anti-malaria drugs are needed and what kind of drugs should be used. Most of the anti-malaria drugs (atovaquone plus proguanil, chloroquine, doxycycline) are compatible with flying duties. However, adverse effects associated with mefloquine include insomnia, strange dreams, mood changes, nausea, diarrhoea and headaches. In addition, mefloquine may cause spatial disorientation and lack of fine coordination and is, therefore, not compatible with aviation duties.

(3) Antihistamines: Antihistamines can cause drowsiness. They are widely used in 'cold cures' and in treatment of hay fever, asthma and allergic rashes. They may be in tablet form or a constituent of nose drops or sprays. In many cases, the condition itself may preclude Aviation duties, so that, if treatment is necessary, expert aero-medical advice should be sought so that so-called non-sedative antihistamines, which do not degrade human performance, can be prescribed.

(4) Cough medicines: Antitussives often contain codeine, dextromethorfan or pseudo-ephedrine which are not compatible with Aviation duties. However, mucolytic agents (e.g. carbocysteine) are well-tolerated and are compatible with aviation duties.

(5) Decongestants: Nasal decongestants with no effect on alertness may be compatible with aviation duties. However, as the underlying condition requiring the use of decongestants may be incompatible with aviation duties, expert aero-medical advice should be sought. For example, oedema of the mucosal membranes causes difficulties in equalising the pressure in the ears or sinuses.

(6) Nasal corticosteroids are commonly used to treat hay fever, and they are compatible with aviation duties.

(7) Common pain killers and antifebrile drugs: Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) and paracetamol, commonly used to treat pain, fever or headaches, may be compatible with aviation duties. However, the pilot, ATCO, LSA or cabin crew member should give affirmative answers to the three basic questions listed in (b) before using the medication and carrying out aviation duties.

(8) Strong analgesics: The more potent analgesics including codeine are opiate derivatives, and may produce a significant decrement in human performance and, therefore, are not compatible with aviation duties.

(9) Anti-ulcer medicines: Gastric secretion inhibitors such as H2 antagonists (e.g. ranitidine, cimetidine) or proton pump inhibitors (e.g. omeprazole) may be acceptable after diagnosis of the pathological condition. It is important to seek for the medical diagnosis and not to only treat the dyspeptic symptoms.

(10) Anti-diarrhoeal drugs: Loperamide is one of the more common anti-diarrhoeal drugs and is usually safe to take whilst flying or performing aviation activities. However, the diarrhoea itself often makes the pilot, ATCO, LSA and cabin crew member unfit for aviation duties.

(11) Hormonal contraceptives and hormone replacement therapy usually have no adverse effects and are compatible with aviation duties.

(12) Erectile dysfunction medication: This medication may cause disturbances in colour vision and dizziness. There should be at least 6 hours between taking sildenafil and aviation duty; and 36 hours between taking vardenafil or tadalafil and aviation duty.

(13) Smoking cessation: Nicotine replacement therapy may be acceptable. However, other medication affecting the central nervous system (buproprion, varenicline) is not acceptable for pilots and ATCO.

(14) High blood pressure medication: Most anti-hypertensive drugs are compatible with aviation duties However, if the level of blood pressure is such that drug therapy is required, the pilot, ATCO, LSA or cabin crew member should be monitored for any side effects before carrying out aviation duties. Therefore, consultation with the AME, AeMC, or Aeromedical Inspector as applicable, is needed.

(15) Asthma medication: Asthma has to be clinically stable before a pilot or cabin crew member can return to aviation duties. The use of respiratory aerosols or powders, such as corticosteroids, beta-2-agonists or chromoglycic acid may be compatible with aviation duties. However, the use of oral steroids or theophylline derivatives is incompatible with aviation duty. Pilots, ATCO or cabin crew members using medication for asthma should consult the AME, AeMC, or Aeromedical Inspector as applicable.

(16) Tranquillisers and sedatives: The inability to react, due to the use of this group of medicines, has been a contributory cause to fatal aircraft accidents. In addition, the underlying condition for which these medications have been prescribed will almost certainly mean that the mental state of a pilot, ATCO, LSA or cabin crew member is not compatible with aviation duties.

(17) Sleeping tablets: Sleeping tablets dull the senses, may cause confusion and slow reaction times. The duration of effect may vary from individual to individual and may be unduly prolonged. Expert aero-medical advice should be obtained before using sleeping tablets.

(18) Melatonin: Melatonin is a hormone that is involved with the regulation of the circadian rhythm. In some countries it is a prescription medicine, whereas in most other countries it is regarded as a ‘dietary supplement’ and can be bought without any prescription. The results from the efficiency of melatonin in treatment of jet lag or sleep disorders have been contradictory. Expert aero-medical advice should be obtained.

(19) Coffee and other caffeinated drinks may be acceptable, but excessive coffee drinking may have harmful effects, including disturbance of the heart’s rhythm. Other stimulants including caffeine pills, amphetamines, etc. (often known as ‘pep’ pills) used to maintain wakefulness or suppress appetite can be habit forming. Susceptibility to different stimulants varies from one individual to another, and all may cause dangerous overconfidence. Over dosage causes headaches, dizziness and mental disturbance. These other stimulants should not be used.

(20) Anaesthetics: Following local, general, dental and other anaesthetics, a period of time should elapse before returning to aviation duties. The period will vary considerably from individual to individual, but a pilot, ATCO, LSA or cabin crew member should not perform any aviation activities for at least 12 hours after a local anaesthetic, and for at least 48 hours after a general, spinal or epidural anaesthetic.

(e) Many preparations on the market nowadays contain a combination of medicines. It is, therefore, essential that if there is any new medication or dosage, however slight, the effect should be observed by the pilot, ATCO, LSA or the cabin crew member on the ground while off duty prior to resuming aviation duties. It should be noted that medication which would not normally affect pilot, ATCO, LSA or cabin crew performance may do so in individuals who are 'oversensitive' to a particular preparation. Individuals are, therefore, advised not to take any medicines before or during aviation duties unless they are completely familiar with their effects on their own bodies. In cases of doubt, pilots, ATCO, LSA and cabin crew members should consult an AME, AeMC, or Aeromedical inspector as applicable.

(f) Other treatments:

Alternative or complementary medicine, such as acupuncture, homeopathy, hypnotherapy and several other disciplines, is developing and gaining greater credibility. Such treatments are more acceptable in some countries than others. There is a need to ensure that 'other treatments', as well as the underlying condition, are declared and considered by the AME, AeMC, or Aeromedical Inspector, as applicable, for assessing fitness.

MED.A.025 Obligations of AeMC, and AME

(a) When conducting medical examinations and/or assessments, AeMC and AME, shall:

(1) Ensure that communication with the person can be established without language barriers;

(2) Make the person aware of the consequences of providing incomplete, inaccurate or false statements on their medical history.

(3) Notify the GCAA if the applicant withdraws the application for a medical certificate at any stage of the process.

(b) After completion of the aero-medical examinations and/or assessment, the AeMC and AME, shall:

(1) Advise the person whether fit, unfit or referred to the GCAA;

(2) Inform the person of any limitation that may restrict flight training or the privileges of the pilot licence, or that may strict any ATC training or the privileges of the ATC licence or cabin crew licence as applicable;

(3) If the person has been assessed as unfit, inform him/her of his/her right of a secondary review; and

(4) In the case of applicants for a medical certificate, submit without delay a signed, or electronically authenticated, detailed report to include the assessment result and evaluation of the findings and a copy of the medical certificate to the GCAA E-Medical service.

(5) Inform the applicant of their responsibility in the case of decrease in medical fitness.

(c) Where consultation with the Aeromedical Inspector of the GCAA is required in accordance with this Part, the AeMC and AME shall follow the procedure established by the GCAA.

(d) AeMCs and AMEs shall maintain records with details of medical examinations and assessments performed in accordance with this regulation and their results in accordance with federal and local legislation.

(e) When required for medical certification and/or oversight functions, AeMCs and AMEs shall submit to the GCAA upon request all aero-medical records and reports, and any other relevant information.

(f) Any false declaration to an AME made by an applicant for a licence or rating shall be reported to the GCAA.

AMC1 MED.A.025 Obligations of AeMC and AME

(a) If the medical examination is carried out by two or more AMEs, only one of them should be responsible for coordinating the results of the examination, evaluating the findings with regard to medical fitness, and signing the report.

(b) The applicant should be made aware that the associated medical certificate may be suspended or revoked if the applicant provides incomplete, inaccurate or false statements on their medical history to the AeMC or AME.

(c) In cases where the AeMC or AME is required to assess the fitness of an applicant for all classes of medical certificate in consultation with the Aeromedical Inspector of the GCAA, they should document the consultation in accordance with the procedure established by the GCAA

(d) The AeMC or AME should give advice to the applicant on treatment and preventive measures if, during the course of the examination, medical conditions or risk factors are identified which may endanger the medical fitness of the applicant in the future.

(e) In case of denial or referral to the GCAA, the AeMC or AME should inform the applicant regarding the result of the assessment in a form and manner established by the GCAA.

GM1 MED.A.025 Obligations of AeMC and AME

Guidelines for the AeMC or AME conducting the medical examinations and assessments for medical certification of Pilots, ATCO, and Cabin Crew:

(a) Before performing the medical examination, the AeMC or AME should:

(1) Verify the applicant's identity by checking their identity card, passport, driving licence or other official document containing a photograph of the applicant;

(2) obtain details of the applicant's licence from the GCAA if they do not have their licence with them;

(3) Except for initial applicants, obtain details of the applicant's most recent medical certificate from GCAA E-Medical Service if they do not have their certificate with them;

(4) In the case of a specific medical examination(s) e.g. (SIC) limitation on the existing medical certificate, obtain details of the specific medical condition and any associated instructions from the Aeromedical inspector of the GCAA. This could include, for example, a requirement to undergo a specific examination or test;

(5) Except for initial applicants, ascertain, from the previous medical certificate, which routine medical test(s) should be conducted, for example electrocardiography (ECG);

(6) Provide the applicant with the instructions for completion of the assessment form in the GCAA E-Medical Service;

(7) Go through the form with the applicant and give information to help the applicant understand the significance of the entries and ask any questions which might help the applicant to recall important historical medical data;

(8) Verify that the form is complete and legible, ask the applicant to tick the appropriate box in the application form. If the applicant declines to complete the application form fully, inform the applicant that it may not be possible to issue a medical certificate regardless of the outcome of the clinical examination and assessment.

(b) Once all the items in (a) have been addressed, the AeMC or AME should:

(1) Perform the medical examination of the applicant in accordance with the applicable rules;

(2) Arrange for additional specialist medical examinations, such as otorhinolaryngology (ENT) or ophthalmology, to be conducted as applicable and obtain the associated report forms or reports;

(3) Complete the medical examination report form in accordance with the associated instructions for completion;

(4) Ensure that all of the report forms are complete, accurate and legible.

(c) Once all the actions in (b) have been carried out, the AeMC or AME should review the report forms and:

(1) If satisfied that the applicant meets the applicable medical requirements as set out in CAR-MED, issue a medical certificate for the appropriate class, with limitations if necessary. The applicant should sign the certificate once signed by the AeMC or AME; or

(2) if the applicant does not meet the applicable medical requirements, or if the fitness of the applicant for the class of medical certificate applied for is in doubt:

(i) Refer the decision on medical fitness to, or consult the decision on medical fitness with, the Aeromedical inspector of the GCAA or AME in compliance with MED.B.001; or

(ii) Deny issuance of a medical certificate, explain the reason(s) for denial to the applicant and inform them of their right of a review according to the procedures of the GCAA.

(d) The AeMC or AME should send the documents as required by MED.A.025 (b) to the Aeromedical Inspector the GCAA within 5 days from the date of the medical examination. If a medical certificate has been denied or the decision has been referred, the documents should be sent to the Aeromedical Inspector of the GCAA on the same day that the denial or referral decision is reached.

(e) If the medical examination is carried out by two AMEs working within same or in different facility because of the unavailability of the AME who had initiated the examination, the transfer of application should be done through GCAA Aeromedical section and the second AME is responsible for coordinating the results of the examination, evaluating the findings with regard to medical fitness, and signing the report.

SECTION 2 - REQUIREMENTS FOR MEDICAL CERTIFICATES

MED.A.030 Medical Certificates

(a) A student pilot shall not fly solo unless that student pilot holds a medical certificate, as required for the relevant licence;

(b) Applicants for and holders of a private pilot licence (PPL), a sailplane pilot licence (SPL), or a balloon pilot licence (BPL) shall hold at least a Class 2 medical certificate;

(c) Applicants for and holders of an (SPL) or a (BPL) involved in commercial sailplane or balloon flights shall hold at least a Class 2 medical certificate;

(d) Applicants for and holders of a commercial pilot licence (CPL), a multi-crew pilot licence (MPL), or an airline transport pilot licence (ATPL) shall hold a Class 1 medical certificate;

(e) When applicants exercising the privileges of a light aircraft pilot licence (LSA), the pilot shall hold at least a valid (LSA) medical certificate;

(f) If an instrument rating is added to a (PPL), the licence holder shall undertake pure tone audiometry examinations in accordance with the periodicity and the standard required for Class 1 medical certificate holders;

(g) If a night rating is added to a (PPL) the licence holder shall be colour safe;

(h) Applicants for and holders of an air traffic controller licence, or student air traffic controller licence, shall hold a Class 3 medical certificate.

(i) A licence holder shall not at any time hold more than one medical certificate issued in accordance with this regulation;

(j) A licence holder shall not exercise the privileges of his/her licence unless he/she holds a current medical assessment appropriate to the licence. A Class 1 medical certificate shall include the privileges and validity of a Class 2 medical certificate.

AMC1 MED.A.030 Medical Certificate

(a) A class 1 medical certificate includes the privileges and validities of class 2, Class 3, Cabin crew and LSA medical certificates.

(b) A class 2 medical certificate includes the privileges and validities of a Cabin crew and LSA medical certificate.

MED.A.035 Application for a Medical Certificate

(a) Application for a medical certificate shall be made in the electronic format established by the GCAA.

(b) Applicants for a medical certificate shall provide the AeMC or AME as applicable, with:

(1) proof of their identity;

(2) a signed declaration:

(i) of medical facts concerning their medical history;

(ii) as to whether they have previously undergone an examination for a medical certificate and, if so, by whom and with what result;

(iii) as to whether they have ever been assessed as unfit or had a medical certificate suspended or revoked.

(c) When applying for a revalidation or renewal of the medical certificate, applicants shall present the most recent medical certificate to the AeMC or AME prior to the relevant examinations.

AMC1 MED.A.035 Application for a Medical Certificate

When applicants do not present a current or previous medical certificate to the AeMC or AME prior to the relevant examinations, the AeMC or AME should not issue the medical certificate unless relevant information is received from the GCAA.

MED.A.040 Issuance, Revalidation or Renewal of medical certificates

(a) A medical certificate shall only be issued, revalidated or renewed once the required medical examinations and/or assessments have been completed and a fit assessment is made.

(b) Initial issue:

(1) Class 1 medical certificates shall be issued by an AeMC.

(2) Class 3 medical certificates shall be issued by an AeMC.

(3) Class 2 medical certificates shall be issued by an AeMC or an AME.

(4) Cabin Crew medical certificates shall be issued by an AeMC or an AME.

(5) LSA medical certificate shall be issued by an AeMC or an AME

(c) Revalidation and renewal:

Class 1, Class 2, Class 3, Cabin crew and LSA medical certificates shall be revalidated or renewed by an AeMC or an AME.

(d) The AeMC or AME shall only issue, revalidate or renew a medical certificate if:

(1) the applicant provided a complete medical history and, if required by the AeMC or AME, the results of medical examinations and tests conducted by the applicant's doctor or any medical specialists; and

(2) the AeMC or AME have conducted the aero-medical assessment based on the medical examinations and tests as required for the relevant medical certificate to verify that the applicant complies with all the relevant requirements of this regulation.

(e) The AME, AeMC or, in the case of referral, the GCAA may require the applicant to undergo additional medical examinations and investigations when clinically indicated before they issue, revalidate or renew a medical certificate.

(f) The GCAA may approve the issue or re-issue a medical certificate, as applicable, if:

(1) a case is referred;

(2) it has identified that corrections to the information on the certificate are necessary.

(g) When, in the opinion of the Aeromedical Examiner, the applicant's medical condition does not meet the applicable medical standards prescribed in this regulation, a medical certificate shall not be issued or renewed unless, the following conditions are fulfilled:

(1) an accredited medical conclusion indicates that in special circumstances the applicant's failure to meet any requirement, whether numerical or otherwise, is such that exercise of the privileges of the licence applied for is not likely to jeopardize flight safety;

(2) relevant ability, skill and experience of the applicant and operational conditions have been given due consideration;

(3) the licence is endorsed with any special limitation or limitations ensuring the safe performance of the licence holder's duties.

(h) Pursuant to (g), the GCAA may approve or deny the medical certificate or appoint an Aeromedical Evaluation Board when further evaluation is required for the GCAA to conclude on the case.

(i) If the opinion of the GCAA, the case under evaluation by the appointed Aeromedical Evaluation Board could be resolved prior to final decision by the Aeromedical Evaluation Board, then the GCAA may decide to dissolve prematurely the Aeromedical Evaluation Board and take final decision on the case.

GM1 MED.A.040 Issuance, revalidation and renewal of medical certificates

Aviation personnel who do not meet Medical standards prescribed in this regulation may be granted a medical certificate under alternative means of compliance. And this Medical certification may be granted on the need of the service, consistent with training, experience, performance, and proven safety of the aviation personnel.

(a) Issue Pre-requisites of Medical Certification under this paragraph

Medical certificates are based upon risk management and how it is applied to the following criteria:

(1) It cannot jeopardise the flight safety. I.e. risk of sudden incapacitation does not exceed 1 % annual incapacitation risk.

(2) The disqualifying defect does not pose a risk of sudden incapacitation.

(3) It does not pose any potential risk for subtle incapacitation that might not be detected by the individual but would affect alertness, special senses, or information processing.

(4) It is not be subject to aggravation by flying duties.

(5) It is resolved or stable at the time of the issue (i.e. non-progressive).

(6) If the possibility of progression or recurrence exists, the first signs or symptoms should be easily detectable and cannot constitute an undue hazard to the individual or to others.

(7) It cannot require uncommonly available tests, regular invasive procedures, non-routine medications or frequent absences to monitor stability or progression.

(8) It cannot involve unconventional medical treatments that are outside of standard of care.

(b) Process of the issue

(1) When the applicant's ability to meet the medical standards has not been clearly demonstrated (complicated cases), or where there has been a change to the existing physical condition of the candidate, the AME should not issue a medical certificate immediately.

(2) The AME may:

(i) Deny the certification and refer the case to the GCAA for decision along with the supporting documents, or

(ii) Recommend to convene Aeromedical Evaluation Board; or

(iii) Arrange for extended medical evaluation which may be consultation with specialist and any testing or investigation to prepare the Aeromedical summary (AME) for the applicant. This extended initial examination provides an expedient way to return a grounded aviator to flight status pending official GCAA endorsement and granting of a Medical certificate by Licensing & Aeromedical Section. The AME should use the service -whenever applicable-of locally GCAA recognised or designated specialists.

(c) The AME then will prepare the request to the GCAA, with the following items:

(1) Complete E-medical application

(2) A detailed history, review of systems, and physical findings associated with the defect should be recorded on the physical exam

(i) All supporting documentation required by the appropriate Aeromedical section of the Licensing Department (i.e. laboratory, radiology, consultant reports...)

(ii) AME's recommended disposition

(iii) Applicant's most recent flight Assessment check – if applicable

(iv) All information required for continuation of previous waivers/deviations –whenever applicable

(3) The Aeromedical Inspector will review the Aeromedical summary and associated reports and approve/deny the issue of medical certificates, or, will appoint Aeromedical Evaluation board and will notify the applicant of its intent to convene a medical evaluation board.

(i) **Procedure of Aeromedical Evaluation board**

(A) The board consists of members appointed by the Aeromedical Inspector. The board evaluates medical cases, which, due to their complexity or uniqueness, warrant a comprehensive aeromedical evaluation. A Special Board of AME should not be requested merely to challenge a physical standard or disqualification without evidence of special circumstances.

(B) The Aeromedical Inspector will appoint three AME doctors to act as members of this board. The AME who have been dealing with the case and most involved will be member of the board usually; unless the Aeromedical Inspector has a concern

(C) The GCAA will authorise the president to consult with other experts in the medical community to conduct a proper evaluation of the applicant's medical qualification. The president of the board should use the function of the GCAA approved specialist whenever available.

(D) The board members should discuss the details of the case and the findings of the literature review with the objective of reaching an agreement on the conclusion and recommendations. All correspondence between the members of the board members should be documented and submitted with the board letters; communication with the specialists and the board members should also be documented and submitted along with the board letters.

It is the responsibility of the treating AME to present all the clinical details and relevant investigations to the board members.

(E) The applicant involved should attend the Board if deemed relevant.

(F) The President of the board should compile a final report to the GCAA that:

- Presents the details of the clinical problem and the board recommendations.
- Outlines any investigations done.
- Includes all reports from external specialists.
- Concludes if the members of the board were in agreement with regards to recommendations regarding further investigations, treatment, continued licensing, restrictions in licensing and follow up by the supervising AME. If not in agreements the differences in opinion should be presented in the letter of recommendation.

- The final board reports should be reviewed and signed electronically by all members.

(G) The Aeromedical Inspector will usually make conclusions based on the Medical Board recommendation report received from the president. In case where there is a disagreement between the board members, the GCAA will hold the final decision and The Aeromedical Inspector will decide to issue or deny the Medical certification

For the issue of medical certificate under this paragraph the Aeromedical Inspector specifies the class of medical certificate and may do any or all of the following:

- Limit the duration of the medical certificate; validity of the Medical certificate
- Condition the granting of a renewal of the medical certificate on the results of subsequent medical tests, examinations, or evaluations;
- State on the medical certificate any operational limitation needed for safety;
- Condition the continued effect of the medical certificate, and any medical class certificate based on it, on compliance with a statement of functional limitations issued to the person in coordination with the GCAA Licensing Department.

Note 1: The president or the members of the board should not discuss any board recommendation with the applicant before receiving a final notification from the GCAA.

Note 2: If Medical functional test is required, it is the responsibility of the treating AME to arrange for the test after consulting the Aeromedical Inspector

Note 3: Occasionally the GCAA may not agree with the board recommendation and take a different decision than the board members or, alternatively may convene another aeromedical board or a senior aeromedical board whichever required.

Note 4: In case Specialist opinion is required for medical evaluation or assessment, he /she should be selected by the President of the board or the members and official referral request should be used.

Note 5: Failure to follow any of the above procedure will result in enforcement action to be taken against the alleged AME.

(ii) **Senior Aeromedical Board**

Occasionally the Aeromedical Inspector will convene a senior board AMEs which will be held by GCAA Aeromedical Committee members. The committee will constitute a board which is the final board to review Aeromedical dispositions as requested by AME and the boards. The board consists of a minimum of five members, two of whom should be GCAA Inspectors. The presiding officer should be the Head of Aeromedical section; the presence

of flight operations personnel may be requested; based on the circumstance of the case under review

(iii) **Procedure of Senior Aeromedical Evaluation board**

The procedure is the same procedure outlined in the paragraph (i) above, however the conclusion of the board should be signed by all senior AMEs and all GCAA representatives.

(d) Follow up Action

(1) All applicants should follow the GCAA requirements for the medical certificate to be valid. The applicant should refer to GCAA endorsement letter to determine how frequently the required information should be submitted. The continuation request should include the applicant's periodic medical exam, and all required additional information as specified by GCAA letter issued by the Aeromedical section.

(2) A person who has been granted a Medical certificate based on a special medical flight or practical test need not take the test again during later physical examinations unless the GCAA Aeromedical section determines or has reason to believe that the physical deficiency has or may have degraded to a degree to require another special medical flight test or practical test.

LIF-MED-011 - FUNCTIONAL HEARING ASSESSMENT

LIF-MED-017 - FUNCTIONAL ASSESSMENT FORM - COLOUR VISION ASSESSMENT (ATCO)

LIF-MED-029 - MEDICAL FLIGHT TEST REPORT SUBSTANDARD VISION IN ONE EYE

LIF-MED-053- FUNCTIONAL ASSESSMENT FORM – COLOUR VISION (FLIGHT CREW)

LIF-MED-055 - FUNCTIONAL ASSESSMENT FORM - SUBSTANDARD VISION (FLIGHT CREW)

(e) Withdrawal of medical certificate issued under this paragraph

If non -compliance is reported then the Medical certificate granted to a person who does not meet the applicable medical provisions may be withdrawn at any time if:

(1) There is adverse change in the holder's medical condition;

(2) The holder fails to comply with a statement of functional limitations or operational limitations issued as a condition of certification;

(3) The holder fails to comply with the periodic follow up requirements endorsed on his/her Medical certificate as a condition of certification;

(4) Public safety would be endangered by the holder's exercise of his licence privileges;

(5) The holder fails to provide medical information reasonably needed by the GCAA for certification.

(6) If the Medical certificate is withdrawn the following procedures apply:

(i) The holder of the Medical certificate will be served a letter of withdrawal, stating the reason for the action;

(ii) By not later than 30 days after the service of the letter of withdrawal, the holder of the Medical certificate may request, in writing, the GCAA for reconsideration of the decision. The request for review should be accompanied by supporting medical evidence to reconsideration.MC@gcaa.gov.ae;

(iii) Within 90 days of receipt of a request for review, a written final decision either affirming or reversing the decision to withdraw will be issued; and a medical certificate rendered invalid pursuant to a withdrawal.

(f) Renewal & Revalidation medical certification issued under the paragraph above

The AME is permitted to re-issue a medical certificate for an applicant who has a medical condition that is disqualifying under current medical provisions and was extensively evaluated through Aeromedical board and was given a Medical certificate with certain limitation. The Applicant should show to the satisfaction of the AME that the duties authorised by the class of medical certificate applied for can be performed without endangering public safety in order to obtain a new medical certificate under current medical provisions. An Examiner's decision or determination is subject to review by the GCAA aeromedical section.

Note: All Board report should follow the specification set in Appendix 3.

MED.A.045 Validity, Revalidation and Renewal of medical certificates

(a) Validity

(1) Class 1 medical certificates shall be valid for a period of maximum 12 months.

(2) The period of validity of Class 1 medical certificates shall be reduced to 6 months for licence holders who:

(i) are engaged in single-pilot commercial air transport operations carrying passengers and have reached the age of 40;

(ii) have reached the age of 60.

(3) Class 3 medical certificates shall be valid for a period of 24 months.

(4) The period of validity of Class 3 medical certificates shall be reduced to 12 months for licence holders who have reached the age of 40. A medical certificate issued prior to reaching the age of 40 shall cease to be valid when the licence holder reaches the age of 41.

(5) Class 2 medical certificates shall be valid for a period of up to:

(i) 60 months until the licence holder reaches the age of 40. A medical certificate issued prior to reaching the age of 40 shall cease to be valid after the licence holder reaches the age of 42;

(ii) 24 months between the age of 40 and 50. A medical certificate issued prior to reaching the age of 50 shall cease to be valid after the licence holder reaches the age of 51; and

(iii) 12 months after the age of 50.

(6) LSA student Pilot or LSA Pilot medical certificate shall be valid for a period of 60 months from the date of issue.

(7) The validity period of a medical certificate, including any associated examination or special investigation, shall be:

(i) determined by the age of the applicant at the date when the medical examination takes place; and

(ii) calculated from the date of the medical examination in the case of initial issue and renewal, and from the expiry date of the previous medical certificate in the case of revalidation.

(8) The validity period of a medical certificate may be extended, at the discretion of the GCAA, up to 45 days.

(b) Revalidation

Examinations and/or assessments for the revalidation of a medical certificate may be undertaken up to 45 days prior to the expiry date of the medical certificate.

(c) Renewal

(1) If the holder of a medical certificate does not comply with (b), a renewal examination and/or assessment shall be required.

(2) In the case of Class 1, Class 3 and Class 2 medical certificates:

(i) if the medical certificate has expired for less than 2 years, a routine revalidation aero-medical examination shall be performed;

(ii) if the medical certificate has expired for more than 2 years, the AeMC or AME shall only conduct the renewal examination after assessment of the aero-medical records of the applicant;

(iii) if the medical certificate has expired for more than 5 years, the examination requirements for initial issue shall apply and the assessment shall be based on the revalidation requirements.

AMC1 MED.A.045 Validity, revalidation and renewal of medical certificates

The validity period of a medical certificate (including any associated examination or special investigation) is determined by the age of the applicant at the date of the medical examination.

The holder of a pilot licence who has attained the age of 60 years shall not act as a pilot of an aircraft engaged in commercial air transport or private operation unless he meets the GCAA over 60 medical examination requirements.

Over 60 medical examination requirements for all classes of GCAA medical certificates

(a) Initial issuance of over 60 medical certificate requirements.

In addition to the usual medical assessment required by the class of medical over 40 years, the first medical assessment at age of 60 years should include:

(1) A psychological evaluation, which shall be conducted by a GCAA approved psychologist who has the privileges to conduct the neurocognitive assessment.

(2) Medical examination by a SAME or SAME equivalent which should include alcohol screening test.

(3) An extended eye examination by an Approved GCAA ophthalmologist.

(4) Fasting blood glucose and a glucose tolerance test in cases where the initial test is abnormal.

(5) Lipid profile.

(6) Cardiac evaluation by stress ECG.

(7) 10 year cardiovascular disease (CVD) risk assessment

(8) Complete blood count

(b) Revalidation Requirements

Revalidation of over 60 medical certificates can be conducted by SAME or SAME equivalent. The licence holder will undergo, in addition to the usual medical assessment requirements;

(1) Every 6 months;

(i) An ECG.

(ii) Fasting blood Glucose

(iii) Lipid profile

(iv) Complete blood count

(2) Every 12 months;

(i) Ophthalmology consultation.

(ii) Audiogram

(iii) Stress ECG

(iv) 10 year cardiovascular disease (CVD) risk assessment

GM1 MED.A.045 Validity, revalidation and renewal of medical certificates

Example: If a Class 1 ATPL holder has a renewal aeromedical examination conducted on the 14 August 2020 with a Date of Birth as 05 Nov 1960, the candidate, on this date, is still under 60 so he does not require to undergo the next medical within the next 6 months, however because he will turn 60 on the 05 November 2020 the validity of the medical certificate will be reduced from 12 to 06 months; In other words from the date of 05 November 2020 the candidate would require to have a medical within 6 months, this would render the date of expiry of the medical assessment issued on 14 August 2020 to be 14 Feb 2021.

When calculated in accordance with MED.A.045, the period of validity will, for the last month counted, include the day that has the same calendar number as the date of the medical examination or, if that month has no day with that number, the last day of that month.

It is advisable to let the calendar day on which the medical assessment expires remain constant year after year by allowing the expiry date of the current medical assessment to be the beginning of the new validity period under the proviso that the medical examination takes places during the period of validity of the current medical assessment but no more than 45 days before it expires.

GM2 MED.A.045 Validity, revalidation and renewal of medical certificates

The Medical Assessment is valid from the day on which the regulatory medical examination has been carried out. Sometimes the issue of the Medical Assessment has to be postponed until the result of laboratory tests or perhaps a specialist evaluation is known, but this does not change the date for the beginning of the validity period.

Example:

1) Initial applicant for GCAA Medical Class 1, on 15/7/2020, the calculated expiry date for his next medical will be 15/7/2021
2) If the applicant comes for revalidation on 15/7/2021, the calculated expiry date for next medical will be 15/7/2022
3) If the applicant comes for revalidation on 12/6/2021, the calculated expiry date for next medical will be on 15/7/2022
4) If the applicant comes for renewal on 20/7/2021, the calculated expiry date for next medical will be on 20/7/2022

The period of validity of medical certificate may be reduced when clinically indicated.

MED.A.046 Suspension or revocation of medical certificates

(a) A medical certificate can be suspended or revoked by the GCAA.

(b) Upon revocation of the medical certificate, the holder shall immediately return the medical certificate to the GCAA.

MED.A.050 Referral

If an applicant for a Class 1, Class 2, Class 3, Cabin crew or LSA medical certificate is referred to the GCAA in accordance with MED. B.001, the AeMC or AME shall transfer the relevant medical documentation to the GCAA.

AMC1 MED.A.050 Referral

Referral to the GCAA

(a) When the application is referred to the GCAA thorough E-Medical Service, it will follow the process in GM1 MED.A.020 Decrease in medical fitness procedure.

(b) The GCAA should ensure that unusual or borderline cases are evaluated on a common basis.

MED.A.055 Deferral of Medical examination

The prescribed re-examination of a licence holder requiring medical assessment operating in an area, which is outside UAE and distant from designated medical examination facilities may be deferred at the discretion of the GCAA, provided that such deferment shall not exceed:

(a) a single period of six months in the case of a flight crew member of an aircraft engaged in non-commercial operations;

(b) two consecutive periods each of three months in the case of a flight and cabin crew member of an aircraft engaged in commercial operations provided that in each case a favourable medical report is obtained after examination by a designated medical examiner of the area concerned, or, in cases where such a designated medical examiner is not available, by a physician legally qualified to practice medicine in that area. A report of the medical examination shall be sent to the GCAA;

(c) in the case of a private pilot, a single period not exceeding 24 months where the medical examination is carried out by an examiner designated under this regulation, by the ICAO Contracting State in which the licence holder is temporarily located. A report of the medical examination shall be submitted to the GCAA before flying activities are conducted by the licence holder.

SUBPART B - REQUIREMENTS FOR PILOT MEDICAL CERTIFICATES

SECTION 1 - GENERAL

MED.B.001 Limitations to Medical Certificates

(a) Limitations to Class 1, Class 3, Class 2 and LSA medical certificates:

(1) If the applicant does not fully comply with the requirements for the relevant class of medical certificate but is considered to be not likely to jeopardise flight safety, the AeMC or AME shall:

(i) for of Class 1 and Class 3 medical certificate, refer the decision on fitness of the applicant to the GCAA as indicated in this regulation;

(ii) if referral to the GCAA is not indicated in this regulation, evaluate the applicant's ability to perform his/her duties safely when complying with one or more limitations endorsed on the medical certificate, and issue the medical certificate with limitation(s) as necessary;

(iii) for Class 2 medical certificate, evaluate the applicant's ability to perform his/her duties safely when complying with one or more limitations endorsed on the medical certificate, and issue the medical certificate, as necessary with limitation(s), in consultation with the GCAA;

(iv) for LSA medical certificates: If LSA student Pilot or Pilot do not fully comply with the medical requirements specified in LSA section, the AME shall consider whether they may be able to perform flying duties safely if complying with one or more limitations.

(2) The AeMC or AME may revalidate or renew a medical certificate with the same limitation without referring the applicant to the GCAA.

(b) When assessing whether a limitation is necessary, particular consideration shall be given to:

(1) whether accredited medical conclusion indicates that in special circumstances the applicant's failure to meet any requirement, whether numerical or otherwise, is such that exercise of the privileges of the licence applied for is not likely to jeopardise flight safety;

(2) the applicant's ability, skill and experience relevant to the operation to be performed.

(c) Any limitation imposed on the holder of a medical certificate shall be specified therein.

(d) Shall comply with Operational limitation codes.

AMC1 MED.B.001 Limitations to Class 1, Class 3 Class 2 and LSA medical certificates

(a) Operational multi-pilot limitation (OML — Class 1 only)

(1) When the holder of a CPL, ATPL or MPL does not fully meet the requirements for a Class 1 medical certificate and has been referred to the licensing authority, it shall be assessed whether the medical certificate may be issued with an OML 'valid only as or with qualified co-

pilot'. This assessment shall be performed by the GCAA or Senior AME and approved by the GCAA.

(2) The holder of a medical certificate with an OML shall only operate an aircraft in multi-pilot operations when the other pilot is fully qualified on the relevant type of aircraft, is not subject to an OML and has not attained the age of 60 years.

(3) The OML for Class 1 medical certificates may be imposed by senior AME or GCAA and only removed by the GCAA.

(b) Operational Safety Pilot Limitation (OSL — Class 2 privileges)

(1) The holder of a medical certificate with an OSL limitation shall only operate an aircraft if another pilot fully qualified to act as pilot-in-command on the relevant class or type of aircraft is carried on board, the aircraft is fitted with dual controls and the other pilot occupies a seat at the controls.

(2) The OSL for Class 2 medical certificates may be imposed or removed by an AeMC or AME in consultation with the GCAA.

(c) Operational Passenger Limitation (OPL — Class 2 privileges).

(1) The holder of a medical certificate with an OPL limitation shall only operate an aircraft without passengers on board.

(2) An OPL for Class 2 medical certificates may be imposed by an AeMC or AME in consultation with the GCAA.

(3) Any other limitation may be imposed on the holder of a medical certificate if required to ensure flight safety.

(4) Any limitation imposed on the holder of a medical certificate shall be specified therein using the table below.

(d) ATC Operational limitations

(1) The GCAA, in conjunction with the air navigation service provider, shall determine the operational limitations applicable in the specific operational environment concerned.

(2) Appropriate operational limitations shall only be placed on the medical certificate by the GCAA.

(e) Any other limitation may be imposed on the holder of a medical certificate if required to ensure the safe exercise of the privileges of the licence.

(f) As per MED.A.020, an AeMC or AME may refer the decision on fitness of the applicant to the GCAA in borderline cases or where fitness is in doubt. In cases where a fit assessment can only be considered with a limitation, the AeMC, AME or the GCAA should evaluate the medical condition of the applicant in consultation with GCAA flight operations, appropriate personnel from the ANSP and other experts, if necessary.

(g) Limitation codes:

(1) The following abbreviations for limitations should be used on the medical certificate as applicable:

	Code	Limitation
1	TML	restriction of the period of validity of the medical certificate
2	VDL	correction for defective distant vision
3	VML	Correction for defective distant , intermediate and near vision and carry spare set of spectacles
4	VNL	correction for defective near vision
5	CCL	correction by means of contact lenses only
6	VCL	valid by day only
7	HAL	valid only when hearing aids are worn
8	APL	valid only with approved prosthesis
9	OML	Valid only as or with qualified co-pilot
10	OCL	valid only as co-pilot
11	OPL	valid only without passengers (PPL only)
12	SSL	special restriction as specified
13	OAL	restricted to demonstrated aircraft type
14	AHL	valid only with approved hand controls
15	SIC	specific regular medical examination(s) - contact GCAA
16	RXO	specialist ophthalmological examinations
17	ORL	Valid only with a safety pilot if passengers are carried
18	OSL	Valid only with a safety pilot and in aircraft with dual controls

(2) The abbreviations for the limitation codes should be explained to the holder of a medical certificate.

(3) Entry of limitations

(i) Limitations VDL, VML, VNL, CCL, VCL, RXO, may be imposed by an AME or an AeMC.

(ii) Limitations TML, HAL, APL, OCL, OPL, OAL, AHL, SIC, ORL, OSL, OML and SSL should only be imposed by the GCAA or SAME.

(4) Removal of limitations

All limitations should only be removed by the GCAA.

GM1 MED.B.001 Limitation to Medical Certificates

(a) TML — Time limitation: The period of validity of the medical certificate is limited to the duration as shown on the medical certificate. This period of validity commences on the date of the medical examination. Any period of validity remaining on the previous medical certificate is no longer valid. The licence holder should present him/herself for reassessment or examination when advised and should follow any medical recommendations.

(b) VDL — Wear corrective lenses and carry a spare set of spectacles: Correction for defective distant vision: whilst exercising the privileges of the licence, the licence holder should wear spectacles or contact lenses that correct for defective distant vision as examined and approved by the AeMC or AME. Contact lenses may not be worn until cleared to do so by an AeMC or AME. A spare set of spectacles, approved by the AeMC or AME, should be readily available.

(c) VML — Wear multifocal spectacles and carry a spare set of spectacles: Correction for defective distant, intermediate and near vision: whilst exercising the privileges of the licence, the licence holder should wear spectacles that correct for defective distant, intermediate and near vision as examined and approved by the AeMC or AME. Contact lenses or full frame spectacles, when either correct for near vision only, may not be worn.

(d) VNL — Have available corrective spectacles and a spare set of spectacles: Correction for defective near vision: whilst exercising the privileges of the licence, the licence holder should have readily available spectacles that correct for defective near vision as examined and approved by the AeMC or AME. Contact lenses or full frame spectacles when either correct for near vision only may not be worn.

(e) CCL — Wear contact lenses that correct for defective vision: Correction for defective distant vision: whilst exercising the privileges of the licence, the holder of a medical certificate should wear contact lenses that correct for defective distant vision, as examined and approved by the AeMC or AME. A spare set of similarly correcting spectacles shall be readily available for immediate use whilst exercising the privileges of the licence.

(f) VCL — Valid by day only: This limitation allows holders of a class 2 or LSA medical certificate with varying degrees of colour deficiency, to exercise the privileges of their licence by daytime only.

(g) RXO — Specialist ophthalmological examinations: Specialist ophthalmological examination(s), other than the examinations stipulated in this Part, are required for a significant reason.

(h) HAL — Hearing aid(s): Whilst exercising the privileges of the licence, the holder of the medical certificate should use hearing aid(s) that compensate for defective hearing as examined and approved by the AeMC or AME. A spare set of batteries should be available.

(i) SIC — Specific regular medical examination(s): This limitation requires the AeMC or AME to contact the GCAA before embarking upon renewal or revalidation medical assessment. It is likely to concern a medical history of which the AME should be aware prior to undertaking the assessment.

(j) SSL — Special restrictions as specified: This limitation may be considered when an individually specified limitation, not defined in this paragraph, is appropriate to mitigate an increased level of risk to the safe exercise of the privileges of the licence. The description of the SSL should be

entered on the medical certificate or in a separate document to be carried with the medical certificate.

(k) APL - Valid only with approved prosthesis: This limitation applies to the holder of a medical certificate with a musculoskeletal condition when a medical flight test or a flight simulator test has shown that the use of a prosthesis is required to safely exercise the privileges of the licence. The prosthesis to be used should be approved.

(l) AHL - Valid only with approved hand controls: This limitation applies to the holder of a medical certificate who has a limb deficiency or other anatomical problem which had been shown by a medical flight test or flight simulator testing to be acceptable but to require the aircraft to be equipped with suitable, approved hand controls.

(m) OCL - Valid only as a qualified co-pilot: This limitation is an extension of the OML and are restricted to the role of co-pilot.

(n) OSL - Valid only with a safety pilot and in aircraft with dual controls: This limitation applies to holders of a class 2 or a LAPL medical certificate only. The safety pilot should be made aware of the type(s) of possible incapacity that the pilot whose medical certificate has been issued with this limitation may suffer and should be prepared to take over the aircraft controls during flight. Refer to MED.B.001(b).

(o) OPL - Valid only without passengers: This limitation applies to holders of a class 2 or LSA medical certificate with a medical condition that may lead to an increased level of risk to flight safety when exercising the privileges of the licence. This limitation is to be applied when this risk is not acceptable for the carriage of passengers. Refer to MED.B.001(c).

(p) ORL - Valid only with a safety pilot if passengers are carried and in aircraft with dual controls: This limitation applies to holders of a class 2 or LSA medical certificate with a medical condition that may lead to an increased level of risk to flight safety when exercising the privileges of the licence. The safety pilot, if carried, should be made aware of the type(s) of possible incapacity that the pilot whose medical certificate has been issued with this limitation may suffer and should be prepared to take over the aircraft controls during flight.

(q) OAL- Restricted to demonstrated aircraft type: This limitation applies to a the holder of a medical certificate who has a limb deficiency or other medical problem which had been shown by a medical flight test or flight simulator testing to be acceptable but to require a restriction to a specific class and type of aircraft.

(r) VCL - Valid by day only: This limitation allows holders of a class 2 or LSA medical certificate with varying degrees of colour deficiency, to exercise the privileges of their licence by daytime only.

(s) OML – Valid only as or with a qualified co-pilot: This limitation applies to holders for a class 1 medical certificate who do not fully meet the aeromedical requirements for single-pilot operations, but are fit for multi-pilot operations. Refer to AMC1 MED.B.001(a)

GM2 MED.B.001 Limitations to Class 1, Class 3 Class 2 and LSA medical certificates

The AMEs in consultation with GCAA may impose TML, HAL, APL, OCL, OPL, OAL, AHL, SIC, ORL, OSL, RXO, OML and SSL Limitations on the medical certificate.

MED.B.005 General

(a) Applicants for a medical certificate shall be free from any:

(1) abnormality, congenital or acquired;

(2) active, latent, acute or chronic disease or disability;

(3) wound, injury or sequelae from operation;

(4) effect or side effect of any prescribed or non-prescribed therapeutic, diagnostic or preventive medication taken; that would entail a degree of functional incapacity which is likely to interfere with the safe exercise of the privileges of the applicable licence or could render the applicant likely to become suddenly unable to exercise the privileges of the licence safely.

(b) In cases where the decision on medical fitness of an applicant for a Class 1 or class 2 medical certificate is referred to the GCAA, the GCAA may delegate such a decision to an AeMC.

SECTION 2 - MEDICAL REQUIREMENTS FOR CLASS 1 AND CLASS 2 MEDICAL CERTIFICATES

MED.B.010 Cardiovascular System

(a) For Cardiovascular system, the following examinations shall be required:

(1) A standard 12-lead resting electrocardiogram (ECG) and report shall be completed when clinically indicated, and:

(i) for a Class 1 medical certificate, during the examination for the first issue of the medical certificate, then every 5 years until the age of 30, every 2 years until the age of 40, annually until the age of 50, and at all revalidation or renewal examinations thereafter;

(ii) for a Class 2 medical certificate, during the first examination for the first issue of the medical certificate, then after the age of 40 and then at the first examination after age 50, and every 2 years thereafter.

(2) Extended cardiovascular assessment shall be required when clinically indicated.

(3) For all classes of medical certificate, an extended cardiovascular assessment shall be completed at the first revalidation or renewal examination at the age of 60 and every year thereafter.

(4) For a Class 1 medical certificate, estimation of serum lipids, including cholesterol, shall be required at the examination for the first issue of a medical certificate, at the first examination after having reached the age of 40, and every 5 years thereafter and when clinically indicated.

(5) For Class 1 medical certificate, HBA1c shall be required at the first examination after having reached the age of 40, and every 5 years thereafter and when clinically indicated.

(6) For all classes of Medical certificates, assessment of cardiovascular risk shall be required when clinically indicated.

(b) Cardiovascular System – General

(1) Applicants shall not suffer from any cardiovascular disorder which is likely to interfere with the safe exercise of the privileges of the applicable licence(s).

(2) Applicants for a Class 1 medical certificate with any of the following conditions shall be assessed as unfit:

(i) aneurysm of the thoracic or supra-renal abdominal aorta, before or after surgery;

(ii) significant functional abnormality of any of the heart valves;

(iii) heart or heart/lung transplantation;

(iv) symptomatic hypertrophic cardiomyopathy.

(3) Before further consideration is given to their application, applicants for a Class 1 medical certificate with an established history or diagnosis of any of the following conditions shall be referred to GCAA:

(i) peripheral arterial disease before or after surgery;

(ii) aneurysm of the abdominal aorta, before or after surgery;

(iii) functionally insignificant cardiac valvular abnormalities;

(iv) after cardiac valve surgery;

(v) abnormality of the pericardium, myocardium or endocardium;

(vi) congenital abnormality of the heart, before or after corrective surgery;

(vii) recurrent vasovagal syncope;

(viii) arterial or venous thrombosis;

(ix) pulmonary embolism;

(x) cardiovascular condition requiring systemic anticoagulant therapy.

(4) Applicants for a Class 1 & 2 medical certificate with an established diagnosis of one of the conditions specified in (2) and (3) above shall be assessed by an approved GCAA cardiologist before a fit assessment can be considered in consultation with the GCAA.

(c) Blood Pressure

(1) Applicants' blood pressure shall be recorded at each examination.

(2) Applicants whose' s blood pressure is not within normal limits shall be further assessed with regard to their cardiovascular condition and medication with a view to determining whether they are to be assessed as unfit in accordance with points (3) and (4).

(3) Applicants for a class 1 medical certificate with any of the following medical conditions shall be assessed as unfit:

(i) symptomatic hypotension;

(ii) blood pressure at examination consistently exceeding 160 mmHg systolic or 95 mmHg diastolic, with or without treatment.

(4) Applicants who have commenced the use of medication for the control of blood pressure shall be assessed as unfit until the absence of significant side effects has been established.

(d) Coronary Artery Disease

(1) Applicants for a Class 1 medical certificate with:

(i) suspected myocardial ischeamia;

(ii) asymptomatic minor coronary artery disease requiring no anti-anginal treatment;

shall be referred to the GCAA and undergo cardiological evaluation to exclude myocardial ischaemia before a fit assessment can be considered.

(2) Applicants for a Class 2 medical certificate with any of the conditions detailed in (d.1) shall undergo cardiological evaluation before a fit assessment can be considered.

(3) Applicants with any of the following conditions shall be assessed as unfit:

(i) myocardial ischaemia;

(ii) symptomatic coronary artery disease;

(iii) symptoms of coronary artery disease controlled by medication.

(4) Applicants for the initial issue of a Class 1 medical certificate with a history or diagnosis of any of the following conditions shall be assessed as unfit:

(i) myocardial ischaemia;

(ii) myocardial infarction;

(iii) revascularisation for coronary artery disease.

(5) Applicants for a Class 2 medical certificate who are asymptomatic following myocardial infarction or surgery for coronary artery disease shall undergo satisfactory cardiological evaluation before a fit assessment can be considered in consultation with the licensing authority. Applicants for the revalidation of a Class 1 medical certificate shall be referred to the GCAA after comprehensive cardiological evaluation.

(e) Rhythm/Conduction Disturbances

(1) Applicants for a Class 1 medical certificate shall be referred to the GCAA (after comprehensive cardiological evaluation) when they have any significant disturbance of cardiac conduction or rhythm, including any of the following:

(i) disturbance of supraventricular rhythm, including intermittent or established sinoatrial dysfunction, atrial fibrillation and/or flutter and asymptomatic sinus pauses;
(ii) complete left bundle branch block;
(iii) Mobitz type 2 atrioventricular block;
(iv) broad and/or narrow complex tachycardia;
(v) ventricular pre-excitation;
(vi) asymptomatic QT prolongation;
(vii) Brugada pattern on electrocardiography.

(2) Applicants for a Class 2 medical certificate with any of the conditions detailed in (e.1) shall undergo satisfactory cardiological evaluation before a fit assessment in consultation with the GCAA can be considered.

(3) Applicants with any of the following:

(i) incomplete bundle branch block;
(ii) complete right bundle branch block;
(iii) stable left axis deviation;
(iv) asymptomatic sinus bradycardia (i.e. heart rate is< 50 beats/min);
(v) asymptomatic sinus tachycardia;
(vi) asymptomatic isolated uniform supra-ventricular or ventricular ectopic complexes;
(vii) first degree atrioventricular block;
(viii) Mobitz type 1 atrioventricular block;

May be assessed as fit in the absence of any other abnormality and subject to satisfactory cardiological evaluation.

(4) Applicants with a history of:

(i) ablation therapy;
(ii) pacemaker implantation;

shall undergo satisfactory cardiovascular evaluation before a fit assessment can be considered. Applicants for a Class 1 medical certificate shall be referred to the GCAA after comprehensive cardiological evaluation. Applicants for a Class 2 medical certificate shall be assessed in consultation with the licensing authority.

(5) Applicants with any of the following conditions shall be assessed as unfit:

(i) symptomatic sinoatrial disease;
(ii) complete atrioventricular block;
(iii) symptomatic QT prolongation;
(iv) an automatic implantable defibrillating system;
(v) a ventricular anti-tachycardia pacemaker.

AMC1 MED.B.010 Cardiovascular system (Class 1)

(a) Examination

Exercise electrocardiography

An exercise ECG when required as part of a cardiovascular assessment should be symptom limited and completed to a minimum of Bruce Stage IV or equivalent.

(b) General

(1) Cardiovascular risk factor assessment

(i) Serum lipid estimation is case finding and significant abnormalities should require review, investigation and supervision by the AeMC or AME in consultation with the licensing authority.

(ii) An accumulation of risk factors (smoking, family history, lipid abnormalities, hypertension, etc.) should require cardiovascular evaluation by the AeMC or AME in consultation with the licensing authority.

(2) Cardiovascular assessment

(i) Reporting of resting ECG should be done by the AME and reporting of exercise electrocardiograms should be by an Approved Cardiologist.

(ii) The extended cardiovascular assessment should be undertaken at an AeMC or may be delegated to an approved cardiologist.

(iii) The approved Cardiologist may perform any investigation deemed necessary after individualised risk assessment and evaluation.

(c) Peripheral arterial disease

If there is no significant functional impairment, a fit assessment may be considered by the GCAA, provided:

(1) applicants without symptoms of coronary artery disease have reduced any vascular risk factors to an appropriate level;

(2) applicants should be on acceptable secondary prevention treatment;

(3) exercise electrocardiography is satisfactory. Further tests may be required which should show no evidence of myocardial ischaemia or significant coronary artery stenosis.

(d) Aortic aneurysm

(1) Applicants with an aneurysm of the infra-renal abdominal aorta may be assessed as fit with a multi-pilot limitation (OML) by the GCAA. Follow-up by ultra-sound scans or other imaging techniques, as necessary, should be determined by the GCAA.

(2) Applicants may be assessed as fit by the GCAA after surgery for an aneurysm of the thoracic or abdominal aorta with a multi-pilot limitation (OML) at revalidation if the blood pressure and cardiovascular assessment are satisfactory. Regular cardiological review should be required.

(e) Cardiac valvular abnormalities

(1) Applicants with previously unrecognised cardiac murmurs should undergo evaluation by a cardiologist and assessment by the GCAA. If considered significant, further investigation should include at least 2D Doppler echocardiography or equivalent imaging.

(2) Applicants with minor cardiac valvular abnormalities may be assessed as fit by the GCAA. Applicants with significant abnormality of any of the heart valves should be assessed as unfit.

(3) Aortic valve disease

(i) Applicants with a bicuspid aortic valve may be assessed as fit if no other cardiac or aortic abnormality is demonstrated. Follow-up with echocardiography, as necessary, should be determined by the GCAA.

(ii) Applicants with aortic stenosis may be assessed as fit by GCAA provided the left ventricular function is intact and the mean pressure gradient of up to 20 mmHg. Those with mean pressure gradient above 20 mmHg but not greater than 50 mmHg may be assessed as fit with a multi-pilot limitation (OML). Follow-up with 2D Doppler echocardiography, as necessary, should be determined by GCAA. Alternative measurement techniques with equivalent ranges may be used. A history of systemic embolism or significant dilatation of the thoracic aorta is disqualifying.

(iii) Applicants with trivial aortic regurgitation may be assessed as fit. A greater degree of aortic regurgitation should require a multi-pilot limitation (OML). There should be no demonstrable abnormality of the ascending aorta on 2D Doppler echocardiography. Follow-up, as necessary, should be determined by the GCAA.

(4) Mitral valve disease

(i) Asymptomatic applicants with an isolated mid-systolic click due to mitral leaflet prolapse may be assessed as fit.

(ii) Applicants with rheumatic mitral stenosis should normally be assessed as unfit.

(iii) Applicants with uncomplicated minor regurgitation may be assessed as fit. Periodic cardiolological review should be determined by the licensing authority.

(iv) Applicants with uncomplicated moderate mitral regurgitation may be considered as fit with a multi-pilot limitation if the 2D Doppler echocardiogram demonstrates satisfactory left ventricular dimensions and satisfactory myocardial function is confirmed by exercise electrocardiography. Periodic cardiological review should be required, as determined by the GCAA.

(iv) Applicants with evidence of volume overloading of the left ventricle demonstrated by increased left ventricular end-diastolic diameter or evidence of systolic impairment should be assessed as unfit.

(f) Valvular surgery

Applicants with cardiac valve replacement/repair should be assessed as unfit. A fit assessment may be considered by the GCAA.

(1) Mitral leaflet repair for prolapse is compatible with a fit assessment, provided post-operative investigations reveal satisfactory left ventricular function without systolic or diastolic dilation and no more than minor mitral regurgitation.

(2) Asymptomatic applicants with a tissue valve or with a mechanical valve who, at least 6 months following surgery, are taking no cardioactive medication may be considered for a fit assessment with a multi-pilot limitation (OML) by the GCAA. Investigations which demonstrate normal valvular and ventricular configuration and function should have been completed as demonstrated by:

(i) a satisfactory symptom limited exercise ECG. Myocardial perfusion imaging/stress echocardiography should be required if the exercise ECG is abnormal or any coronary artery disease has been demonstrated;

(ii) a 2D Doppler echocardiogram showing no significant selective chamber enlargement, a tissue valve with minimal structural alteration and a normal Doppler blood flow, and no structural or functional abnormality of the other heart valves. Left ventricular fractional shortening should be normal.

Follow-up with exercise ECG and 2D echocardiography, as necessary, should be determined by the GCAA.

(3) Where anticoagulation is needed after valvular surgery, a fit assessment with an OML may be considered if the haemorrhagic risk is acceptable and the anticoagulation is stable. Anticoagulation should be considered stable if, within the last 6 months, at least 5 international normalised ratio (INR) values are documented, of which at least 4 are within the INR target range. The INR target range should be determined by the type of surgery performed.

(g) Thromboembolic disorders

Applicants with arterial or venous thrombosis or pulmonary embolism should be assessed as unfit. A fit assessment with an OML may be considered after a period of stable anticoagulation as prophylaxis, after review by the Aeromedical section of the GCAA. Anticoagulation should be considered stable if, within the last 6 months, at least 5 INR values are documented, of which at least 4 are within the INR target range and the haemorrhagic risk is acceptable. In cases of anticoagulation medication not requiring INR monitoring, a fit assessment with an OML may be considered after review by the Aeromedical section of the GCAA after a stabilisation period of 3 months. Applicants with pulmonary embolism should also be evaluated by a cardiologist. Following cessation of anticoagulant therapy, for any indication, applicants should undergo a re-assessment by the Aeromedical section of the GCAA.

(h) Other cardiac disorders

(1) Applicants with a primary or secondary abnormality of the pericardium, myocardium or endocardium should be assessed as unfit. A fit assessment may be considered by the GCAA following complete resolution and satisfactory cardiological evaluation which may include 2D Doppler echocardiography, exercise ECG and/or myocardial perfusion imaging/stress echocardiography and 24-hour ambulatory ECG. Coronary angiography

may be indicated. Frequent review and a multi-pilot limitation may be required after fit assessment.

(2) Applicants with a congenital abnormality of the heart, including those who have undergone surgical correction, should be assessed as unfit. Applicants with minor abnormalities that are functionally unimportant may be assessed as fit by the GCAA following cardiological assessment. No cardioactive medication is acceptable. Investigations may include 2D Doppler echocardiography, exercise ECG and 24-hour ambulatory ECG. Regular cardiological review should be required.

(i) Syncope

(1) In the case of a single episode of vasovagal syncope which can be explained and is compatible with flight safety, a fit assessment may be considered.

(2) Applicants with a history of recurrent vasovagal syncope should be assessed as unfit. A fit assessment may be considered by the GCAA after a 6-month period without recurrence provided cardiological evaluation is satisfactory. Such evaluation should include:

(i) a satisfactory symptom limited 12 lead exercise ECG to Bruce Stage IV or equivalent. If the exercise ECG is abnormal, myocardial perfusion imaging/stress echocardiography should be required;

(ii) a 2D Doppler echocardiogram showing neither significant selective chamber enlargement nor structural or functional abnormality of the heart, valves or myocardium;

(iii) a 24-hour ambulatory ECG recording showing no conduction disturbance, complex or sustained rhythm disturbance or evidence of myocardial ischaemia.

(3) A tilt test carried out to a standard protocol showing no evidence of vasomotor instability may be required.

(4) Neurological review should be required.

(5) A multi-pilot limitation (OML) should be required until a period of 5 years has elapsed without recurrence. The GCAA may determine a shorter or longer period of multi-pilot limitation according to the individual circumstances of the case.

(6) Applicants who experienced loss of consciousness without significant warning should be assessed as unfit.

(j) Blood pressure

(1) The diagnosis of hypertension should require cardiovascular review to include potential cardiovascular risk factors.

(2) Anti-hypertensive treatment should be agreed by the GCAA

Acceptable medication may include:

(i) non-loop diuretic agents;

(ii) ACE inhibitors;

(iii) angiotensin II/AT1 blocking agents (sartans);

(iv) slow channel calcium blocking agents;

(v) certain (generally hydrophilic) beta-blocking agents.

(3) Following initiation of medication for the control of blood pressure, applicants should be re-assessed to verify that the treatment is compatible with the safe exercise of the privileges of the licence held.

(k) Coronary artery disease

(1) Chest pain of uncertain cause should require full investigation. Applicants with angina pectoris should be assessed as unfit, whether or not it is alleviated by medication.

(2) In suspected asymptomatic coronary artery disease, exercise electrocardiography should be required. Further tests may be required, which should show no evidence of myocardial ischaemia or significant coronary artery stenosis.

(3) Evidence of exercise-induced myocardial ischaemia should be disqualifying.

(4) After an ischaemic cardiac event, including revascularisation, applicants without symptoms should have reduced any vascular risk factors to an appropriate level. Medication, when used to control cardiac symptoms, is not acceptable. All applicants should be on acceptable secondary prevention treatment.

(i) A coronary angiogram obtained around the time of, or during, the ischaemic myocardial event and a complete, detailed clinical report of the ischaemic event and of any operative procedures should be available to the GCAA:

(A) there should be no stenosis more than 50 % in any major untreated vessel, in any vein or artery graft or at the site of an angioplasty/stent, except in a vessel subtending a myocardial infarction. More than two stenoses between 30 % and 50 % within the vascular tree should not be acceptable;

(B) the whole coronary vascular tree should be assessed as satisfactory by a cardiologist, and particular attention should be paid to multiple stenoses and/or multiple revascularisations;

(C) an untreated stenosis greater than 30 % in the left main or proximal left anterior descending coronary artery should not be acceptable.

(ii) At least 6 months from the ischaemic myocardial event, including revascularisation, the following investigations should be completed (equivalent tests may be substituted):

(A) an exercise ECG showing neither evidence of myocardial ischaemia nor rhythm or conduction disturbance;

(B) an echocardiogram showing satisfactory left ventricular function with no important abnormality of wall motion (such as dyskinesia or akinesia) and a left ventricular ejection fraction of 50 % or more;

(C) in cases of angioplasty/stenting, a myocardial perfusion scan or stress echocardiogram, which should show no evidence of reversible myocardial ischaemia. If there is any doubt about myocardial perfusion in other cases (infarction or bypass grafting) a perfusion scan should also be required;

(D) further investigations, such as a 24-hour ECG, may be necessary to assess the risk of any significant rhythm disturbance.

(iii) Follow-up should be annually (or more frequently, if necessary) to ensure that there is no deterioration of the cardiovascular status. It should include a review by a cardiologist, exercise ECG and cardiovascular risk assessment. Additional investigations may be required by GCAA.

(A) After coronary artery vein bypass grafting, a myocardial perfusion scan or equivalent test should be performed if there is any indication, and in all cases within 5 years from the procedure.

(B) In all cases, coronary angiography should be considered at any time if symptoms, signs or non-invasive tests indicate myocardial ischaemia.

(iv) Successful completion of the 6-month or subsequent review will allow a fit assessment with a multi-pilot limitation (OML).

(A) For revalidation, applicant may be assessed as fit if the cardiology evaluation is satisfactory.

(l) Rhythm and conduction disturbances

(1) Any significant rhythm or conduction disturbance should require evaluation by a cardiologist and appropriate follow-up in the case of a fit assessment. Such evaluation should include:

(i) exercise ECG to the Bruce protocol or equivalent. Bruce stage 4 should be achieved and no significant abnormality of rhythm or conduction, or evidence of myocardial ischaemia should be demonstrated. Withdrawal of cardioactive medication prior to the test should normally be required;

(ii) 24-hour ambulatory ECG which should demonstrate no significant rhythm or conduction disturbance;

(iii) 2D Doppler echocardiogram which should show no significant selective chamber enlargement or significant structural or functional abnormality, and a left ventricular ejection fraction of at least 50 %.

Further evaluation may include (equivalent tests may be substituted):

(iv) 24-hour ECG recording repeated as necessary;

(v) electrophysiological study;

(vi) myocardial perfusion imaging;

(vii) cardiac magnetic resonance imaging (MRI);

(viii) coronary angiogram.

(IX) any other investigation deemed necessary by the approved cardiologist after individualised risk assessment

(2) Applicants with frequent or complex forms of supra ventricular or ventricular ectopic complexes require full cardiological evaluation.

(3) Where anticoagulation is needed for a rhythm disturbance, a fit assessment with an OML may be considered if the haemorrhagic risk is acceptable and the anticoagulation is stable. Anticoagulation should be considered stable if, within the last 6 months, at least 5 INR values are documented, of which at least 4 are within the INR target range. In cases of anticoagulation medication not requiring INR monitoring, a fit assessment with an OML may be considered after review by the Aeromedical Inspector of the GCAA after a stabilisation period of 3 months.

(4) Ablation

Applicants who have undergone ablation therapy should be assessed as unfit. A fit assessment may be considered by the GCAA following successful catheter ablation and should require a multi-pilot limitation for at least one year, unless an electrophysiological study, undertaken at a minimum of 2 months after the ablation, demonstrates satisfactory results. For those whose long-term outcome cannot be assured by invasive or non-invasive testing, an additional period with a multi-pilot limitation and/or observation may be necessary.

(5) Supraventricular arrhythmias

Applicants with significant disturbance of supraventricular rhythm, including sinoatrial dysfunction, whether intermittent or established, should be assessed as unfit. A fit assessment may be considered by the GCAA if cardiological evaluation is satisfactory.

(i) Atrial fibrillation/flutter

(A) For initial applicants, a fit assessment should be limited to those with a single episode of arrhythmia which is considered by the GCAA to be unlikely to recur.

(B) For revalidation, applicants may be assessed as fit if cardiological evaluation is satisfactory and the stroke risk is sufficiently low. A fit assessment with an OML may be considered after a period of stable anticoagulation as prophylaxis, after review by the Aeromedical Inspector of the GCAA. Anticoagulation should be considered stable if, within the last 6 months, at least 5 INR values are documented, of which at least 4 are within the INR target range. In cases of anticoagulation medication not requiring INR monitoring, a fit assessment with an OML may be considered after review by the Aeromedical Inspector of the GCAA after a stabilisation period of 3 months.

(ii) Applicants with asymptomatic sinus pauses up to 2.5 seconds on resting electrocardiography may be assessed as fit if exercise electrocardiography, echocardiography and 24-hour ambulatory ECG are satisfactory.

(iii) Symptomatic sino-atrial disease should be disqualifying.

(6) Mobitz type 2 atrio-ventricular block

Applicants with Mobitz type 2 AV block should require full cardiological evaluation and may be assessed as fit in the absence of distal conducting tissue disease.

(7) Complete right bundle branch block

Applicants with complete right bundle branch block should require cardiological evaluation on first presentation and subsequently:

(i) Applicants with complete right bundle branch block should undergo a cardiological evaluation on first presentation. A fit assessment may be considered if there is no underlying pathology.

(ii) Applicants with bifascicular block may be assessed as fit with an OML after a satisfactory cardiological evaluation. The OML may be considered for removal if an electrophysiological study demonstrates no infra-Hissian block, or a 3-year period of satisfactory surveillance has been completed.

(8) Complete left bundle branch block

A fit assessment may be considered by the GCAA:

(i) Initial applicants should demonstrate a 3-year period of stability.

(ii) For revalidation, after a 3-year period with a multi-pilot limitation (OML) applied, a fit assessment without multi-pilot limitation may be considered.

(iii) Investigation of the coronary arteries is necessary for applicants over age 40.

(9) Ventricular pre-excitation

A fit assessment may be considered by the GCAA:

(i) Asymptomatic initial applicants with pre-excitation may be assessed as fit if an electrophysiological study, including adequate drug-induced autonomic stimulation reveals no inducible re-entry tachycardia and the existence of multiple pathways is excluded.

(ii) Asymptomatic applicants with pre-excitation may be assessed as fit at revalidation with a multi-pilot limitation (OML).

(10) Pacemaker

Applicants with a subendocardial pacemaker should be assessed as unfit. A fit assessment may be considered at revalidation by the GCAA no sooner than 3 months after insertion and should require:

(i) no other disqualifying condition;

(ii) a bipolar lead system, programmed in bipolar mode without automatic mode change of the device;

(iii) that the applicant is not pacemaker dependent;

(iv) regular follow-up at least every 12 months, including a pacemaker check; and

(iv) a multi-pilot limitation (OML).

(11) QT prolongation

Applicant with QT prolongation of the QT interval on the ECG associated with symptoms should be disqualifying. Asymptomatic applicants require cardiological evaluation for a fit assessment and a multi-pilot limitation may be required.

(12) Brugada pattern on electrocardiography

Applicants with a Brugada pattern Type 1 should be assessed as unfit. Applicants with Type 2 or Type 3 may be assessed as fit, with limitations as appropriate, subject to satisfactory cardiological evaluation.

AMC2 MED.B.010 Cardiovascular system (Class 2)

(a) Examination

Exercise electrocardiography: An exercise ECG when required as part of a cardiovascular assessment should be symptom-limited and completed to a minimum of Bruce Stage IV or equivalent.

(b) General

(1) Cardiovascular risk factor assessment

An accumulation of risk factors (smoking, family history, lipid abnormalities, hypertension, etc.) requires cardiovascular evaluation.

(2) Cardiovascular assessment

Reporting of resting and exercise electrocardiograms should be by an approved specialist.

(c) Peripheral arterial disease

A fit assessment may be considered for an applicant with peripheral arterial disease, or after surgery for peripheral arterial disease, provided there is no significant functional impairment, any vascular risk factors have been reduced to an appropriate level, the applicant is receiving acceptable secondary prevention treatment, and there is no evidence of myocardial ischaemia.

(d) Aortic aneurysm

(1) Applicants with an aneurysm of the infra-renal abdominal aorta of less than 5 cm in diameter may be assessed as fit, subject to satisfactory cardiological evaluation. Regular cardiological evaluations should be carried out.

(2) Applicants with an aneurysm of the thoracic or supra-renal abdominal aorta of less than 5 cm in diameter may be assessed as fit with an ORL or OSL, subject to satisfactory cardiological evaluation. Regular follow-up should be carried out.

(3) Applicants may be assessed as fit after surgery for an infra-renal abdominal aortic aneurysm, subject to satisfactory cardiological evaluation. Regular cardiological evaluations should be carried out.

(4) Applicants may be assessed as fit with an ORL or OSL after surgery for a thoracic or supra-renal abdominal aortic aneurysm, subject to satisfactory cardiological evaluation. Regular cardiological evaluations should be carried out

(e) Cardiac valvular abnormalities

(1) Applicants with previously unrecognised cardiac murmurs require further cardiological evaluation.

(2) Applicants with minor cardiac valvular abnormalities may be assessed as fit.

(3) Aortic valve disease

(i) Applicants with a bicuspid aortic valve may be assessed as fit if no other cardiac or aortic abnormality is demonstrated. Follow-up with echocardiography, as necessary, should be determined in consultation with the Aeromedical Inspector of the GCAA.

(ii) Applicants with aortic stenosis may be assessed as fit provided the left ventricular function is intact and the mean pressure gradient is less than 20 mmHg. Applicants with an aortic valve orifice of more than 1 cm2 and a mean pressure gradient above 20 mmHg, but not greater than 50 mmHg, may be assessed as fit with an ORL or OSL.

Follow-up with 2D Doppler echocardiography, as necessary, should be determined in consultation with the GCAA the in all cases. Alternative measurement techniques with equivalent ranges may be used. Regular cardiological evaluation should be considered. Applicants with a history of systemic embolism or significant dilatation of the thoracic aorta should be assessed as unfit.

(iii) Applicants with trivial aortic regurgitation may be assessed as fit. Applicants with a greater degree of aortic regurgitation may be assessed as fit with an OSL. There should be no demonstrable abnormality of the ascending aorta on 2D Doppler echocardiography. Follow-up, as necessary, should be determined in consultation with the GCAA.

(4) Mitral valve disease

(i) Asymptomatic applicants with an isolated mid-systolic click due to mitral leaflet prolapse may be assessed as fit.

(ii) Applicants with rheumatic mitral stenosis should be assessed as unfit.

(iii) Applicants with minor regurgitation may be assessed as fit. Periodic cardiological review should be determined in consultation with the GCAA.

(iv) Applicants with moderate mitral regurgitation may be considered as fit with an ORL or OSL if the 2D Doppler echocardiogram demonstrates satisfactory left ventricular dimensions and satisfactory myocardial function is confirmed by exercise electrocardiography. Periodic cardiological review should be determined in consultation with the GCAA.

(v) Applicants with evidence of volume overloading of the left ventricle demonstrated by increased left ventricular end-diastolic diameter or evidence of systolic impairment should be assessed as unfit.

(f) Valvular surgery

(1) Applicants who have undergone cardiac valve replacement or repair may be assessed as fit if post-operative cardiac function and investigations are satisfactory and no anticoagulants are needed.

(2) Where anticoagulation is needed after valvular surgery, a fit assessment with an ORL or OSL may be considered after cardiological evaluation if the haemorrhagic risk is acceptable. The review should show that the anticoagulation is stable. Anticoagulation should be considered stable if, within the last 6 months, at least 5 INR values are documented, of which at least 4 are within the INR target range. The INR target range should be determined by the type of surgery performed. Applicants who measure their INR on a 'near patient' testing system within 12 hours prior to flight and only exercise the privileges of their licence(s) if the INR is within the target range, may be assessed as fit without the above-mentioned limitation. The INR results should be recorded and the results should be reviewed at each aero-medical assessment. Applicants taking anticoagulation medication not requiring INR monitoring, may be assessed as fit without

the above-mentioned limitation in consultation with the GCAA after a stabilisation period of 3 months.

(g) Thromboembolic disorders

Applicants with arterial or venous thrombosis or pulmonary embolism should be assessed as unfit. A fit assessment with an ORL or OSL may be considered after a period of stable anticoagulation as prophylaxis in consultation with the GCAA. Anticoagulation should be considered stable if, within the last 6 months, at least 5 INR values are documented, of which at least 4 are within the INR target range and the haemorrhagic risk is acceptable. Applicants who measure their INR on a 'near patient' testing system within 12 hours prior to flight and only exercise the privileges of their licence(s) if the INR is within the target range may be assessed as fit without the above-mentioned limitation. The INR results should be recorded and the results should be reviewed at each aero-medical assessment. Applicants taking anticoagulation medication not requiring INR monitoring, may be assessed as fit without the above-mentioned limitation in consultation with the Aeromedical inspector of the GCAA. After a stabilisation period of 3 months. Applicants with pulmonary embolism should also undergo a cardiological evaluation. Following cessation of anticoagulant therapy for any indication, applicants should undergo a re-assessment in consultation with the Aeromedical Inspector of the GCAA.

(h) Other cardiac disorders

(1) Applicants with a primary or secondary abnormality of the pericardium, myocardium or endocardium may be assessed as unfit pending satisfactory cardiological evaluation.

(2) Applicants with a congenital abnormality of the heart, including those who have undergone surgical correction, may be assessed as fit subject to satisfactory cardiological assessment. Cardiological follow-up may be necessary and should be determined in consultation with the GCAA.

(i) Syncope

Applicants with a history of recurrent vasovagal syncope may be assessed as fit after a 6-month period without recurrence, provided that cardiological evaluation is satisfactory. Neurological review may be indicated.

(j) Blood pressure

(1) When the blood pressure at examination consistently exceeds 160 mmHg systolic and/or 95 mmHg diastolic, with or without treatment, the applicant should be assessed as unfit.

(2) The diagnosis of hypertension requires review of other potential vascular risk factors.

(3) Applicants with symptomatic hypotension should be assessed as unfit.

(4) Anti-hypertensive treatment should be compatible with flight safety.

(5) Following initiation of medication for the control of blood pressure, applicants should be re-assessed to verify that the treatment is compatible with the safe exercise of the privileges of the licence held.

(k) Coronary artery disease

(1) Chest pain of uncertain cause requires full investigation.

(2) In suspected asymptomatic coronary artery disease cardiological evaluation should show no evidence of myocardial ischaemia or significant coronary artery stenosis.

(3) After an ischaemic cardiac event, or revascularisation, applicants without symptoms should have reduced any vascular risk factors to an appropriate level. Medication, when used to control angina pectoris, is not acceptable. All applicants should be on acceptable secondary prevention treatment.

(i) A coronary angiogram obtained around the time of, or during, the ischaemic myocardial event and a complete, detailed clinical report of the ischaemic event and of any operative procedures should be available to the AME.

(A) There should be no stenosis more than 50 % in any major untreated vessel, in any vein or artery graft or at the site of an angioplasty/stent, except in a vessel subtending a myocardial infarction. More than two stenoses between 30 % and 50 % within the vascular tree should not be acceptable.

(B) The whole coronary vascular tree should be assessed as satisfactory and particular attention should be paid to multiple stenoses and/or multiple revascularisations.

(C) An untreated stenosis greater than 30 % in the left main or proximal left anterior descending coronary artery should not be acceptable.

(ii) At least 3 to 6 months from the ischaemic myocardial event, including revascularisation, the following investigations should be completed (equivalent tests may be substituted):

(A) an exercise ECG showing neither evidence of myocardial ischaemia nor rhythm disturbance;

(B) an echocardiogram showing satisfactory left ventricular function with no important abnormality of wall motion and a satisfactory left ventricular ejection fraction of 50 % or more;

(C) in cases of angioplasty/stenting, a myocardial perfusion scan or stress echocardiogram which should show no evidence of reversible myocardial ischaemia. If there is doubt about revascularisation in myocardial infarction or bypass grafting, a perfusion scan should also be required;

(D) further investigations, such as a 24-hour ECG, may be necessary to assess the risk of any significant rhythm disturbance.

(iii) Periodic follow-up should include cardiological review.

(A) After coronary artery bypass grafting, a myocardial perfusion scan (or satisfactory equivalent test) should be performed if there is any indication, and in all cases within five years from the procedure for a fit assessment without a safety pilot limitation.

(B) In all cases, coronary angiography should be considered at any time if symptoms, signs or non-invasive tests indicate myocardial ischaemia.

(iv) Successful completion of 3 to 6 months or subsequent review will allow a fit assessment.

(4) Applicants may be assessed as fit with a safety pilot limitation having successfully completed only an exercise ECG.

(5) Angina pectoris is disqualifying, whether or not it is abolished by medication.

(l) Rhythm and conduction disturbances

(1) Applicants with significant rhythm or conduction disturbance should undergo cardiological evaluation before a fit assessment may be considered with an ORL or OSL, as appropriate. Such evaluation should include:

(i) exercise ECG to the Bruce protocol or equivalent. Bruce stage 4 should be achieved and no significant abnormality of rhythm or conduction, or evidence of myocardial ischaemia should be demonstrated. Withdrawal of cardioactive medication prior to the test should normally be required;

(ii) 24-hour ambulatory ECG which should demonstrate no significant rhythm or conduction disturbance;

(iii) 2D Doppler echocardiogram which should show no significant selective chamber enlargement or significant structural or functional abnormality, and a left ventricular ejection fraction of at least 50 %.

(iv) Further evaluation may include (equivalent tests may be substituted):

(A) 24-hour ECG recording repeated as necessary;

(B) electrophysiological study;

(C) myocardial perfusion imaging;

(D) cardiac magnetic resonance imaging (MRI);

(E) coronary angiogram.

(2) Where anticoagulation is needed for a rhythm disturbance, a fit assessment with an ORL or OSL may be considered, if the haemorrhagic risk is acceptable and the anticoagulation is stable. Anticoagulation should be considered stable if, within the last 6 months, at least 5 INR values are documented, of which at least 4 are within the INR target range. Applicants who measure their INR on a 'near patient' testing system within 12 hours prior to flight and only exercise the privileges of their licence(s) if the INR is within the target range may be assessed as fit without the above-mentioned limitation. The INR results

should be recorded and the results should be reviewed at each aero-medical assessment. Applicants taking anticoagulation medication not requiring INR monitoring, may be assessed as fit without the above-mentioned limitation in consultation with the GCAA

(3) Ablation: A fit assessment may be considered following successful catheter ablation subject to satisfactory cardiological review undertaken at a minimum of 2 months after the ablation.

(4) Supraventricular arrhythmias

(i) Applicants with significant disturbance of supraventricular rhythm, including sinoatrial dysfunction, whether intermittent or established, may be assessed as fit if cardiological evaluation is satisfactory.

(ii) Applicants with atrial fibrillation/flutter may be assessed as fit if cardiological evaluation is satisfactory and the stroke risk is sufficiently low. Where anticoagulation is needed, a fit assessment with an ORL or OSL may be considered after a period of stable anticoagulation as prophylaxis, in consultation with the medical assessor of the licensing authority. Anticoagulation should be considered stable if, within the last 6 months, at least 5 INR values are documented, of which at least 4 are within the INR target range.

(iii) Applicants who measure their INR on a 'near patient' testing system within 12 hours prior to flight and only exercise the privileges of their licence(s) if the INR is within the target range may be assessed as fit without the above-mentioned limitation. The INR results should be recorded and the results should be reviewed at each aero-medical assessment. Applicants taking anticoagulation medication not requiring INR monitoring, may be assessed as fit without the above-mentioned limitation in consultation with the medical assessor of the GCAA after a stabilisation period of 3 months.

(iv) Applicants with asymptomatic sinus pauses up to 2.5 seconds on resting electrocardiography may be assessed as fit if cardiological evaluation is satisfactory.

(5) Heart block

(i) Applicants with first degree and Mobitz type 1 AV block may be assessed as fit.

(ii) Applicants with Mobitz type 2 AV block may be assessed as fit in the absence of distal conducting tissue disease.

(6) Complete right bundle branch block

Applicants with complete right bundle branch block may be assessed as fit with appropriate limitations, such as an ORL, subject to satisfactory cardiological evaluation.

(7) Complete left bundle branch block

Applicants with complete left bundle branch block may be assessed as fit with appropriate limitations, such as an ORL, subject to satisfactory cardiological assessment.

(8) Ventricular pre-excitation

Asymptomatic applicants with ventricular pre-excitation may be assessed as fit with limitation(s) as appropriate, subject to satisfactory cardiological evaluation. Limitations may not be necessary if an electrophysiological study is conducted and the results are satisfactory.

(9) Pacemaker

Applicants with a subendocardial pacemaker may be assessed as fit no sooner than 3 months after insertion provided:

(i) there is no other disqualifying condition;

(ii) a bipolar lead system is used, programmed in bipolar mode without automatic mode change of the device;

(iii) the applicant is not pacemaker dependent; and

(iv) the applicant has a regular follow-up at least every 12 months, including a pacemaker check.

(10) QT prolongation

Applicants with asymptomatic QT prolongation may be assessed as fit with an ORL or OSL subject to satisfactory cardiological evaluation.

(11) Brugada pattern on electrocardiography

Applicants with a Brugada pattern Type 1 should be assessed as unfit. Applicants with Type 2 or Type 3 may be assessed as fit, with limitation(s) as appropriate, subject to satisfactory cardiological evaluation.

(m) Heart or heart/lung transplantation

(1) Applicants who have undergone heart or heart/lung transplantation may be assessed as fit, with appropriate limitation(s) such as an ORL, no sooner than 12 months after transplantation, provided that cardiological evaluation is satisfactory with:

(i) no rejection in the first year following transplantation;

(ii) no significant arrhythmias;

(iii) a left ventricular ejection fraction ≥ 50%;

(iv) a symptom limited exercise ECG; and

(v) a coronary angiogram if indicated;

(2) Regular cardiological evaluations should be carried out.

GM1 MED.B.010 Cardiovascular system (Class 1 & 2)

Cardiovascular risk assessment:

(a) **Indication:**

(1) Hypertension

(2) Hyperlipidaemia

(3) Diabetes

(4) Smoking in combination with other risk factors

(5) Obesity, and lack of exercise

(6) Adults age 40, 45, 50, 55, 60 and then annually

(7) The Metabolic Syndrome (hypertension, hyperlipidaemia, insulin resistance and truncal obesity) carries a significantly increased risk of such event.

(8) Obstructive Sleep Apnoea

(b) **Method for CVD risk assessment**

(1) Test required for assessment include but are not limited to Lipid profile, check for blood pressure, random blood glucose and HBA1c.

(2) The AME should use internationally recognised calculators/charts/or score cards for the estimation of CHD.

(3) The preferred calculator for GCAA medical examination is as below; this calculator considers all the risks factors – the modifiable and non-modifiable:
http://www.patient.co.uk/doctor/Primary-Cardiovascular-Risk-Calculator.htm

(c) **Assessing and management of the cardiovascular risks**

(1) Risk group less than 10% risk over 10 years

The licence may be issued without limitation once all modifiable risk factors have been discussed with the applicant. A management strategy should be detailed in the reports to the licensing authority.

(2) Risk group 10-20% over 10 years:

(i) Modifiable risk factors should be addressed in conjunction with adjustment of current or the addition of approved prevention medications e.g. Statins

(ii) After the control of the modifiable risk factors, if the calculated risk remains in the intermediate zone, further cardiac evaluation by an approved cardiologist should be required.

(iii) If cardiac evaluation rules out significant risk of Ischemic heart events, the medical certificate may be issued with OML restriction, and annual approved cardiology follow up.

(3) Risk group > 20% over 10 years, or presence of diabetes, left ventricular hypertrophy , symptomatic carotid disease (CVA,TIA) , or Peripheral Vascular Disease including Aneurysm, Abnormal Tests – ABIs)

(i) The licence holder should be grounded

(ii) An approved cardiac consultation will be required with further cardiac evaluation to rule out any significant risk of ischemic heart events changes.

(iii) All the modifiable risk factor should be discussed with the applicant and a management strategy detailed in the report to the licensing authority.

(iv) On satisfactory the medical certificate may be issued with OML restriction and cardiology follow up as detailed by the approved cardiologist.

GM2 MED.B.010 Cardiovascular system (Class 1 & 2)

(a) Valvular Heart Disease

(1) Upon initial diagnosis of Valvular Heart Disease, the applicant should be suspended and referred to Approved GCAA Cardiologist.

(2) The cardiologist should perform - A comprehensive transthoracic echocardiogram (TTE) with 2–dimensional (2D) imaging and Doppler interrogation should then be performed to correlate findings with initial impressions based on the initial clinical evaluation.

(3) Other ancillary testing such as transesophageal echocardiography (TEE), computed tomography (CT) or cardiac magnetic resonance (CMR) imaging, stress testing, and diagnostic hemodynamic cardiac catheterization may be required If transthoracic echo is not enough to establish the diagnosis and severity.

(4) Following the comprehensive assessment, the Cardiologist should submit a report to the AME with the following details:

(i) Risk of progression of the valvular heart disease

(ii) Prognosis and timing of valve intervention

(iii) If the applicant is symptomatic

(iv) If the applicant is asymptomatic but has an evidence of severe valvular heart disease

(v) Quantify hemodynamic severity (Pressure gradient, valve area…)

(vi) Left & right ventricular system function

(vii) Presence of LVH

(viii) Pulmonary artery pressure

(ix) Left ventricular thickness

(x) Disease classification (mild/moderate/severe)

(xi) Propensity of the disease to develop arrhythmia

(xii) Presence of other anatomical abnormalities in the heart (concomitant valvular lesions)

(xiii) Presence of Co-morbidity (HTN, CHD, DM, Smoker)

(xiv) Treatment required for cardioversion if arrhythmia present

(xv) Need for anticoagulation

(xvi) Need to use vasodilators

(xvii) Evidence of volume overloading of the left ventricle

(xviii) A history of transient ischaemic attack (TIA)

(xix) Cardiology recommendation (The cardiologist should report if there is a need for long term anticoagulation (duration, medication dose and frequency) and the need for any labs monitoring

(5) For reinstatement, the AME should determine the risk of incapacitation and modify the risks by addition of appropriate limitations.

(6) Cases which require a surgical intervention should be evaluated on case by case basis.

(7) Follow up recommendations

Follow-up of these cases should be made based on the Cardiologist evaluation of the case who should determine the frequency of the visit and other cardiac testing. However, evaluation of the patient may be necessary sooner if there is a change in the patient's symptoms.

(b) Aortic Valve Disease

(1) Bicuspid Aortic Valve

(i) Provided no other abnormality (2D Doppler flow rate <2.0 m/sec) is present a fit assessment without limitation may be considered for all the classes of medicals. And Biennial Cardiologist review will be required

(ii) If the aortic root is > 4.0cm, a multi-pilot (Class 1 'OML' limitation required, for Class 2 require a safety pilot (Class 2 'OSL') limitation. Annual review by a cardiologist is required for all the classes of medical.

(iii) An aortic root diameter >4.5 cm is disqualifying for all classes.

(2) Aortic Stenosis

On diagnosis of the condition, the AME should inform the GCAA and advise applicant not to exercise the privileges of his licence until cleared to do so by GCAA. This will be considered once investigations have been completed and results assessed as satisfactory to the GCAA.

(i) **Investigations required for recertification are:**

(A) Routine aviation medical examination

(B) Approved cardiologist's assessment and risk calculation

(C) Standard 24 lead ECG

(D) Doppler echocardiogram

(E) Other investigations as necessary

(ii) **Aeromedical Disposition**

(A) A fit assessment requires an intact left ventricular function and depends mainly on the mean pressure gradient, but other factors such as left ventricular hypertrophy, reduced left ventricular diastolic function, reduced left ventricular ejection fraction, aortic valve calcification, reduced valve area and aortic regurgitation will need to be considered. Applicants with a minor aortic stenosis (mean pressure gradient of up to 20 mm Hg and Doppler peak aortic velocity 2.5 m/s)) may be assessed as fit without restriction.

(B) Applicants with a mild aortic stenosis (mean pressure gradient above 20 and of up to 40 mm Hg & Doppler peak aortic velocity 2.5–3.0 m/s) may be assessed as with a multi-pilot (Class 1 'OML') limitation.

(C) Applicants with a more severe aortic stenosis (mean pressure gradient of up to 50 mm Hg & Doppler peak aortic velocity > 3.0) may be assessed as with a multi-pilot (Class 1 'OML') limitation and close cardiological supervision.

(D) Applicant with mean pressure gradient above 50 mm Hg cannot be certified for Class 1.

(E) Evidence of valvular calcification should restrict the licence to multi-crew operations (Class 1 'OML') . Attributable symptoms will disbar.

(F) No significant left ventricular hypertrophy (free wall and septal thickness > 1.1 cm) nor dilatation, (left ventricular diastolic diameter > 5.6 cm in dominant stenosis, > 6.0 cm in dominant regurgitation) should be present for recertification.

(G) A history of transient ischaemic attack (TIA) disqualifies for all classes of certification.

(iii) **Subsequent Reviews**

At annual intervals:

(A) Routine aviation medical examination

(B) Approved cardiologist review

(C) Standard 24 lead ECG

(D) Doppler echocardiogram

(3) Aortic regurgitation

Aortic regurgitation is well tolerated and even moderate regurgitation may be present for very many years. On diagnosis of the condition, the AME should inform the GCAA and advise the applicant not to exercise the privileges of his licence until cleared to do so by GCAA. This will not be considered until all investigations have been completed and results assessed as satisfactory to the GCAA.

(i) **Investigations required for recertification are:**

(A) Routine aviation medical examination

(B) Approved cardiologist's assessment

(C) Standard 24 lead ECG

(D) Doppler echocardiogram

(E) Exercise ECG to Bruce protocols or equivalent

(F) Minor regurgitation in the absence of aortic root disease may be compatible with fit assessment for all the classes.

(G) Co-existent dilatation of the aortic root >5 cm is disqualifying.

(H) There should be no significant arrhythmia, and the effort performance should be normal. Significant increase in the end-systolic (> 4.4 cm) and/or end-diastolic (> 6.5 cm) diameters of the left ventricle (i)There should be no significant increase in the left ventricular end systolic diameter of the hear (arbitrarily > 6.0 cm) and no increase of the left ventricular end diastolic diameter (> 4.1 cm) measured on echocardiography., with or without evidence of impairment of systolic/diastolic function will also disqualify.

(ii) **Subsequent Reviews**

At annual intervals:

(A) Routine aviation medical examination

(B) Approved cardiologist review

(C) Standard 24 lead ECG

(D) Doppler echocardiogram

(c) Mitral valve disease

(1) **Rheumatic mitral stenosis/regurgitation**, unless minimal with the subject in sinus rhythm, disbars from all forms of certification to fly. This is due to the excess risk of incapacitation, secondary to the unpredictable onset of atrial fibrillation, and a significant risk of cerebral embolism. In mitral stenosis the onset of atrial fibrillation, if the rate is rapid, may be associated with hypotension or pulmonary oedema.

(2) **Non-rheumatic non-ischaemic mitral regurgitation** in subjects of pilot age is usually due to prolapse of either or both leaflets of the valve. When caused by rupture of the chordae or ischaemic injury to the papillary musculature, it disbars from certification to fly.

(3) **Mitral leaflet prolapse** is a common condition affecting up to five per cent of males and eight per cent of females, but definitions vary. It has been associated with a tendency to atrial and/or ventricular rhythm disturbances and atypical chest pain. There is a very small risk of cerebral embolus, sudden death and endocarditis (all < 0.02 per cent per annum) and also of chordal rupture. Thickening or significant redundancy of the valve leaflets is associated with a higher embolic risk and needs special consideration.

(4) **Minor degenerative mitral regurgitation** in the presence of a pan or late systolic murmur, normal left ventricular dimensions on echocardiography and no other potentially disqualifying abnormality may be consistent with unrestricted certification but requires close cardiological review with early restriction if there is any change, especially in the end-systolic/diastolic diameters of the heart. Ischaemic mitral regurgitation is disqualifying.

(5) **In non-rheumatic non-ischaemic mitral regurgitation**, annual cardiological review will be required, to include echocardiography and 24-hour ambulatory monitoring. Exercise ECG may also be indicated. A left ventricular systolic diameter > 4.1 cm and/or an end-diastolic diameter > 6.0 cm should disbar from all classes of certification to fly. The presence of atrial fibrillation in this context is also disbarring.

GM3 MED.B.010 Cardiovascular system

(a) Ventricular Pre-Excitation

Asymptomatic applicants with pre-excitation may be assessed as fit if they meet the following criteria, which may also indicate a satisfactory electrophysiological evaluation:

(1) no inducible re-entry tachycardia;

(2) refractory period > 300 ms;

(3) no induced atrial fibrillation;

(4) no evidence of multiple accessory pathways.

GM4 MED.B.010 Cardiovascular system

(a) Anticoagulation

Applicants taking anticoagulant medication which requires monitoring with INR testing, should measure their INR on a 'near patient' testing system within 12 hours prior to flight and the privileges

of the applicable license(s) should only be exercised if the INR is within the target range. The INR result should be recorded and the results should be reviewed at each aero-medical assessment.

GM5 MED.B.010 Cardiovascular system

(a) Hypertension

(1) For diagnosing a person with Hypertension, please use the NICE guideline (http://www.nice.org.uk/nicemedia/live/13561/56015/56015.pdf) or (https://www.acc.org/~/media/Non-Clinical/Files-PDFs-Excel-MS-Word%20etc/Guidelines/2017/Guidelines_Made_Simple_2017_HBP.pdf)

(2) Diagnosing Hypertension If blood pressure (BP) >140/90, take second measurement during examination. If second measurement substantially different, take a third measurement. If BP >140/90, perform 24hr ambulatory BP.

(3) Evaluation required for recertification which should be done by GCAA Approved Cardiologist

(i) Documentation of good blood pressure control which require 24-hour BP check at initial diagnosis and after successful treatment, without significant side effects, this should be confirmed by undertaking a repeat 24 hr BP check no sooner than 10 days after starting treatment. If 24hr ambulatory BP cannot be tolerated or for class 2, Cabin crew or LSA certificate holders, home blood pressure monitoring is acceptable (for each blood pressure recording, take 2 measurements 1 minute apart, take 2 recordings a day for at least 4 days, discard 1st day measurements and use average value of remaining measurements).

(ii) Documentation of an absence of end organ damage.

(iii) Initial evaluation should include:

(A) Lipid levels- cholesterol, LDL, HDL, Total cholesterol/ HDL ratio, Triglycerides

(B) Random blood glucose and HBA1c and Renal Function Test,

(C) Full blood count,

(D) Liver function tests

(E) Carbohydrate deficient transferrin (only if it protracted or uncontrolled High Blood pressure)

(F) Urine micro albumin

(G) Standard 12 lead ECG

(H) Cardiac echo

(I) Fundoscopic examination

(J) Ambulatory blood pressure monitoring should always be employed in cases of doubt (or for diagnosis of borderline hypertension or suspected white coat hypertension)

(K) Exclusion of secondary causes including an assessment of the risk of obstructive sleep apnoea

(L) Any pathology detected will require specialist evaluation and risk mitigation

(iv) Subsequent review annually which should be done by AME

(A) Lipid levels- cholesterol, LDL, HDL, Total cholesterol/ HDL ratio, Triglycerides.

(B) Random blood glucose and HBA1c

(C) Renal Function test

(D) Standard 12 lead ECG & Echocardiogram

(E) Urine micro albumin level

(F) Comment on evidence for hypertensive Fundoscopic findings

(G) Documentation of good blood pressure control (from clinic visit or daily review of the record from B.P measurement machine).

(H) Echocardiogram and other relevant cardiac assessment (Only if indicated by the Cardiologist)

Note: The re-evaluation by echocardiographic examination of known hypertensive patient should be requested if there is change in the clinical status, or for patients who are suspected with having left ventricular hypertrophy (LVH), left atrial (LA) dilatation, or concomitant heart diseases and with multiple risk factors (10-year cardiovascular risk ≥10%).

(4) Aeromedical consideration

(i) Diagnosis of secondary hypertension should be reviewed on case by case basis.

(ii) The diagnosis of uncontrolled hypertension is disqualifying

(iii) Unrestricted Medical certificate is possible if adequate control of blood pressure is achieved (BP<140/90), There is no evidence of end-organ damage, there is no significant medication side effects and There is absence of other cardiovascular risk factors.

(iv) A restricted Medical certificate to multi-pilot operations (Class 1 'OML') may be required if there is evidence of end-organ damage; and /or presence of other cardiovascular risk factors (10 year cardiovascular risk ≥10%)

(v) Pilots with complications of hypertension or multiple risk factors may need to be referred to or discussed with the AMS.

(5) Acceptable treatments for Hypertension

(i) Most modern antihypertensive agents are acceptable for control of hypertension in all license holders, provided the applicant is established on medication and has exhibited no adverse side effects from the drugs.

(A) The angiotensin converting enzyme (ACE) inhibitors (such as enalapril, lisinopril, ramipril, perindopril),

(B) angiotensin receptor blockers (ARB) (e.g. losartan, valsartan, candesartan), which block the angiotensin II receptor and have a very low side effect profile and,

(C) the slow channel calcium-blockers (CCB) (such as amlodipine, nicardipine) are the products of choice, for use by flight crew subject to careful supervision.

(D) Thiazide diuretics use in flight crew or Cabin crew member does not require any flying restriction and the Combinations of thiazide with spironolactone may also be compatible with flying.

(E) The Beta-blockers may be compatible with flying if they are prescribed for a condition having no adverse effect on flying safety. Selective B1 blockers (e.g. Atenolol) are preferred for flying personal.

(F) Central antihypertensive drugs are considered Incompatible with flying duties e.g.clonidine, alphamethyldopa.

(G) Vasodilators are also considered incompatible with flying duties e.g. prazosin, dihydralazin.

(ii) The applicant must not pilot any aircraft following the commencement of antihypertensive therapy or of a changed treatment regimen until such time as there are no significant side effects from medication,i.e within two weeks of the commencement of therapy or change in medication.

(iii) The pilot should be restricted to multi-pilot operations (Class 1 'OML')) unless it can be demonstrated that his overall risk of cardiovascular event, considering his age, treated and untreated blood pressure levels and any other vascular risk factor presence, is normal or near normal in actuarial terms.

(iv) Any changes in medication or dosage should be notified to an AME and will require a two weeks period of grounding. After two weeks the pilot should provide their AME with a report from GCAA approved Cardiologist to confirm the changes, stability of BP and no treatment related side-effects.

Note : All Hypertension report should follow the specification set in Appendix 4.

GM6 MED.B.010 Cardiovascular system

(a) Rhythm and conduction disturbances

(1) Atrioventricular Conduction Disturbances

(i) First degree atrioventricular block is present if the PR interval exceeds 210 ms.

(A) In the absence of broadening of the QRS width > 100 ms, the condition is very likely to be benign.

(B) The interval should shorten on exercise.

(C) Occasionally, very long PR intervals are seen of up to 400 ms; these, too, seem to be benign, provided the QRS width is normal, the interval shortens on exercise, and following atropine.

(D) It is sometimes associated with Mobitz type I atrioventricular block (decremental atrioventricular conduction), which should be of short periodicity and occur only at night in young adults.

(E) The additional presence of a bundle branch disturbance, particularly if the mean frontal QRS axis is abnormal, raises the possibility of distal conducting tissue disease.

(ii) Second degree atrioventricular block

(A) Short periodicity (i.e. 2:3 and 3:4) Mobitz type I atrio-ventricular block. It requires a 24-hour ambulatory monitoring and an exercise recording. And long-term follow-up is necessary, and a multi-crew (OML) restriction is required on the medical certificate. The additional presence of an abnormal electrical axis and/or bundle branch disturbance is likely to disbar.

(B) Mobitz type II and 2:1 atrioventricular block represent delay in the His-Purkinje network and carry a risk of progression to complete atrioventricular block with risk of syncope. Such abnormalities should lead to a denial of medical certification.

(iii) Complete (third degree) atrioventricular block disbars from all classes of medical certification. Certification for Class 2 may be permitted Provided that there is no other disqualifying pathology and an endocardial pacemaker has been inserted.

Pacemaker dependence normally disqualifies from Class 1 operations.

(2) Atrial Fibrillation

(i) Certification in the context of atrial fibrillation requires:

(A) freedom from symptoms;

(B) sinus rhythm and normotension;

(C) normal TSH, LFTs and MCV;

(D) no history of transient ischaemic attack (TIA);

(E) absence of other risk factors for recurrence and/or for thromboembolic stroke, including age > 65 years,hypertension, diabetes, left ventricular hypertrophy, valvar heart disease, coronary heart disease(predicating need for warfarin);

(F) normal cavity and structural dimensions of the heart, normal valves and normal Doppler flows on echocardiography. The left atrial internal diameter should be < 4.5 cm;

(G) exercise walking time to be normal (> 10 minutes). In atrial fibrillation, the maximum heart rate should be< 230 bpm and the longest pause < 3.5 s;

(H) three Holter recordings over two to three months to have shown no evidence of atrial fibrillation

(I) arbitrarily defined as at least three to five consecutives normally conducted complexes;

(J) restriction of the licence with a multi-crew limitation. After an event-free period of two years, the restriction may be considered for removal, subject to review.

(ii) These are rigorous standards, which will be achieved by only a minority. Subjects of pilot age not fulfilling the above and who demonstrate paroxysmal/permanent atrial fibrillation in spite of medication may require anticoagulation with warfarin or other anticoagulant medicine, which itself require an individual assessment of risk. Aspirin/clopidogrel may be recommended by the supervising cardiologist in the absence of treatment with warfarin. In the event of default, further fitness consideration will require satisfactory answers to the following:

(A) is the thromboembolic rate acceptable without warfarin?

(B) are there symptoms at any time, i.e. on switching rhythm, and if so are they minimal?

(C) is the heart rate controlled well at rest and on exercise?

(D) is an approved/non-approved drug being taken?

(iii) AF permitted treatment:

(A) digoxin (mainly of value in controlling resting heart rate in the established condition);

(B) beta-blocking agents, usually atenolol or bisoprolol, which may to help preserve sinus rhythm and reduce the heart rate in atrial fibrillation. Sotalol also has some class III effect (as well as some pro-arrhythmic effect) and is permitted provided there is no demonstrated pro-arrhythmic effect;

(C) verapamil, which may help to preserve sinus rhythm and control the heart rate;

(D) diltiazem, both alone and combined with the foregoing (with care in the presence of beta-blockade) is helpful in rate management.

Note: None of these products is particularly effective, and in the long term atrial fibrillation is likely to become established. Their side-effect profile, however, is generally not high.

(iv) Medicines not permitted include the following:

(A) Class Ia anti-arrhythmic agents, such as:

- quinidine (excessive risk of torsades de pointes and sudden cardiac death (SCD).
- disopyramide (excessive anti-cholinergic side effects).
- procainamide (lupus-like syndrome and occasionally agranulocytosis).

(B) Class Ib drugs (e.g. mexiletine) which are ineffective in atrial rhythm disturbances,

(C) Class Ic agents (flecainide, propafenone) which are effective in bringing about the restoration of sinus rhythm and its maintenance but which have undesirable effects such as tremor and visual disturbances.Both may provoke atrial flutter in a minority (about five per cent).

(D) The most effective class III drug, amiodarone, which has a high-side effect profile and thus cannot be considered. The most common side effect, photo-sensitization, is less important than the disturbance of sleep and sedation that it may cause. Patients receiving this drug develop corneal micro-deposits, which may give a halo effect around lights at night.

(E) Class III drugs — moricizine, dofetilide and ibutilide.

(F) Warfarin.

Note: Aeromedical disposition of individual diagnosed with AF who require treatment will be done on case by case evaluation.

(3) Atrial Flutter

(i) Investigations for recertification should include:

(A) Routine aviation medical examination.

(B) An approved cardiologist's assessment including the following blood tests (thyroid function test, full blood count, liver function tests and carbohydrate deficient transferrin).

(C) Exercise ECG to Bruce protocols.

(D) 24 hour ECG monitoring.

(E) Echocardiogram.

(F) Further tests may be requested at the discretion of the cardiologist.

(ii) Aeromedical Disposition

(A) If drug treatment-which is acceptable for flying duties-, is required, there should be adequate rate control, without significant side effects, and there should be no underlying structural heart disease. If these conditions are satisfied, the applicant may be assessed fit with limitation.

(B) If the flutter circuit has undergone successful ablation with demonstrated bidirectional block, the arrhythmia has not recurred for three months, and the following protocol can be fulfilled, a Class 1 Medical Assessment with restriction to multi-crew operations may be issued subject to cardiological follow-up:

- Exercise ECG (completion of at least three stages of the Bruce protocol) is normal.
- Echocardiography shows a structurally normal heart.
- Absence of atrial flutter on Holter monitoring (evidence of atrial fibrillation will need further review).
- Electrophysiological study shows bidirectional isthmus block.

Note: Unrestricted certification may be considered after 12 months.

(4) Wolff-Parkinson-White (WPW) syndrome

(i) Investigations required for recertification are:

(A) Routine aviation medical examination.

(B) Approved cardiologist's assessment to exclude history of arrhythmia (Tachycardia or Atrial Fibrillation).

(C) Exercise ECG to Bruce protocols and symptom limited, for at least 9 minutes and no sustained arrhythmia.

(D) Electrophysiological studies should include an isoprenaline/adrenaline infusion sufficient to increase the sinus rate by 25%, and the following criteria should be met:

- HV interval < 70 ms
- No inducible atrio-ventricular re-entry tachycardia an antegrade refractory period of accessory pathway >300 msec (>250 msec with -delta interval during atrial fibrillation >300 ms (>250 msec with isoprenaline) Cycle length with 1:1 accessory pathway conduction >300 ms (>250 msec with isoprenaline)
- No evidence of multiple pathways.

(E) 24 hour ECG without significant rhythm or conduction disturbance.

(F) Echocardiogram showing a normal heart structure and normal LV and RV function.

(G) Further tests may be requested if needed according to the cardiologist decision.

(ii) Aeromedical Disposition

(A) If there is no history of arrhythmia, and an echocardiogram, exercise ECG and 24-hour ambulatory ECG recording are within normal limits, Class 1& 2 restricted certification may be considered.

(B) The presence of atrioventricular re-entrant tachycardia or paroxysmal atrial fibrillation in the presence of an accessory pathway is disqualifying.

(iii) Subsequent Reviews every six months:

(A) Routine aviation medical examination.

(B) Approved cardiologist review.

(C) 24 hour ECG monitoring.

(iv) Post Radiofrequency ablation of WPW syndrome

Investigations required for recertification are:

(A) Routine aviation medical examination.

(B) Approved cardiologist's assessment, without a history of arrhythmia (Tachycardia or Atrial Fibrillation).

(C) Exercise ECG to Bruce protocols up to stage 4, symptom limited, should be achieved and no significant abnormality of rhythm or conduction nor evidence of myocardial ischaemia should be demonstrable. Withdrawal of cardio-active medication prior to the test should be considered.

(D) 24 hour ECG without evidence of significant rhythm or conduction disturbance.

(E) Echocardiogram -no significant selective chamber enlargement or significant structural or functional abnormality and left ventricular ejection fraction of at least 50%.

(F) Electrophysiological studies-no evidence of accessory pathway, conduction pre or post isoprenaline/adrenaline.

(G) Further tests may be requested if needed according to cardiologist decision.

Note: Applicants who have undergone ablation therapy should be assessed as unfit. A fit assessment may be considered by the GCAA following successful catheter ablation and should require a multi-pilot limitation for at least one year, unless an electrophysiological study, undertaken at a minimum of 2 months after the ablation, demonstrates satisfactory results. For those whose long-term outcome cannot be assured by invasive or non-invasive testing, an additional period with a multi-pilot limitation and/or observation may be necessary. Cabin crew and Class 2 may gain unrestricted licence.

(5) Implantation of Cardiac Pacemaker

(i) Investigations for recertification are:

(A) Routine aviation medical examination (history of syncope, family history of sudden cardiac death or Brugada syndrome).

(B) An approved cardiologist's assessment.

(C) 24 hour ECG without significant rhythm or conduction disturbance.

(D) Echocardiogram.

(E) Exercise ECG-to Bruce stage VI showing no significant abnormality or evidence of myocardial ischemia.

(ii) Aeromedical disposition:

If the applicant does not have any other disqualifying conditions, and is not pacemaker dependent, and if the pacemaker used is bipolar lead system, then he may be re-certificated with Class 1 restricted licence. Class 2 may be re-certificated with unrestricted licence if they fulfil all the above requirements.

The use of Anti-tachycardia pacemaker and automatic implantable system defibrillating systems are disqualifying.

(iii) Subsequent investigations:

(A) Routine aviation medical examination every six months.

(B) Annual approved cardiologist's assessment with pacemaker check and 24 hour ECG.

MED.B.015 Respiratory System

(a) Applicants with significant impairment of pulmonary function shall be assessed as unfit. A fit assessment may be considered once pulmonary function has recovered and is satisfactory.

(b) For a Class 1 medical certificate, applicants are required to undertake pulmonary function tests at the initial examination and on clinical indication.

(c) For a Class 2 medical certificate, applicants are required to undertake pulmonary function tests on clinical indication.

(d) Applicants with Applicants with a medical history or diagnosis of any of the following medical conditions shall undertake respiratory evaluation with a satisfactory result before they may be assessed as fit:

(1) asthma requiring medication;
(2) active inflammatory disease of the respiratory system;
(3) active sarcoidosis;
(4) pneumothorax;
(5) sleep apnoea syndrome;
(6) major thoracic surgery;
(7) pneumonectomy;

Before further consideration is given to their application, applicants with an established diagnosis of any of the medical conditions specified in points (3) and (5) shall undergo satisfactory cardiological evaluation.

(e) Aero-medical assessment:

(1) applicants for a Class 1 medical certificate with any of the conditions detailed in (d) above shall be referred to the GCAA;

(2) applicants for a Class 2 medical certificate with any of the conditions detailed in (d) above shall be assessed in consultation with the GCAA

(f) Applicants for a Class 1 medical certificate who have undergone a total pneumonectomy shall be assessed as unfit.

AMC1 MED.B.015 Respiratory system (Class1)

(a) Examination

(1) Spirometry

Spirometric examination is required for initial examination. An FEV1/FVC ratio less than 70 % at initial examination should require evaluation by a specialist in respiratory disease.

(2) Chest radiography

Posterior/anterior chest radiography may be required at initial, revalidation or renewal examinations when indicated on clinical or epidemiological grounds.

(b) Chronic obstructive airways disease

Applicants with chronic obstructive airways disease should be assessed as unfit. Applicants with only minor impairment of their pulmonary function may be assessed as fit.

(c) Asthma

Applicants with asthma requiring medication or experiencing recurrent attacks of asthma may be assessed as fit if the asthma is considered stable with satisfactory pulmonary function tests and medication is compatible with flight safety. Systemic steroids are disqualifying.

(d) Inflammatory disease

For applicants with active inflammatory disease of the respiratory system a fit assessment may be considered when the condition has resolved without sequelae and no medication is required.

(e) Sarcoidosis

(1) Applicants with active sarcoidosis should be assessed as unfit. Investigation should be undertaken with respect to the possibility of systemic, particularly cardiac, involvement. A fit assessment may be considered if no medication is required, and the disease is investigated and shown to be limited to hilar lymphadenopathy and inactive.

(2) Applicants with cardiac sarcoid should be assessed as unfit.

(f) Pneumothorax

(1) Applicants with a spontaneous pneumothorax should be assessed as unfit. A fit assessment may be considered if respiratory evaluation is satisfactory:
  (i) 1 year following full recovery from a single spontaneous pneumothorax;
  (ii) at revalidation, 6 weeks following full recovery from a single spontaneous pneumothorax, with a multi-pilot limitation and modification of all risk factors; limitation can be lifted after one year after full recovery.
  (iii) following surgical intervention in the case of a recurrent pneumothorax provided there is satisfactory recovery.

(2) A recurrent spontaneous pneumothorax that has not been surgically treated is disqualifying.

(3) A fit assessment following full recovery from a traumatic pneumothorax as a result of an accident or injury may be acceptable once full absorption of the pneumothorax is demonstrated.

(g) Thoracic surgery

(1) Applicants requiring major thoracic surgery should be assessed as unfit until recovery is complete, the applicant is asymptomatic, and the risk of secondary complication is minimal.

(2) A fit assessment following lesser chest surgery may be considered after satisfactory recovery and full respiratory evaluation.

(h) Sleep apnoea syndrome/sleep disorder

Applicants with unsatisfactorily treated sleep apnoea syndrome should be assessed as unfit.

AMC2 MED.B.015 Respiratory system (Class 2)

(a) Examination

Chest radiography: Posterior/anterior chest radiography may be required if indicated on clinical grounds.

(b) Chronic obstructive airways disease

Applicants with only minor impairment of pulmonary function may be assessed as fit.

(c) Asthma

Applicants with asthma may be assessed as fit if the asthma is considered stable with satisfactory pulmonary function tests and medication is compatible with flight safety. Systemic steroids should be disqualifying.

(d) Inflammatory disease

Applicants with active inflammatory disease of the respiratory system should be assessed as unfit pending resolution of the condition.

(e) Sarcoidosis

(1) Applicants with active sarcoidosis should be assessed as unfit. Investigation should be undertaken with respect to the possibility of systemic involvement. A fit assessment may be considered once the disease is inactive.

(2) Applicants with cardiac sarcoid should be assessed as unfit.

(f) Pneumothorax

(1) Applicants with spontaneous pneumothorax should be assessed as unfit. A fit assessment may be considered if respiratory evaluation is satisfactory: six weeks following full recovery from a single spontaneous pneumothorax or following recovery from surgical intervention in the case of treatment for a recurrent pneumothorax.

(2) A fit assessment following full recovery from a traumatic pneumothorax as a result of an accident or injury may be acceptable once full absorption of the pneumothorax is demonstrated.

(g) Thoracic surgery

Applicants requiring major thoracic surgery should be assessed as unfit until recovery is complete, the applicant is asymptomatic, and the risk of secondary complication is minimal.

(h) Sleep apnoea syndrome

Applicants with unsatisfactorily treated sleep apnoea syndrome should be assessed as unfit.

GM1 MED.B.015 Respiratory system (Class 1 & 2)

(a) Asthma

(1) Aeromedical disposition:

(i) Initial Class 1 applicants or Class 1 holders with a new diagnosis of asthma require review by a GCAA approved pulmonologist.

(ii) If the applicant for Class 1/2 is diagnosed to have mild asthma,

(A) Is well controlled,

(B) Has a normal chest examination,

(C) No adverse history,

(D) Has a satisfactory spirometry,

(E) Has a fall in FEV1 of less than or equal to 10% on Bronchial Reactivity Test,

(F) Requires inhaled corticosteroids less than 800µg day,

Then he may be assessed as fit Class 1 or/2.

(iii) If the applicant is diagnosed to have

(A) Moderately controlled asthma,

(B) Has no adverse history,

(C) Has satisfactory spirometry,

(D) Has a fall in FEV1 of 11-16% on Bronchial reactivity test,

(E) or inhaled corticosteroids equal to or greater than 800 µg day,

Then he may be assessed as fit with a restricted Class 1 licence or unrestricted Class 2.

(iv) If the applicant for Class 1 is diagnosed with sub-optimally controlled asthma with no adverse history, satisfactory spirometry, fall in FEV1 of 16-20% on Bronchial Reactivity Test, he will not be considered fit until the required criteria are met. Class 2 applicant may be certified with OSL restriction.

(v) Applicant for Class 1/2 with uncontrolled asthma: Fall in FEV1 of greater than 20% on Bronchial Reactivity Test AND/OR adverse history will not be medically certified.

(vi) For renewal of Class 1 and 2, if symptoms are, mild, infrequent, symptoms well controlled on medication, no symptoms in flight, no wheeze on examination, the AME can issue the medical certificate based on his clinical examination.

(vii) The AME should not renew the medical certificate, if he detects;

(A) The symptoms worsen/or wheeze on chest examination

(B) Increase in frequency of emergency room, hospital, or outpatient visits.

(C) The FEVI is < 70% predicted value.

(D) The applicant requires 3 or more medications for stabilisation.

(E) The applicant is using steroid in dosage equivalent to more than 20mg of prednisone per day.

(2) Disqualifying features of asthma:

(i) Severe asthma likely to reduce operational efficiency

(ii) Brittle asthmatics

(A) Repeated courses of oral steroids

(B) Poor control on inhaled cortical-steroids

(C) Hospital/A&E attendance (A history of asthma attacks requiring acute medical intervention/ admission within past 5 years for Class 1 and 2 years for Class 2)

(D) Frequent exacerbations

(E) Those requiring unacceptable medication e.g.: Oral steroids

(F) Oral theophylline

(G) Steroid-sparing agents e.g. methotrexate, cyclosporins, azathioprine

(3) Required Investigations:

(i) Standard Spirometry (Lung Function Tests)

(ii) Bronchial Reactivity Test: either 6-minute free running test (see separate Bronchial Reactivity Test Form) or a chemical challenge with histamine/metacholine/mannitol

(4) Acceptable Treatment:

In accordance with British Thoracic Society (BTS) guidelines - The following medication is acceptable for certification:

(i) Inhaled β2 agonists

(ii) Inhaled cortico-steroids

(iii) Long acting β2 agonists

(iv) Leukotriene receptor antagonists

(v) Inhaled cromoglycate

(b) Pulmonary Tuberculosis certification protocol:

(1) Initial applicants for or holders of a Class 1 /2 class certificates with a history of previous pulmonary tuberculosis may be assessed as fit provided that:

(i) A recognised course of medication has been completed.

(ii) Chest radiography shows no significant lung damage.

(iii) Normal pulmonary function testing is demonstrated.

(2) Applicants for Class 1/ 2 class with active disease or undergoing any treatment should be assessed as 'temporarily unfit' for at least the early part of their therapy because of the symptoms, side effects associated with treatment, and the need for close follow up.

(3) Following the initial part of the therapy, if the applicant for Class 1 shows a satisfactory report from his treating physician that he doesn't have any significant side effects of the medication and he doesn't carry any risk of transmission of the disease, he can return to flying with restricted certificate till he completes the course of treatment with close AME monitoring.

(4) Following the initial part of the therapy, if the applicant for Class 2 showed satisfactory report from his treating physician that he doesn't have any significant side effects of the medication and he doesn't carry any risk of transmission of the disease, he can be granted unrestricted licence with close follow up with his AME and /treating physician.

(5) Following completion of therapy, assessment of fitness should be performed as detailed in (ii, iii) above.

(6) Applicants with substantial lung damage may have bronchiectasis, be susceptible to recurrent episodes of chest infection and therefore require careful evaluation. Applicants with persistent cavities also require careful evaluation. Large cavities are likely to be associated with considerable degree of lung damage and applicants will be unlikely to be assessed as fit.

(7) If the applicant is taking prophylaxis treatment with Isonizid because of contact with an infected person, or because of recent TB skin test conversion, he may continue flying duties without compromising flight safety as long as no side effects are apparent. In these cases the AME/or treating physician should follow all patients on prophylaxis clinically, ordering appropriate laboratory studies when indicated.

(c) Sarcoidosis

(1) Requirement for initial certification of applicant with a history of Sarcoidosis confined to hilar lymphadenopathy.

(i) The disease should be inactive clinically or until disease progression/stability has been demonstrated for a minimum of 3 months. (Activity is defined as worsening within a system, or new system involvement.)

(ii) Serial CXR (hilar lymphadenopathy should be re-examined and shown to be non-progressive and no evidence of pulmonary shadowing)

(iii) Gas transfer factor should be stable & Pulmonary function tests should be normal (<10%/yr fall in FVC or <15%/yr fall in gas transfer factor (no lower than 70% of predicted)).

(iv) Cardiology review to include:

(A) Resting and exercise ECG to Bruce protocols (symptom limited)

(B) 24-hour ambulatory ECG monitoring- without significant rhythm or conduction disturbances.

(C) Echocardiogram.

(D) Myocardial scintigraphy or perfusion scanning (MRI) may be needed if any cardiac abnormality detected.

(2) Aeromedical Disposition

(i) If all the above tests are satisfactory including no cardiac Sarcoidosis; no evidence of other organ involvement and no medication are prescribed a Class 1 OML restriction. Class 2 and may be given unrestricted licences.

(ii) Cardiac Sarcoidosis is disqualifying

(iii) Applicants with a diagnosis of active Sarcoidosis should be assessed as unfit.

(iv) Initial applicants with a history of multi-system Sarcoidosis should be assessed as unfit.

(v) Previous history of systemic involvement (skin, bone, eye, central nervous system and lung parenchyma), the applicant will be given permanent restricted licence.

(vi) The need for treatment is normally disqualifying. However, up to 10mg prednisolone may, in individual cases, be acceptable following AMS case assessment and subject to stability and confirmation of absence of side-effects.

(3) Subsequent review every six months for Class 1 and annual review for Class 2, for the first two years

(i) Routine aviation medical examination

(ii) Approved cardiologist's assessment

(iii) 24-hour ECG.

(iv) Exercise ECG to Bruce protocols

(4) Subsequent review every twelve months for Class 1

If satisfactory follow up for two years with no previous history of systemic involvement, the applicant for Class 1 can be given unrestricted licence and continue to have annual follow up.

(d) Spontaneous or Idiopathic Pneumothorax

(1) The assessment of applicants with a recent history of spontaneous pneumothorax should consider not only clinical recovery after treatment (conservative and/or surgical), but primarily the risk of recurrence. There are significant first, second and third recurrence rates with conservative treatment of 10%-60%, 17%-80% and 80%-100% of cases, respectively. After chemical pleurodesis, the recurrence rate is 25-30%; after mechanical pleurodesis or pleurectomy, the rate is 1-5%.

(2) In the case of an initial applicant, a history of spontaneous pneumothorax need not be disqualifying provided that the applicant has had only one attack with complete clinical recovery, and that the medical investigation has revealed no evidence of predisposing disease such as bullous emphysema and demonstrated satisfactory pulmonology report.

(3) A history of two or more attacks should be considered as constituting a more serious risk. In such cases an applicant should be assessed as unfit until at least three months after surgery (i.e. wedge resection or pleurectomy).

(4) Certificate holders who develop a spontaneous pneumothorax should be assessed as temporarily unfit until full resolution has occurred. They may be assessed as fit for certification provided that;

(i) Full re-expansion of the lung has taken place.

(ii) Recertification can be undertaken six weeks after a VATS pleurectomy. For other procedures, recertification may require a longer grounding period.

(iii) Unrestricted initial Class 1 and 2 medical certifications can be considered 6 weeks after full recovery from surgical treatment with a normal post-operative chest radiograph.

(iv) If surgical treatment is not undertaken, for a primary spontaneous pneumothorax, certification is possible 6 weeks from full recovery with an OML for Class 1 for at least one year following recovery due to the possible risk of recurrence.

(v) Respiratory evaluation is normal.

(vi) No bullae are discovered on chest radiography, CT scan, or other medical imaging technique.

(vii) All modifiable risk factors including smoking have been addressed

Notes:

1. A final decision should be made by the AMS and based on a thorough investigation and evaluation in accordance with best medical practice.
2. An applicant with a recurrent spontaneous pneumothorax that has not been surgically treated will be assessed as unfit.

(5) Acceptable surgical treatment

Acceptable surgical treatment includes thoracotomy, oversewing of apical blebs, parietal pleurectomy and Video Assisted Thoracic Surgery (VATS) pleurectomy but not chemical pleurodesis.

(e) Obstructive Sleep Apnea Screening Guidelines

(1) OSA Screening is usually indicated in:

(i) History of Excessive Daytime Sleepiness

(ii) History of Snoring

(iii) Witnessed apnoea

(iv) Resistant /uncontrolled Hypertension,

(v) Uncontrolled Diabetes,

(vi) Metabolic Syndrome

(vii) Obesity, BMI> 35

(viii) Significant weight gain (10% increase in total body weight)

(ix) A high neck circumference >40 cm

(x) Complaints of frequent nocturnal awakenings

(xi) Complaints of difficulty concentrating

(xii) Complaints of problems with memory

(xiii) Complaints of daytime sleepiness

(xiv) Complaints of fatigue

(xv) Complaints of low mood

(xvi) Complaints of erectile dysfunction

(xvii) Stop Bang questionnaire score of ≥3

(xviii) Epworth sleep score ≥10

(2) Method of Objective screening:

(i) Physical examination including, vital signs (blood pressure, pulse, respiration); height, weight, and body mass index (BMI), neck circumference, ear, nose, and throat examination thyroid assessment; cardiovascular; pulmonary assessment, and psychological assessment for presence of mood disorder; if clinically indicated.

(ii) The commonly used Epworth Sleepiness scale (ESS) is a simple validated measure of daytime sleepiness and has been shown to be both a reliable and consistent method of distinguishing those with potential sleep disorders from the normal population. Ideally it should be given to sleeping partners who can more accurately assess snoring and apnoea. ESC of ≥10, considered indicative of pathological sleepiness and specialist referral is required. Refer to Appendix-1.

(iii) The use of STOP – BANG questionnaire which is more sensitive in moderate to severe OSA. Stop Bang questionnaire score of≥3 is an indicative of sleep apnoea which requires further assessment by specialist. Refer to Appendix-1.

(iv) The gold standard diagnostic test is; nocturnal full polysomnographic attended by technologist diagnostic testing (type 1 Sleep Study).

(v) When the diagnosis is suspected, the AME should refer the applicant for sleep study

to confirm/or exclude the diagnosis of OSA. The initial decision on grounding the applicant prior to the specialist referral solely depends on the AME assessment of the case.

(vi) The GCAA accepts the use of CPAP (Continuous Positive Airway Pressure) as an appropriate treatment for Obstructive Sleep Apnoea. The machine should have the ability for data capture ensure compliance. Other methods of treatment including positional therapy and dental splinting may be acceptable on reports showing adequate control of OSA on sleep study analysis and correct fitting and usage of the splints. Presence of any associated risk factors of Obesity, Hypertension, Thyroid disease, Diabetes Mellitus should be addressed and treated as per GCAA protocols in addition.

(vii) The applicant should have documentary advice to lose at least 5% of the current weight over the following year.

(viii) The minimum grounding period of 2 weeks after starting CPAP treatment will be required before returning the applicant to aviation related safety duties. The pilot will be required to use the CPAP machine at least four hours during sleep, for more than 70% of the time. For dental splints, he will be required to use the splint for each and every sleep period. He may be returned to duty once the compliance with the treatment is established by Specialist review with no subjective symptoms and ESS < 10. The AME should refer the case to GCAA for Aeromedical section for reinstatement of the applicant.

(ix) The GCAA will issue the medical certificate with OML restriction.

(x) Follow up recommendations, will include 6 monthly Specialist (Sleep Specialist) review and 3 monthly AME review to check for compliance, weight loss and other medical conditions which may require periodic review. For those managed with dental splinting, in addition to the specialist review, they would require a Dental assessment every six months to check on compliance and fitting.

(xi) Once granted the restricted medical certificate the applicant will be instructed not to perform aviation safety sensitive job if they experience any problems with the treatment or he suspects his sleepiness/ snoring symptoms returning, or at any time obtains a self-reported ESS of >= 10.

(xii) The GCAA will not consider removal of the OML restriction, until the time when the applicant's medical condition satisfactory controlled, and all associated risk factors are eliminated or controlled.

(xiii) The applicant will be required to be revaluated by the Specialist in case of documented change in his body weight of 10% value increase or decrease.

Note: All Respiratory report should follow the specification set in Appendix 1.

MED.B.020 Digestive System

(a) Applicants shall not possess any functional or structural disease of the gastro-intestinal tract or its adnexa which is likely to interfere with the safe exercise of the privileges of the applicable licence(s).

(b) Applicants with any sequelae of disease or surgical intervention in any part of the digestive tract or its adnexa likely to cause incapacitation in flight, in particular any obstruction due to stricture or compression shall be assessed as unfit.

(c) Applicants shall be free from herniae that might give rise to incapacitate ng symptoms.

(d) Applicants with any of the following disorders of the gastrointestinal system may be assessed as fit subject to satisfactory gastrointestinal evaluation after successful treatment or full recovery after surgery:

(1) recurrent dyspeptic disorder requiring medication;
(2) pancreatitis;
(3) symptomatic gallstones;
(4) a clinical diagnosis or history of chronic inflammatory bowel disease;
(5) after surgical operation on the digestive tract or its adnexa, including surgery involving total or partial excision or a diversion of any of these organs.

(e) Aero-medical assessment:

(1) applicants for a Class 1 medical certificate with the diagnosis of the conditions specified in (2), (4) and (5) shall be referred to the GCAA;
(2) fitness of Class 2 applicants with pancreatitis shall be assessed in consultation with the GCAA.

AMC1 MED.B.020 Digestive system (Class 1 & 2)

(a) Oesophageal varices

Applicants with oesophageal varices should be assessed as unfit.

(b) Pancreatitis

Applicants with pancreatitis should be assessed as unfit pending assessment. A fit assessment may be considered if the cause (e.g. gallstone, other obstruction, medication) is removed.

(c) Gallstones

(1) Applicants with a single asymptomatic large gallstone discovered incidentally may be assessed as fit if not likely to cause incapacitation in flight.
(2) 2

(d) Inflammatory bowel disease

Applicants with an established diagnosis or history of chronic inflammatory bowel disease should be assessed as fit if the inflammatory bowel disease is in established remission and stable and that systemic steroids are not required for its control.

(e) Peptic ulceration

Applicants with peptic ulceration should be assessed as unfit pending full recovery and demonstrated healing.

(f) Abdominal surgery

(1) Abdominal surgery is disqualifying for a minimum of 3 months. An earlier fit assessment may be considered if recovery is complete, the applicant is asymptomatic and there is only a minimal risk of secondary complication or recurrence.

(2) Applicants who have undergone a surgical operation on the digestive tract or its adnexa, involving a total or partial excision or a diversion of any of these organs, should be assessed as unfit for a minimum period of 3 months or until such time as the effects of the operation are no longer likely to interfere with the safe exercise of the privileges of the applicable licence(s).

MED.B.025 Metabolic and Endocrine Systems

(a) Applicants with metabolic, nutritional or endocrine dysfunction may be assessed as fit subject to demonstrated stability of the condition and satisfactory aero-medical evaluation.

(b) Diabetes mellitus

1) Applicants with diabetes mellitus requiring insulin shall be assessed as unfit.

2) Applicants with diabetes mellitus not requiring insulin shall be assessed as unfit unless it can be demonstrated that blood sugar control has been achieved.

(c) Aero-medical assessment:

1) applicants for a Class 1 medical certificate requiring medication other than insulin for blood sugar control shall be referred to the licensing authority;

2) fitness of Class 2 applicants requiring medication other than insulin for blood sugar control shall be assessed in consultation with the Aeromedical Inspector

AMC1 MED.B.025 Metabolic and endocrine systems (Class 1)

(a) Metabolic, nutritional or endocrine dysfunction

Applicants with metabolic, nutritional or endocrine dysfunction may be assessed as fit if the condition is asymptomatic, clinically compensated and stable with or without replacement therapy, and regularly reviewed by an appropriate specialist.

(b) Obesity

Applicants with a Body Mass Index 35 may be assessed as fit only if the excess weight is not likely to interfere with the safe exercise of the applicable licence(s) and the results of a risk assessment, including evaluation of the cardiovascular system and evaluation of the possibility of sleep apnoea, are satisfactory.

(c) Addison's disease

Addison's disease is disqualifying. A fit assessment may be considered, provided that cortisone is carried and available for use whilst exercising the privileges of the licence(s). Applicants may be assessed as fit with a multi-pilot limitation.

(d) Gout

Applicants with acute gout should be assessed as unfit. A fit assessment may be considered once asymptomatic, after cessation of treatment or the condition is stabilised on anti-hyperuricaemic therapy.

(e) Thyroid dysfunction

Applicants with hyperthyroidism or hypothyroidism should be assessed as unfit. A fit assessment may be considered when a stable euthyroid state is attained.

(f) Abnormal glucose metabolism

Glycosuria and abnormal blood glucose levels require investigation. A fit assessment may be considered if normal glucose tolerance is demonstrated (low renal threshold) or impaired glucose tolerance without diabetic pathology is fully controlled by diet and regularly reviewed.

(g) Diabetes mellitus

Subject to good control of blood sugar with no hypoglycaemic episodes:

1) applicants with diabetes mellitus not requiring medication may be assessed as fit;

2) the use of antidiabetic medications that are not likely to cause hypoglycaemia may be acceptable for a fit assessment with a multi-pilot limitation.

AMC2 MED.B.025 Metabolic and endocrine systems (Class 2)

(a) Metabolic, nutritional or endocrine dysfunction

Metabolic, nutritional or endocrine dysfunction is disqualifying. A fit assessment may be considered if the condition is asymptomatic, clinically compensated and stable.

(b) Obesity

Obese applicants may be assessed as fit only if the excess weight is not likely to interfere with the safe exercise of the applicable licence(s) and the results of a risk assessment,

including evaluation of the cardiovascular system and evaluation of the possibility of sleep apnoea, are satisfactory.

(c) Addison's disease

Applicants with Addison's disease may be assessed as fit provided that cortisone is carried and available for use whilst exercising the privileges of the licence.

(d) Gout

Applicants with acute gout should be assessed as unfit until asymptomatic.

(e) Thyroid dysfunction

Applicants with thyroid disease may be assessed as fit once a stable euthyroid state is attained.

(f) Abnormal glucose metabolism

Glycosuria and abnormal blood glucose levels require investigation. A fit assessment may be considered if normal glucose tolerance is demonstrated (low renal threshold) or impaired glucose tolerance is fully controlled by diet and regularly reviewed.

(g) Diabetes mellitus

Applicants with diabetes mellitus may be assessed as fit. The use of antidiabetic medications that are not likely to cause hypoglycaemia may be acceptable.

GM1 MED.B.025 Metabolic and endocrine systems (Class 1)

(a) Benign Pituitary Tumors Class 1

(1) Applicants with symptoms and/or on first diagnosis should be assessed as unfit. A fit assessment can be considered subject to a satisfactory endocrinologist's report and visual fields assessment after 3 months of being stable on treatment.

(2) Annual follow-up with endocrinology report and visual fields is required.

(3) **Cabergoline** is used for the treatment of microprolactinomas. It is acceptable for any class of certification, providing the pilot has been stabilised on this medication for a period of not less than three months on the ground and has no adverse side-effects from the therapy.

(b) Obesity

(1) General Evaluation of Obesity at Aero-medical Examination

(i) Assessment of the overweight or obese person should begin with a careful history and physical examination.

(ii) History should include:

(iii) Any triggering factors for weight gain

(iv) History of medication (use is an important aspects of the initial evaluation (corticosteroids, oestrogen, progesterone, testosterone or other anabolic/androgenic steroids).

(v) Family and social history are indicated (family history of obesity related disease)

(vi) Smoking intake

(vii) Alcohol consumption should be documented

(viii) Activity level

(ix) Dietary history and patterns of eating

(x) Exercise habits investigated.

(xi) Sleep disturbance, snoring, sleep apnoea should be assessed

(xii) Menstrual disturbances specifically symptoms related to polycystic ovarian syndromes

(xiii) Mood disorders

(xiv) Any symptoms of gastoesophageal reflux disease

(xv) Any cardiovascular symptoms

(xvi) The physical examination of an obese patient should evaluate

(xvii) They type of obesity- truncal, central etc.

(xviii) Waist circumference

(xix) Hip to waist ratio

(xx) Body fat composition

(xxi) Neck circumference

(xxii) The presence of a thyroid goitre

(xxiii) Mallampti score

(xxiv) Clinical assessment for hypothyroidism or any evidence of Cushing's.

(xxv) Discussion of the patient's cardiac risk factors is also appropriate.

(xxvi) Review the applicant's previous medical record and performance of appropriate physical examination.

(2) Defining the Nature of the Problem (Body Composition Tests)

(i) The body mass index (BMI)

Body mass index is defined as the individual's body weight divided by the square of their Height. The formulas universally used in medicine produce a unit of measure of kg/m2.

(ii) Waist circumference and waist hip ratio

Waist circumference is the distance around the natural waist (just above the navel).

(The tape should be positioned mid-way between the top of the hip bone and the bottom of the rib cage).

The absolute waist circumference (>102 cm in men and >88 cm in women) or waist-hip ratio (>0.9 for men and >0.85 for women) are both used as measures of central obesity.

Waist hip ratio is calculated as follow, measure waist at narrowest part and measure the hip at widest part then divide waist /hip to get the ration.

(iii) Body fat percentage

Body fat percentage is total body fat expressed as a percentage of total body weight. It is generally agreed that men with more than 25% body fat and women with more than 33% body fat are obese.

(iv) Neck circumference measurements

Screening for and treating Obstructive Sleep Apnea Syndrome will potentially lead to improved quality of life, reduced cardiovascular mortality and reduced accident rates.

The neck circumference should be measured at a point just below the larynx (Adam's Apple) and perpendicular to the long axis of the neck. The applicant should look straight ahead during measurement, with shoulders down, and the tape will be as close to horizontal as anatomically feasible (the tape line in the front of the neck should be at the same height as the tape line in the back of the neck). Care should be taken so as not to involve the shoulder/neck muscles (trapezius) in the measurement.

Neck Circumference measured in centimetres should be adjusted for hypertension (+4cm), habitual snoring (+3cm), reported choking or gasping most nights (+3cm) to get prediction of Obstructive Sleep Apnoea. (Refer to protocol of OSA).

(v) Laboratory evaluation

It should include FBC, blood glucose, HbA1c, liver, renal function, lipid profile, B12, Folate, Vitamin D

(3) Aeromedical Disposition

(i) For the GCAA medical certification purpose the definition of obesity include:-

- A body mass index above 30, or
- A waist circumference over 102 cm, female 88cm, or
- A waist to hip ration of 0.9 male and 0.85 female, or
- Body fat content above 25% male and 32% female

(ii) Obese applicant with incapacitation risk of >1%, should be grounded and require full cardiovascular assessment by an approved GCAA cardiologist and should enter a weight management program which should include dietary advice, an increased exercise regime and regular 3 monthly AME follow and should require an additional battery of tests to exclude the nutritional and metabolic disorders before issuing the medical certificate. The minimum tests required would be Lipid profile (total cholesterol, LDL, triglyceride level and HDL), random blood glucose estimation with HBA1c and calculation the overall risk of cardiovascular disease. A target weight reduction of at least 10 % their original weight over one year and all risk factors should be monitored and controlled. Obese applicant with incapacitation risk under 1% still requires documented advice on weight management

(iii) Obese applicants who are otherwise well and can exercise the privileges of a licence safely will be certificated without restriction.

(iv) Obese Individual with OSA should be managed as per the protocol of OSA.

(v) If the Class 1 candidate with BMI of 35 or more fails to lose weight over 6 months period, or even gain more weight, the GCAA may recommend further assessments with particular attention to his competency in managing emergency situations and evacuation. Multi-pilot (Class 1 'OML') limitation may be required.

(vi) If the high BMI does not reflect obesity (e.g. muscular built), then other measurement to be used as guidelines with the BMI for more accurate assessment, such as body fat percentage.

(vii) Failure to comply with any or all of these points may lead to permanent unfitness.

(4) Treatment that affect Medical certification

(i) Medication

Orlistat or other medications which reduce the absorption of dietary fat, when combined with a change in lifestyle, can be used to treat obesity in individuals with a BMI in excess of 30 or in excess of 28 if other risk factors such as hypertension, diabetes or high cholesterol are present. Licence holders elected to use these medications should inform the AME about its use and should be grounded for at least two weeks to ensure absence of adverse effects from the medication. Side effects

might include flatulence, oily or leaky stools and abdominal pain and bloating, headaches and anxiety.

Note: Appetite suppressants are disqualifying for medical certification, and they are not recommended for the treatment of obesity.

(ii) Surgery

Bariatric surgery promotes weight loss by altering the anatomy of digestive system and limiting the amount of food that can be eaten/digested and changes in hormones e.g. gastric bypass, Sleeve Gastrectomy or gastric banding. It is a major procedure that is usually considered as an option if an individual's BMI is 40 or more or above 35 with 2 or more co-morbidities. Other criteria also need to be fulfilled and this option should be discussed with the Specialists. If it is deemed an acceptable for treatment for the licence holder, he/she should notify the AME to suspend him/her for a period of up to 3 months post-surgery which will be dependent upon the type of procedure performed and the recovery. Endoscopic procedures will significantly reduce this period. Detailed reports will be required to confirm that the licence holder made a full recovery from the procedure, are not experiencing any incapacitating side effects and a final assessment with the AME will be required before returning the licence holder to his aviation duties again. And other treatment or procedure that the licence holder might be considering must be discussed with the AME.

(5) Thyroid disorders

(i) Initial applicants with an established diagnosis of thyroid dysfunction will have the issue of their medical certificate deferred until acceptable reports have been received.

(ii) A report from an endocrinologist will be required to confirm details of history, investigations, diagnosis and treatment, optimised thyroid function, no side-effects from either the disorder or the treatment and plans for follow-up care.

(iii) **Hypothyroidism**

Florid hypothyroidism requires a temporarily unfit status. The candidate may be considered for fit assessment if clinically asymptomatic, euthyroid and taking their prescribed approved medication. Annual endocrinological review is required by the GCAA.

Any changes in management, including medication changes, should be notified to the AME.

(iv) **Hyperthyroidism**

A hyperthyroid pilot is unfit for flying and should remain so until a stable euthyroid state has been attained. A fit assessment may be considered by the GCAA when the licence holder is clinically and biochemically euthyroid. The individual should be annually reviewed (to include TSH, T3, T4 estimation) to guard against recurrence or the development of hypothyroidism. The continued use of anti-thyroid drugs, if well tolerated, is consistent with aeromedical fitness.

Any changes in management will be notified to an AME.

Cases where eye involvement has occurred, an Extended Eye Examination is required before the candidate can be returned to flying to ensure satisfactory eye movements and no diplopia.

(v) **Thyroidectomy**

Following thyroid surgery (complete or partial) the certificate holder will be assessed as unfit. A fit assessment can be made following full surgical recovery, and demonstrated stability of thyroid function.

A report from the specialist will be required confirming details of the surgery, recovery and ongoing treatment and confirmation of euthyroid state. Minimum follow up is annual blood test confirming euthyroid status.

(vi) **Radioactive Iodine Treatment**

The certificate holder will be assessed as unfit until all treatment is complete and a euthyroid state has been achieved. A report from the specialist will be required and should confirm details of treatment and follow-up care including confirmation of euthyroid state. Minimum follow up is for an annual blood thyroid test confirming euthyroid status.

(6) Diabetes Mellitus

(i) Diagnostic criteria Diabetes may be diagnosed based on plasma glucose criteria, either the fasting plasma glucose (FPG) value or the 2-h plasma glucose (2-h PG) value during a 75-g oral glucose tolerance test (OGTT), or HBA1c criteria

	Fasting Plasma Glucose (FPG)	**Oral Glucose Tolerance Test (OGTT)**	**HB A1c**
Normal	less than 100 mg/dl	less than 140 mg/dl	less than 5.7%
Pre-diabetes	100-125 mg/dL	140 to 199 mg/dl	5.7–6.4%
Diabetes Mellitus	≥126 mg/dL	≥200 mg/dL	≥6.5%

Note 1: Diagnosis, assessment and treatment of Diabetes Mellitus should be based on the **latest** American Diabetes Association guidelines

Note 2: Unless there is a clear clinical diagnosis (e.g., patient in a hyperglycemic crisis or with classic symptoms of hyperglycemia and a random plasma glucose ≥200 mg/dL [11.1 mmol/L]), diagnosis requires two abnormal test results from the same sample or in two separate test samples. If using two separate test samples, it is recommended that the second test, which may either be a repeat of the initial test or a different test, be performed without delay.

Note 3: if a patient has discordant results from two different tests, then the test result that is above the diagnostic cut point should be repeated, with consideration of the possibility of A1C assay interference. The diagnosis is made on the basis of the confirmed test

(ii) Complications

(A) Macro-angiopathic vascular damage in the coronary, cerebral and peripheral arteries, which can constitute a major aeromedical risk and it increases with the duration of the condition.

(B) Microangiopathy is associated with progressive retinal and renal damage.

(C) Neuropathy which is probably related to the long term effects of the metabolic abnormality and can involve motor, sensory and autonomic functions.

(D) Cataracts are more common in older patients with diabetes.

(E) colour vision changes.

Note: All complications tend to be found in long term diabetes, especially those which are poorly controlled, but can also appear early in the disease-retinopathy in particular can be an initial finding.

(iii) Management of Diabetes Mellitus

In type 2 diabetes the first step in the management is a low calorie diet, weight reduction, exercise at least 150 minutes weekly and smoking cessation.

(A) Certification

1. Impaired glucose tolerance often represents a pre-diabetic state that may convert to the full condition at a rate of around 4% per year. Cases may need dietary treatment and will require prolonged and detailed follow-up in order to preserve aeromedical fitness in the long run. The AME should inform the licence holders about all possible outcome of this condition and should emphasise the importance of the regular follow up and weight loss. A target weight loss of 10% over 1 year is appropriate in most cases.

2. Type 2 diabetics fully controlled on diet alone may be fit for unrestricted medical certificates, subject to detailed follow-up at periodic medical examinations or at least annually with acceptable blood investigations.
3. Insulin use is disqualifying for Class 1 & 3.
4. The use of oral hypoglycemic drugs may be acceptable for Class 1 & 3 with certain limitation with its use as a single agent (e.g. Biguanides, Thiazolidinedione or Alpha-glucosidase inhibitors , DPP-4 Inhibitors, Glucagon-like peptide-1 (GLP-1) receptor agonists
5. Class 2 & Cabin crew Class certification usually may allow more classes of Anti-Diabetic medications based on case by case basis.
6. Combination of agents may be considered on a case by case basis, provided there is no evidence of hypoglycaemia.

(B) Anti-diabetic medications: Refer to appendix 6

(C) Initial assessment

At the time of diagnosis of Type 2 Diabetes mellitus, the GCAA requires the following evaluations to be done:

1. Careful examination to exclude common complications of diabetes including neuropathy
2. HbA1c should be **<**7 %
3. Blood Glucose should be reasonably controlled
4. BMI level, and determine the desired goal (BMI of <25 is the target)
5. Diabetes Mellitus should be treated as high risk for cardiovascular disease and all modifiable risk factors should be managed aggressively.
6. Blood tests including HBA1c, renal function, liver function and lipids.
7. A GCAA extended eye examination.
8. ECG at the time of diagnosis
9. An approved cardiologist consultation
10. Urine microalbuminuria
    1) If single medication is required to control blood glucose level, The licence holder is grounded to ensure good glycaemic control, minimal side-effects & HBA1c < 7%

2) If single medication fails to adequately control blood glucose levels, and addition of other agent is required; then the licence holder is grounded for ground trial to ensure no hypoglycaemic episodes, no additional other side-effects, good glycaemic control, or HbA1c <7%

3) To provide a complete record of blood glucose monitoring to AME - random daily record for a minimum 30 days ideally via a data card.

Note 1: Occasionally the GCAA may reinstate a pilot whom HBA1C is > 7% if a significant fall in the level of HBA1C is documented from the date of diagnosis; however his subsequent follow up HBA1C should remain under satisfactory control.

Note 2: There is no specific time period that the pilot should be grounded, the decision to return him/her to aviation duties based on case by case evaluation and the overall indices of good glycaemic control.

(D) Follow up for cases of Type 2 diabetes mellitus

1. Periodic review with an AME and careful examination to exclude common complications of diabetes.
2. Blood glucose and HBA1c less than 7.5% undertaken at three monthly to check the control of diabetes.
3. Regular BMI and body fat monitoring and a comment on reduction progress.
4. Periodic tests including renal function, blood lipids and urinary tests for detecting early renal damage (microalbuminuria)
5. Annual GCAA approved ophthalmologist review. Those with previous documented colour deficiency require a CAD test prior to relicensing and then annually thereafter as part of the extended eye examination.
6. CNS and foot examination for evidence of neuropathy; either by neurologist, family physician or AME.
7. Approved Cardiology review.

Note: The GCAA may on individual cases permit the use of a medications not listed above for Diabetes treatment provided the risk assessment performed on the case is satisfactory and the decision in this case should be made in consultation with the AMS.

Note: All report for Diabetic applicant should be compiled through the specified form.

MED.B.030 Haematology

(a) Applicants shall not possess any haematological disease which is likely to interfere with the safe exercise of the privileges of the applicable licence(s).

(b) Applicants for a Class 1 and 2 medical certificates, a full blood count shall be tested at each examination for the issue of a medical certificate.

(c) Applicants with a haematological condition may be assessed as fit subject to satisfactory aero-medical evaluation.

(d) Applicants for a class 1 medical certificate with any of the following haematological conditions shall be referred to the medical assessor of the GCAA:

(1) abnormal haemoglobin, including, but not limited to aeromedically significant anaemia, erythrocytosis or haemoglobinopathy;
(2) significant lymphatic enlargement;
(3) enlargement of the spleen;
(4) coagulation, haemorrhagic or thrombotic disorder;
(5) leukaemia.

(e) The fitness of applicants for a class 2 medical certificate with any of the haematological conditions specified in points (4) and (5) of point (d) shall be assessed in consultation with the GCAA.

AMC1 MED.B.030 Haematology (Class 1 & 2)

(a) Abnormal haemoglobin

Applicants with abnormal haemoglobin should be investigated.

(b) Anaemia

(1) Applicants with anaemia demonstrated by a reduced haemoglobin level or haematocrit less than 32 % should be assessed as unfit and require investigation. A fit assessment may be considered in cases where the primary cause has been treated (e.g. iron or B12 deficiency) and the haemoglobin or haematocrit has stabilised at a satisfactory level. Applicant with chronic anaemia (e.g. Thalassemia trait) may be assessed as fit.

(2) Anaemia which is unamenable to treatment is disqualifying.

(c) Polycythaemia

Applicants with polycythaemia should be assessed as unfit and require investigation. A fit assessment with a Multi-Pilot Limitation (OML) for class 1 applicant and with Operational Safety Pilot Limitation (OSL) for class 2 applicant may be considered if the condition is stable and no associated pathology is demonstrated.

(d) Haemoglobinopathy

(1) Applicants with a haemoglobinopathy should be assessed as unfit. A fit assessment may be considered where minor thalassaemia or other haemoglobinopathy is diagnosed without a

history of crises and where full functional capability is demonstrated. The haemoglobin level should be satisfactory.

(2) Applicants with sickle cell disease should be assessed as unfit.

(e) Coagulation and haemorrhagic disorders

Applicants with a coagulation disorder should be assessed as unfit. A fit assessment may be considered if there is no history of significant bleeding episodes.

(f) Haemorrhagic disorders

Applicants with a haemorrhagic disorder require investigation. A fit assessment with a multi-pilot limitation may be considered if there is no history of significant bleeding in class 1 applicants.

(g) Thrombo-embolic disorders

(1) Applicants with a thrombotic disorder require investigation. A fit assessment with a multi-pilot limitation may be considered if there is no history of significant clotting episodes.
(2) An arterial embolus is disqualifying.
(3) If anticoagulation is used as treatment, refer to AMC1 MED.B.010 Cardiovascular system (g) & AMC2 MED.B.010 Cardiovascular system (g)

(h) Disorders of the lymphatic system

Applicants with significant localised and generalised enlargement of the lymphatic glands and diseases of the blood should be assessed as unfit and require investigation. A fit assessment may be considered in cases of an acute infectious process which is fully recovered or Hodgkin's lymphoma or other lymphoid malignancy which has been treated and is in full remission.

(i) Leukaemia

(1) Applicants with acute leukaemia should be assessed as unfit. Once in established remission, applicants may be assessed as fit.
(2) Applicants with chronic leukaemia should be assessed as unfit. After a period of demonstrated stability a fit assessment may be considered.
(3) Applicants with a history of leukaemia should have no history of central nervous system involvement and no continuing side-effects from treatment of flight safety importance. Haemoglobin and platelet levels should be satisfactory. Regular follow- up is required.

(j) Splenomegaly

Applicants with splenomegaly should be assessed as unfit and require investigation. A fit assessment may be considered when the enlargement is minimal, stable and no associated pathology is demonstrated, or if the enlargement is minimal and associated with another acceptable condition.

GM 1 MED.B.030 Haematology (Class 1&2)

(a) Coagulation/Haemorrhagic disorders

(1) **Thrombocytopaenia**

Applicants with a diagnosis of thrombocytopenia should be assessed as unfit. Medical certification is considered subject to a haematologist report acceptable to the Authority Medical Section. Platelet counts below 75 x 10¬9/l should be assessed as unfit.

(2) Haemophilias

Applicants with a diagnosis of Haemophilia A (factor VIII deficient) or Haemophilia B (Factor IX deficient, Christmas disease) should be assessed as unfit. Medical certification is considered for applicants with a diagnosis of very mild forms with >30% coagulation factor subject to a haematologist report acceptable to the Authority Medical Section. History of spontaneous bleeding is not acceptable for medical certification.

(3) **Von Willibrand disease**

Applicants with a diagnosis of Von Willibrand disease should be assessed as unfit. Medical certification is considered subject to a haematologist report acceptable to the Authority Medical Section confirming that the phenotype is mild, that there is no history of significant bleeding and that therapy is not required.

(b) Thrombo-embolic disorders

Deep Venous Thrombosis (DVT), Pulmonary Embolism (PE) and use of Warfarin

Applicants with arterial or venous thrombosis or pulmonary embolism should be assessed as unfit. A fit assessment with an OML may be considered after a period of stable anticoagulation as prophylaxis, after review by the Aeromedical Inspector of the GCAA. Anticoagulation should be considered stable if, within the last 6 months, at least 5 INR values are documented, of which at least 4 are within the INR target range and the haemorrhagic risk is acceptable. In cases of anticoagulation medication not requiring INR monitoring, a fit assessment with an OML may be considered after review by the Aeromedical Inspector after a stabilisation period of 3 months. Applicants with pulmonary embolism should also be evaluated by a cardiologist. Following cessation of anticoagulant therapy, for any indication, applicants should undergo a re-assessment by the GCAA.

MED.B.035 Genitourinary System

(a) Applicants shall not possess any functional or structural disease of the renal or genito-urinary system or its adnexa which is likely to interfere with the safe exercise of the privileges of the applicable licence(s).

(b) Urinalysis shall form part of every aero-medical examination. Applicants shall be assessed as unfit where their urine contains abnormal elements considered to be of pathological significance that could entail a degree of functional incapacity which is likely to jeopardise the safe exercise

of the privileges of the license or could render the applicant likely to become suddenly unable to exercise those privileges.

(c) Applicants with any sequela of disease or surgical procedures on the kidneys or the urinary tract likely to cause incapacitation, in particular any obstruction due to stricture or compression shall be assessed as unfit.

(d) Applicants with a genitourinary disorder, such as:

(1) renal disease;
(2) one or more urinary calculi, or a history of renal colic;

may be assessed as fit subject to satisfactory renal/urological evaluation.

(d) Applicants who have undergone a major surgical operation in the genitourinary system or its adnexa involving a total or partial excision or a diversion of their organs shall be assessed as unfit. However, after full recovery, they may be assessed as fit.

(e) The applicants for a class 1 medical certificate referred to in points (c) and (d) shall be referred to GCAA.

AMC1 MED.B.035 Genitourinary system (Class 1)

(a) Abnormal urinalysis

Investigation is required if there is any abnormal finding on urinalysis.

(b) Renal disease

(1) Applicants presenting with any signs of renal disease should be assessed as unfit. A fit assessment may be considered if blood pressure is satisfactory and renal function is acceptable.
(2) The requirement for dialysis is disqualifying.

(c) Urinary calculi

(1) Applicants with an asymptomatic calculus or a history of renal colic require investigation.
(2) Applicants presenting with one or more urinary calculi should be assessed as unfit and require investigation.
(3) A fit assessment with a multi-pilot limitation (OML) may be considered whilst awaiting assessment or treatment.
(4) A fit assessment without multi-pilot limitation may be considered after successful treatment for a calculus.
(5) With parenchymal residual calculi, a fit assessment with a multi-pilot limitation (OML) may be considered.

(d) Renal/urological surgery

(1) Applicants who have undergone a major surgical operation on the genitourinary system or its adnexa involving a total or partial excision or a diversion of any of its organs, should be assessed as unfit until recovery is complete, the applicant is asymptomatic, and the risk of secondary complication is minimal.

(2) After other urological surgery, a fit assessment may be considered when the applicant is completely asymptomatic and there is only minimal risk of secondary complication or recurrence.

(3) An applicant with compensated nephrectomy without hypertension or uraemia may be considered for a fit assessment.

(4) Applicants who have undergone renal transplantation may be considered for a fit assessment if it is fully compensated and tolerated with only minimal immuno- suppressive therapy after at least 12 months. Applicants may be assessed as fit with a multi-pilot limitation.

(5) Applicants who have undergone total cystectomy may be considered for a fit assessment if there is satisfactory urinary function, no infection and no recurrence of primary pathology. Applicants may be assessed as fit with a multi-pilot limitation (OML).

AMC2 MED.B.035 Genitourinary system (Class 2)

(a) Renal disease

Applicants presenting with renal disease may be assessed as fit if blood pressure is satisfactory and renal function is acceptable. The requirement for dialysis is disqualifying.

(b) Urinary calculi

(1) Applicants presenting with one or more urinary calculi should be assessed as unfit.
(2) Applicants with an asymptomatic calculus or a history of renal colic require investigation.
(3) While awaiting assessment or treatment, a fit assessment with a safety pilot limitation may be considered.
(4) After successful treatment the applicant may be assessed as fit.
(5) Applicants with parenchymal residual calculi may be assessed as fit.

(c) Renal/urological surgery

(1) Applicants who have undergone a major surgical operation on the urinary tract or the urinary apparatus involving a total or partial excision or a diversion of any of its organs should be assessed as unfit until such time as the effects of the operation are no longer likely to cause incapacity in flight.

(2) After other urological surgery, a fit assessment may be considered if the applicant is completely asymptomatic, there is minimal risk of secondary complication or recurrence presenting with renal disease, if blood pressure is satisfactory and renal function is acceptable. The requirement for dialysis is disqualifying.

(3) An applicant with compensated nephrectomy without hypertension or uraemia may be assessed as fit.

(4) Applicants who have undergone renal transplantation may be considered for a fit assessment if it is fully compensated and with only minimal immuno-suppressive therapy.

(5) Applicants who have undergone total cystectomy may be considered for a fit assessment if there is satisfactory urinary function, no infection and no recurrence of primary pathology.

GM1 MED.B.035 Genitourinary system (Class 1&2)

(a) **Urine Testing**

Urine testing is required at every examination to test for Proteins, Sugar, Blood or any other abnormal contents. If any abnormal contents are found in the urine the result should be interpreted in the proper perspective (e.g., the finding of blood in the urine of a menstruating female crew). However, the test should be repeated after a suitable interval and results noted. If a simple urinary tract infection is diagnosed without any other complications treatment should be instituted. There is no need to delay the candidate's documents waiting for the infection to clear up however a note should be made to the effect that a U.T.I was diagnosed which was non-consequential to the fitness of the candidate and treatment was dispensed. The required testing can be performed in the laboratory however the AME should be satisfied with the authenticity of the results.

Cases of positive urine for ketones in the presence of valid reason such as fasting, high protein diet, and in the presence of normal blood glucose, the result can be acceptable for the issuing medical certificate.

(1) **Haematuria**

(i) Definitions

(A) Visible haematuria (VH): also called macroscopic haematuria or gross haematuria.

(B) Non-visible haematuria (NVH): also called microscopic haematuria or dipstick-positive haematuria:

(C) Symptomatic non-visible haematuria (s-NVH) - associated symptoms include voiding lower urinary tract symptoms (LUTS): hesitancy, frequency, urgency, dysuria.

(D) Asymptomatic non-visible haematuria (a-NVH) - incidental detection in the absence of LUTS or upper urinary tract symptoms.

(ii) Significant haematuria is defined as:

(A) Any single episode of VH.

(B) Any single episode of s-NVH (in absence of urinary tract infection (UTI) or other transient causes).

(C) Persistent a-NVH (in absence of UTI or other transient causes).

(D) Persistence is defined as 2 out of 3 dipsticks positive for NVH.

(iii) Initial investigations for a patient with s-NVH and persistent a-NVH

(A) Exclude UTI and/or other transient cause.

(B) Plasma creatinine and estimated glomerular filtration rate (eGFR).

(C) Measure proteinuria: send urine for protein:creatinine ratio (PCR) and albumin:creatinine ratio (ACR) on a random sample (according to local practice). 24-hour urine collections for protein are rarely required. An approximation to the 24-hour urine protein or albumin excretion (in milligrams) is obtained by multiplying the ratio (in mg/mmol) x 10.

(D) Measurement of blood pressure.

(iv) Other initial investigations

These may include:

(A) FBC (anaemia) and clotting screen.

(B) Urine red cell morphology: dysmorphic erythrocytes suggest a renal origin.

(C) Cytological examination of urine – depends on the case history and Specialist review.

(v) Indications for urological referral

Direct referral to urology for further investigation is required for:

(A) All patients with visible haematuria; a nephrology referral may be considered more appropriate if glomerulonephritis is suspected.

(B) Patients with s-NVH (any age) if clinically indicated.

(C) All patients with a-NVH aged ≥40 years.

(D) Referral or re-referral to urology is indicated if development of VH or s-NVH.

(vi) Indications for nephrological referral

(A) For patients who have had a urological cause excluded or have not met the referral criteria for a urological assessment, a referral to nephrology should be considered.

(B) Evidence of declining GFR (by greater than 10 ml/minute at any stage within the previous five years or by greater than 5 ml/minute within the previous one year).

(C) Stage 4 or 5 chronic kidney disease (eGFR less than 30 ml/minute).

(D) Significant proteinuria (ACR 30 mg/mmol or higher, or PCR 50 mg/mmol or higher).

(E) Isolated haematuria (i.e. in the absence of significant proteinuria) with hypertension in those aged younger than 40 years.

(F) Visible haematuria coinciding with intercurrent (usually upper respiratory tract) infection.

(vii) Aeromedical disposition

(A) Initial Applicant with either VH, a-NVH or s-NVH should be grounded till all investigations are satisfactory.

(B) If the cause of NVH is UTI, treat the infection and confirm the resolution with a follow up urine analysis 6 weeks after completion of the therapy. Applicant with S-NVH persisting after treatment of urinary tract infection also need to be further evaluated

(C) a-NVH, Repeat the Urine test, if Persistent request all initial investigation and refer the Applicant who is > 40 years to Urologist and once cleared he will be declared fit.

(D) a-NVH, Repeat Urine test, if negative reports on two occasions, then the Applicant should be declared fit

(E) Persistent a-NVH in aged < 40 request other investigations and if abnormal refer to Nephrologist and if all upper urinary tract investigations are normal refer to Urology if required. Once he is cleared from Urologists applicant can be certified fit with applicable restriction.

(F) Applicant with Hematuria and proteinuria, red cell casts, and elevated serum creatinine levels should be referred promptly to a nephrology subspecialist.

(G) Applicant with asymptomatic microscopic hematuria or with hematuria persisting after treatment of urinary tract infection also need to be evaluated.

(H) For all cases requiring referral to Urologist or Nephrologist, a report detailing the diagnosis, treatment and prognosis will be required before assessing the applicant for medical certification.

(I) Applicant who had negative urological or nephrological investigations (including all of: eGFR 60 ml/minute or higher, and ACR less than 30 mg/mmol or PCR less than 50 mg/mmol, and blood pressure less than 140/90 mm Hg) need long-term monitoring due to the uncertainty of the underlying diagnosis. Close monitoring of the applicant should include an annual assessment (whilst haematuria persists) of blood pressure, eGFR and ACR/PCR.

(2) **Proteinuria**

The urine should not contain any pathological element. Proteinuria should always be an indication for additional medical investigation, but need not be disqualifying for aviation duties. In this case Urine protein:creatinine ratio (PCR) or albumin:creatinine ratio (ACR) is preferred. (Significant Proteinuria is defined as: ACR>30 or PCR>50).

When trace proteinuria and trace haematuria are both present, a repeat test is indicated and referral to Urologist and Nephrologist are required.

(b) **Chronic Renal Disease (CRD)**

(1) **Identify & Evaluate Patients with Chronic Renal Disease**

(i) License holder at risk for CRD, including those with

(A) diabetes mellitus

(B) hypertension

(C) cardiovascular disease

(D) family history of kidney failure

(ii) The two key markers for CRD are urine albumin – to –creatinine ration (ACR) and eGFR.

(iii) Other investigation which should be requested before referral to Nephrologist are

(A) creatinine with estimated GFR

(B) blood urea nitrogen (BUN)

(C) electrolytes, glucose, calcium, phosphorus

(D) Serum albumin

(E) complete blood count (CBC)

(iv) Decreased kidney function (eGFR < 60 mL/min/1.73 m2)- Applicant with abnormal urine ACR level and a persistent reduction in the estimated glumerluar filtration rate (eGFR) should be grounded and referred to Nephrologist. (eGFR result of less than 60 ml/min/1.73 m2 in an Applicant not previously tested should be repeated within 2 weeks).

(2) **Aeromedical disposition**

(i) The decision for reinstatement will be referred to the GCAA, it will be on individual case assessment and should be based on the following:

(A) The Level of eGFR

(B) The cause of CKD

(C) Associated comorbidities

(D) Presence of symptoms or complications

(E) Presence of congenital single kidney

(F) ACR of 30 or more

(G) The nephrologist report which should include:

- Current status report from the treating physician. It should note if the condition is stable or if additional treatment or dialysis is recommended;
- Whether the Applicant is symptomatic or asymptomatic at evaluation time
- Cause of the CRD
- Staging of CRD which should identify risk for progression and complications.
- All blood investigation done within past two weeks including (Complete blood count, BUN, serum electrolyte, eGFR and urine ACR level)
- All investigation results including imagine test results
- Follow up regimen
- List of medications and side effects, if any; Refer the case to the GCAA.

(3) **License holder with End stage Renal Disease requiring dialysis will be disqualified from all aviation duties.**

(c) **License holder with kidney transplant**

Occasionally the GCAA may permit license holder with Kidney transplant, this will be based on case by case evaluation and require an Aeromedical evaluation board (Following renal transplantation, most recipients receive immunosuppressants to prevent tissue rejection. They have increased risks of hypertension and of ischaemic heart disease, also of developing carcinoma. Some transplant recipients have minimal complications and normal renal function. GCAA will not consider aeromedical certification for pilots or ATCs until 12 months following transplantation. If the applicant is then receiving standard immunosuppressant therapy, has well controlled blood pressure, and renal function is at an acceptable level, GCAA, may consider recertification, on a case-by case basis**).** The use of approved anti-hypertensive drugs is permitted and any steroid dosage should be below 10mg/day. Levels of anti-rejection drugs should be within therapeutic range to minimise side effects. Cardiovascular risk should be assessed by a cardiologist to include an exercise (stress) ECG. To maintain certification, applicants are required to provide a regular annual renal report. Class 1 holders require also an annual cardiology assessment, including an exercise ECG. The Class 1 certificate will be restricted with OML.

(d) **Polycystic renal disease**

The diagnosis of autosomal dominant polycystic kidney disease requires an OML for Class 1 certificate holders. Berry aneurysms need to be excluded by means of Magnetic Resonance Angiography and cardiac valve disease (including aortic root dilatation) by means of an echocardiogram. Abdominal aortic aneurysm also needs to be excluded.

(e) Urinary Calculi

(1) **Asymptomatic stone(s)**

The existence of calculi may be completely unknown to the applicant and could be accidentally demonstrated during instrumental check-up performed for other reasons. In such cases, the GCAA may consider a fit assessment with a restricted licence for all the classes of certification for one year. After this period of documented freedom from symptoms and an urologist review (Radiological investigation, biochemistry, metabolic screen and any other relevant investigation) is satisfactory.

A fit assessment without a limitation may be considered by the GCAA for all the classes with no evidence of renal calculi otherwise a restricted licence would be appropriate. If originally picked up by an ultrasound scan further ultrasound scans are required for every renewal and it should demonstrate no volume increase of calculi and no movement of calculi from their original position. If not initially found by ultrasound scan the low dose CT scan undertaken at 2 years and 7 years post index case would suffice as screening.

(2) **Residual stone(s)**

A residual stone, or stones, may often be asymptomatic. If in the calyces or collecting system, they remain a hazard and should be cleared before the individual can be assessed as fit to fly. If the stone is parenchymal, then the hazard is minimal and the applicant may be considered fit with restricted medical certificates for Class 1.

(3) **Recurrent renal colic**

Recurrent renal colic when associated with calculi should be investigated. If a comprehensive urological examination indicates a condition susceptible to treatment and subsequent review over an extended period after treatment shows no change in volume or position of stone and no stone in the calyces or collecting system, and no recurrent of symptoms, the individual may be assessed as fit. Urological follow-up with adequate techniques should be required by the GCAA for every renewal of medical certificate.

Note: *Fit assessment of individuals with frequent or recurrent stone formation may be considered at an earlier stage with restricted licences and regular urologist assessment and follow up.*

(4) **Previous history of uretric colic more than seven years**

Applicant with history of documented renal colic more than 7 years ago can be assessed as fit without restriction if the urologist review with appropriate investigations reveals stone free and normal kidneys. If the investigation reveals residual stone the applicant will be assessed as fit with restricted medical certificates and he should have a regular urologist review. If he underwent successful treatment and the applicant remains asymptomatic he may be given unrestricted medical certificates.

(f) **Acceptable treatment and medication for Erectile Dysfunction**

Phosphodiesterase Type 5 (PDE5) inhibitors

The main aeromedical concerns are the side effect profile of these drugs which includes colour vision changes in the blue/green and purple spectrum and sudden hearing loss. CAD test should be done whilst on medication to ensure that the applicant is safe in accordance with the flying colour vision standards before being released for flying.

Generic Name	Trade Name	Minimum time between dose and flying
Sidenafil	Viagra	12 hrs
Vardenafil	Levitra	12 hrs
Tadalafil	Cialis	36 hrs

Notes for pilots:

- You should discuss the appropriate dose with your AME.
- PDE5 inhibitors should never be taken in conjunction with any other medication without first discussing potential interactions with your AME.
- Choose an extended off duty period to try the medication for the first time in case of side effects.
- Side effects that are important for flying include changes in blood pressure, visual disturbance including a change in colour vision, headaches, musculoskeletal pain and a sustained erectile effect with the potential for distraction from the flying task.
- You should not obtain this medication other than by prescription to ensure product quality. The contents of medication obtained in other ways, in particular over the internet, cannot be assured.

Apomorphine

12 hours should elapse after use before flying/controlling.

MED.B.040 Infectious Disease

(a) Applicants shall have no established medical history or clinical diagnosis of any infectious disease which is likely to interfere with the safe exercise of the privileges of the applicable licence held.

(b) Applicants who are HIV positive shall be assessed as unfit.

AMC1 MED.B.040 Infectious disease

(a) Infectious disease - General

In cases of infectious disease, consideration should be given to a history of, or clinical signs indicating, underlying impairment of the immune system.

(b) Tuberculosis

Applicants with active tuberculosis should be assessed as unfit. A fit assessment may be considered following completion of therapy.

(c) Syphilis

Acute syphilis is disqualifying. A fit assessment may be considered in the case of those fully treated and recovered from the primary and secondary stages.

(d) HIV infection

(1) HIV positivity is disqualifying.
(2) The occurrence of AIDS or AIDS-related complex is disqualifying.

(e) Infectious hepatitis

Infectious hepatitis is disqualifying. A fit assessment may be considered after full recovery.

GM1 MED.B.040 Infectious disease (Class 1&2)

(a) Infectious Hepatitis

Jaundice, as a result of inflammation of the liver, may be caused by infections or toxic agents.

Active infectious hepatitis is incompatible with flying. Fit assessment may be considered by the AME in conjunction with the GCAA after full clinical recovery and normal liver function tests.

(1) Hepatitis B:

(i) Acute hepatitis B is disqualifying. Certification may be considered upon full recovery (viral clearance).

(ii) Chronic hepatitis B – Certification may be considered in pilots in the 'immune tolerant' or 'inactive HBV carrier state'.

(iii) Pilots are required to submit a report from a liver specialist, to include:

(A) History of infection and Current symptoms;

(B) Stability of condition;

(C) Liver Function Tests;

(D) HBV serology;

(E) HBV DNA levels;

(F) Alphafoetoprotein (AFP);

(G) Report of ultrasound of the liver.

(H) Other reports and laboratory testing may be required to assess risk.

(I) Requirement for treatment is disqualifying.

(2) Hepatitis C

(i) Applicants with HCV-antibody positivity HCV-PCR are considered unfit for certification.

(ii) Revalidation/renewal may be considered for class 1 with SIC restrictions.

(iii) Requirement for treatment is disqualifying;

(iv) Pilots are required to submit a report from a liver specialist, to include:

(A) History of infection

(B) Symptoms experienced and course of infection including any CNS effects

(C) Liver Function Tests

(D) All laboratory HCV Serology performed

MED.B.045 Obstetrics and Gynaecology

(a) Applicants shall not possess any functional or structural obstetric or gynaecological condition which is likely to interfere with the safe exercise of the privileges of the applicable licence(s).

(b) Applicants who have undergone a major gynaecological operation shall be assessed as unfit until full recovery.

(c) Pregnancy

(1) In the case of pregnancy, if the AeMC or AME considers that the licence holder is fit to exercise her privileges, he/she shall limit the validity period of the medical certificate to the end of the 26th week of gestation. After this point, the certificate shall be suspended. The suspension shall be lifted after full recovery following the end of the pregnancy.

(2) Holders of Class 1 medical certificates shall only exercise the privileges of their licences until the 26th week of gestation with an OML. Notwithstanding MED. B.001 in this case, the OML may be imposed and removed by the AeMC or AME.

AMC1 MED.B.045 Obstetrics and gynaecology (Class 1)

(a) Gynaecological surgery

An applicant who has undergone a major gynaecological operation should be assessed as unfit for a period of 3 months or until such time as the effects of the operation are not likely to interfere with the safe exercise of the privileges of the licence(s) if the holder is completely asymptomatic and there is only a minimal risk of secondary complication or recurrence.

(b) Severe menstrual disturbances

An applicant with a history of severe menstrual disturbances unamenable to treatment should be assessed as unfit.

(c) Pregnancy

(1) A pregnant licence holder may be assessed as fit with a multi-pilot limitation during the first 26 weeks of gestation, following review of the obstetric evaluation by the AeMC or AME who should inform GCAA.

(2) The AeMC or AME should provide written advice to the applicant and the supervising physician regarding potentially significant complications of pregnancy.

AMC2 MED.B.045 Obstetrics and gynaecology (Class 2)

(a) Gynaecological surgery

An applicant who has undergone a major gynaecological operation should be assessed as unfit until such time as the effects of the operation are not likely to interfere with the safe exercise of the privileges of the licence(s).

(b) Pregnancy

(1) A pregnant licence holder may be assessed as fit during the first 26 weeks of gestation following satisfactory obstetric evaluation.

(2) Licence privileges may be resumed upon satisfactory confirmation of full recovery following confinement or termination of pregnancy.

MED.B.050 Musculoskeletal System

(a) Applicants shall not possess any abnormality of the bones, joints, muscles or tendons, congenital or acquired which is likely to interfere with the safe exercise of the privileges of the applicable licence(s).

(b) An applicant shall have sufficient sitting height, arm and leg length and muscular strength for the safe exercise of the privileges of the applicable licence(s). Applicants who do not have sufficient sitting height, arm and leg length and muscular strength for the safe exercise of the privileges of the licence shall be assessed as unfit. However, where their sitting height, arm and leg length and muscular strength is sufficient for the safe exercise of the privileges in respect of a certain aircraft type, which can be demonstrated where necessary through a medical flight or a simulator flight test, the applicant may be assessed as fit and their privileges shall be limited accordingly.

(c) An applicant shall have satisfactory functional use of the musculoskeletal system to enable the safe exercise of the privileges of the applicable licence(s). Applicants who do not have satisfactory functional use of the musculoskeletal system to enable them to safely exercise the privileges of the licence shall be assessed as unfit. However, where their functional use of the musculoskeletal system is satisfactory for the safe exercise the privileges in respect of a certain aircraft type, which may be demonstrated where necessary through a medical flight or a simulator flight test, the applicant may be assessed as fit and their privileges shall be limited accordingly. It is, however, understood that a degree of interpretation and assessment must always be exercised at the discretion of the medical examiner, taking into consideration not

only medical but also operational and environmental factors of relevance for the overall aeromedical evaluation of an applicant's fitness.

(d) In case of doubt arising in the context of the assessments referred to in points (b) and (c), applicants for a class 1 & 2 medical certificate shall be referred to the GCAA-Aeromedical section.

AMC1 MED.B.050 Musculoskeletal system (Class 1)

(a) An applicant with any significant sequela from disease, injury or congenital abnormality affecting the bones, joints, muscles or tendons with or without surgery requires full evaluation prior to a fit assessment. Medical flight test may be required.

(b) Initial applicant for GCAA medical certification with a limb deficiency will not be certified

(c) An applicant with inflammatory, infiltrative, traumatic or degenerative disease of the musculoskeletal system may be assessed as fit provided the condition is in remission and the applicant is taking no disqualifying medication and has satisfactorily completed a medical flight or simulator flight test. A limitation to specified aircraft type(s) may be required.

(d) Abnormal physique, including obesity, or muscular weakness may require medical flight or flight simulator testing. Particular attention should be paid to emergency procedures and evacuation. A limitation to specified aircraft type(s) may be required.

AMC2 MED.B.050 Musculoskeletal system (Class 2)

(a) An applicant with any significant sequela from disease, injury or congenital abnormality affecting the bones, joints, muscles or tendons with or without surgery should require full evaluation prior to fit assessment.

(b) In cases of limb deficiency, a fit assessment may be considered following a satisfactory medical flight test.

(c) An applicant with inflammatory, infiltrative, traumatic or degenerative disease of the musculoskeletal system may be assessed as fit, provided the condition is in remission and the applicant is taking no disqualifying medication and has satisfactorily completed a medical flight test. A limitation to specified aircraft type(s) may be required.

(d) Abnormal physique or muscular weakness may require a satisfactory medical flight test. A limitation to specified aircraft type(s) may be required.

MED.B.055 Psychiatry

(a) Comprehensive mental health assessment shall form part of the initial class 1 aero-medical examination.

(b) Drugs screening shall form part of the initial aero-medical examination.

(c) Applicants with a mental or behavioural disorder due to alcohol or other use or abuse of psychoactive substances shall be assessed as unfit pending recovery and freedom from substance use and subject to satisfactory psychiatric evaluation after successful treatment. Applicants for a Class 1 medical certificate shall be referred to the GCAA. Fitness of Class 2 applicants shall be assessed in consultation with the Aeromedical section.

(d) Applicants with a clinical diagnosis or documented medical history of any of the following psychiatric conditions shall undergo satisfactory psychiatric evaluation before they may be assessed as fit:

(1) mood disorder;

(2) neurotic disorder;

(3) personality disorder;

(4) mental or behavioural disorder;

(5) misuse of a psychoactive substance

(e) Applicants with a history of a single or repeated acts of deliberate self-harm shall be assessed as unfit. Applicants shall undergo satisfactory psychiatric evaluation before a fit assessment can be considered.

(f) Aero-medical assessment:

(1) applicants for a Class 1 medical certificate with one of the conditions detailed in (c), (d) or (e) above shall be referred to the licensing authority;

(2) fitness of Class 2 applicants with one of the conditions detailed in (c), (d) or (e) above shall be assessed in consultation with the licensing authority.

(g) Applicants with an established history or clinical diagnosis of schizophrenia, schizotypal or delusional disorder shall be assessed as unfit.

AMC1 MED.B.055 Psychiatry (Class 1)

(a) Mental health assessment as part of the initial class 1 aero-medical examination

(1) A comprehensive mental health assessment should be conducted and recorded considering social, environmental and cultural contexts.

(2) The applicant's history and symptoms of disorders that might pose a threat to flight safety should be identified and recorded.

(3) The mental health assessment should include assessment and documentation of:

(i) general attitudes to mental health, including understanding possible indications of reduced mental health in themselves and others;

(ii) coping strategies under periods of psychological stress or pressure in the past, including seeking advice from others;

(iii) childhood behavioural problems;

(iv) interpersonal and relationship issues;

(v) current work and life stressors; and

(vi) overt personality disorders.

(4) Where there are signs or is established evidence that an applicant may have a psychiatric or psychological disorder, the applicant should be referred for specialist opinion and advice.

(b) Mental health assessment as part of revalidation or renewal class 1 medical examination

(1) The assessment should include review and documentation of:

(i) current work and life stressors;

(ii) coping strategies under periods of psychological stress or pressure in the past, including seeking advice from others;

(iii) any difficulties with operational crew resource management (CRM);

(iv) any difficulties with employer and/or other colleagues and managers; and

(v) interpersonal and relationship issues, including difficulties with relatives, friends, and work colleagues.

(2) Where there are signs or is established evidence that an applicant may have a psychiatric or psychological disorder, the applicant should be referred for specialist opinion and advice.

(3) Established evidence should be verifiable information from an identifiable source related to the mental fitness or personality of a particular individual. Sources for this information can be accidents or incidents, problems in training or proficiency checks, behaviour or knowledge relevant to the safe exercise of the privileges of the applicable licence(s).

(a) Assessment of holders of a class 1 medical certificate referenced in MED.B.055(d)

Assessment of holders of a class 1 medical certificate referenced in MED.B.055(d) may require psychiatric and psychological evaluation as determined by the aeromedical Inspector of the GCAA. A SIC limitation should be imposed in case of a fit assessment. Follow-up and removal of SIC limitation, as necessary, should be determined by the Aeromedical Inspector of the GCAA.

(b) Psychoactive substance testing

(1) Drug tests should screen for opioids, cannabinoids, amphetamines, cocaine, hallucinogens and sedative hypnotics. Following a risk assessment performed by the organization on the target population, screening tests may include additional drugs.

(2) For renewal/revalidation, random psychoactive substance screening test may be performed based on the risk assessment by the competent authority on the target population. If random psychoactive substance screening test is considered, it should be performed and reported in accordance with the procedures developed by the organization.

(3) In the case of a positive psychoactive substance screening result, confirmation should be required in accordance with CAR-PSMP standards and procedures for psychoactive substance testing.

(4) In case of a positive confirmation test, a psychiatric evaluation should be undertaken before a fit assessment may be considered by the medical assessor of the licensing authority.

(e) Assessment and referral decisions

(1) Psychotic disorder

Applicants with a history, or the occurrence, of a functional psychotic disorder should be assessed as unfit. A fit assessment may be considered if a cause can be unequivocally identified as one which is transient, has ceased and the risk of recurrence is minimal.

(2) Organic mental disorder

An organic mental disorder is disqualifying. Once the cause has been treated, an applicant may be assessed as fit following satisfactory psychiatric review.

(3) Psychoactive medication

Applicants who use psychoactive medication likely to affect flight safety should be assessed as unfit. If stability on maintenance psychoactive medication is confirmed, a fit assessment with an OML may be considered. If the dosage or type of medication is changed, a further period of unfit assessment should be required until stability is confirmed.

(4) Schizophrenia, schizotypal or delusional disorder

Applicants with an established schizophrenia, schizotypal or delusional disorder should only be considered for a fit assessment if the Aeromedical section concludes that the original diagnosis was inappropriate or inaccurate or, in the case of a single episode of delirium, provided that the applicant has suffered no permanent impairment.

(5) Mood disorder

An established diagnosis of Manic disorder is disqualifying, whether occurring in isolation or as part of a bipolar disorder.

Established diagnosis of depressive disorder after full recovery and after full consideration of an individual case a fit assessment may be considered, depending on the characteristics and severity of the mood disorder without Pshcycotic symptoms and no suicidal attempt. If a stable maintenance psychotropic medication is confirmed, a fit assessment should require a multi-pilot limitation.

(6) Neurotic, stress-related or somatoform disorder

Where there is suspicion or established evidence that an applicant has a neurotic, stress-related or somatoform disorder, the applicant should be referred for psychiatric opinion and advice.

(7) Personality or behavioural disorder

Where there is suspicion or established evidence that an applicant has a personality or behavioural disorder, the applicant should be referred for psychiatric opinion and advice.

(8) Disorders due to alcohol or other substance use

(i) Mental or behavioural disorders due to alcohol or other psychoactive substance use, use or misuse with or without dependency, should be assessed as unfit.

(ii) A fit assessment may be considered after a period of two years documented sobriety or freedom from psychoactive substance use or miss use. At revalidation or renewal a fit assessment may be considered earlier with a multi-pilot limitation. Depending on the individual case, treatment and evaluation may include In-patient treatment of some weeks and inclusion into a support programme followed by review by a psychiatric specialist; and ongoing checks, including drug and alcohol testing and reports resulting from the support programme, which may be required indefinitely.

(9) Deliberate self-harm

A single self-destructive action or repeated acts of deliberate self-harm are disqualifying. A fit assessment may be considered after full consideration of an individual case and may require psychiatric or psychological review. Neuropsychological assessment may also be required.

(10) Assessment

The assessment should take into consideration if the indication for the treatment, side effects and addiction risks of such treatment and the characteristics of the psychiatric disorder are compatible with flight safety.

(f) Specialist opinion and advice

(1) In case a specialist evaluation is needed, following the evaluation, the specialist should submit a written report to the AME, AeMC or Aeromedical Inspector of the GCAA as appropriate, detailing their opinion and recommendation.

(2) Psychiatric evaluations should be conducted by a GCAA approved and qualified psychiatrist having adequate knowledge and experience in aviation medicine.

(3) The psychological opinion and advice should be based on a clinical psychological assessment conducted by a suitably qualified and accredited Senior psychologist with expertise and experience in aviation psychology.

(4) The psychological evaluation may include a collection of biographical data, the administration of aptitude as well as personality tests and clinical interview.

GM1 MED.B.055 Psychiatry (Class 1&2)

(a) Major Depression

(1) Protocol for licensing pilots with Major Depression

(i) Initial diagnosis of a Depressive episode (according to ICD 10/or DSM V criteria) and treatment should be initiated by a GCAA approved Psychiatrist.

(ii) Baseline Clinical Psychologist assessment should be done by GCAA approved Psychologist at diagnosis. The Psychometric testing to include Hamilton Score if depressed or Becks Anxiety Inventory for Anxiety. Additional tests at the discretion of the Approved GCAA Psychologist.

(iii) Baseline blood tests to exclude co-morbid Drug and Alcohol misuse including a urine drug screen, full blood count, liver function tests, thyroid function tests and carbohydrate deficient transferrin

(iv) The treatment options include Cognitive Behavioural Therapy (CBT), and or Selective Serotonin Re-uptake Inhibitors (SSRI's). The SSRI's allowed to be used are Citalopram, Escitalopram, Sertraline and Fluoxetine. Other treatment options should be assessed on individual basis.

(v) . Initial grounding should be for at least four weeks post commencement of treatment. This period to:

(A) Check for potential side effects

(B) Improvement in the condition

(C) Stability

(vi) The pilot will be reviewed monthly by the treating Psychiatrist and AME with a Hamilton rating score or Becks anxiety inventory

(vii) Once stable and there is absence of any side effects confirmed by the treating Psychiatrist, the AME will arrange a psychological assessment and a functional simulator assessment. The simulator assessment will follow a standardised protocol to ensure safe handling of the aircraft in all conditions.

(viii) On completion of all the tests to a satisfactory level, a second Psychiatrist evaluation will be arranged.

(ix) The AME will send the following reports to the GCAA:

(A) Initial psychiatrist reports with all details of the case as per GCAA form.

(B) Initial psychologist assessment including the result of psychometric test.

(C) Monthly follow up of the case from the first Psychiatrist and the AME.

(D) Second psychometric test result after stability of the condition.

(E) The second psychiatrist evaluation of the condition after stabilisation of the condition.

(F) Simulator test result.

(x) The GCAA will evaluate the reports and determine the fitness of the applicant. Class 1 may be granted medical certificate with OML restriction. On individual basis the GCAA may request the convene of an Aeromedical board.

(xi) After returning to flying duties the pilot should ground himself if he feels a worsening of his condition or cognitive functioning.

(xii) After returning to flying duties and being treated, the pilot should be evaluated every month by GCAA Approved Psychiatrist, The review should include Hamilton score if depressed, if the score is above 8, the pilot should be grounded for further assessment and treatment.

(xiii) The AME should also review the Applicant who returns to flying duties on treatment every month to confirm the stability of his medical condition. Any change in his condition should immediately be evaluated by Psychiatrist.

(xiv) Any decline in cognitive function detected on routine flying (by Colleague or Supervisor) or during Simulator check should necessitate immediate grounding and Psychiatric re-evaluation.

(xv) Any suicidal ideation during the course of stability will necessitate grounding and further Psychiatric re-evaluation.

(xvi) Evidence of non-compliance with treatment or ignorance of Psychiatric or AME reviews, necessitates immediate grounding.

(xvii) Once CBT treatment has finished, Pilot should be reviewed on monthly basis by AME and 3 monthly by the Psychiatrist, and if after at least six months there are no further areas of concern, the GCAA will convene a second Aeromedical evaluation board, at the request of the AME, to reassess the Pilot's condition to remove the OML restriction.

(xviii) Follow up should continue as directed by the Psychiatrist and AME which may be indefinitely.

(xix) For Pilots completing SSRIs treatment, a four week ground trial is required to assess any withdrawal symptoms from cessation of treatment. The psychiatrist should liaise with the AME regarding the timing of this.

(xx) Once successful withdrawal has occurred, a report to be sent to the GCAA recommending return to flying with OML off medication. The Pilot will be subjected to monthly AME or Psychiatric review.

(xxi) After minimum of 6 month flying with satisfactory Psychiatric and AME reviews, a full report recommending removal of OML restriction to be forwarded to the GCAA for their consideration. Second Psychiatrist evaluation may be required by the GCAA.

(xxii) Follow up should continue as directed by the Psychiatrist and AME which may be indefinitely.

(2) Cognitive Simulator assessment

(i) Simulator assessment to be done between 3-5 am during Cognitive/ Circadian lows.

(ii) The focus of the evaluation is to assess the pilot's cognitive and decision making skills during periods of high workload to the level of (Company).

(iii) A comparison of the current cognitive skill level for the pilot with his skill level prior to his illness is recommended whenever applicable.

(iv) This simulator should be conducted under 'day' and 'night' conditions to follow the current PPC scenario - which would confirm that the pilot meets the regulatory standards;

(v) In addition the pilot should conduct a Manual Handling Simulator where the pilot would be required to operate the simulator without the use of auto pilot, flight director or auto thrust. This exercise is designed to check a pilot's instrument scan as well as his capacity, airmanship and awareness. The exercise should include rapid role reversals in bank and pitch to test for dizziness;

(vi) The final part of the simulator should be a manually flown single engine ILS, which would check capacity, awareness and alertness.

(3) Specification for Psychiatric report

(i) Applicant details

(ii) History of presenting complaint

(iii) Current neurovegetative signs and symptoms

(iv) Past psychiatric history

(v) Substance abuse history

(vi) Family psychiatric history

(vii) Medical History

(viii) Social history

(ix) Career history

(x) Forensic history

(xi) Mental status examination

(xii) Diagnosis

(xiii) Treatment plan

(xiv) Follow up requirements

(xv) Prognosis

(xvi) Fitness assessment requirement

(b) Neurotic, stress-related and somatoform disorders

(1) Phobic anxiety disorders

The essential feature of this disorder is marked and persistent fear of clearly, circumscribed objects or situations. Exposure to the phobic stimulus almost invariably provokes an immediate anxiety response. The GCAA may grant aeromedical certification where an applicant's specific phobia is unrelated to the aviation environment or unlikely to affect aviation adversely.

(2) Panic Disorder

The essential feature here is recurrent attacks of severe anxiety (panic) which are not restricted to any particular situation or set of circumstances and are unpredictable. There is often secondary fear of dying, losing control or going mad. The dominant symptoms, as with other anxiety disorders, include palpitations, chest pain, choking sensations, dizziness and feelings of unreality (de-personalisation or de-realisation). Attacks occurs suddenly, may be unpredictable and usually build to maximum within 10-15 minutes. The GCAA will not grant aeromedical certification to an individual who suffers non-specific or unpredictable panic attacks.

(3) Obsessive compulsive disorders

The essential feature here is that of recurrent obsessional thoughts or compulsive acts.

Obsessional thoughts are ideas, images or impulses that enter the individual's mind again and again in a stereotyped form. They are almost invariably distressing and the patient often tries unsuccessfully to resist them. They are, however, recognised as his/her own thoughts, even though they are involuntary and often repugnant. Compulsive acts or rituals are stereotype behaviours which are repeated again and again. They are not inherently enjoyable nor do they result in the completion of inherently useful tasks. Their function is to prevent some objectively unlikely event which he/she fears might involve harm. This behaviour is recognised by the patient as pointless or ineffectual, and repeated attempts may be made to resist Anxiety is almost invariably present. If the compulsive acts are resisted the anxiety gets worse.

(4) Generalised anxiety disorder

The anxiety that is generalised and persistent but not restricted to, or even strongly predominating in any particular environmental circumstances. The symptoms are variable but include complaints of persisting nervousness, trembling, muscular tension, sweating, light headedness, palpitations, dizziness and epigastric discomfort. Fears that the individual or a relative will shortly become ill or have an accident are frequently expressed. The clinical course is chronic and fluating.

(5) Reaction to severe stress and adjustment disorders

(i) Acute stress disorder

That is a transient disorder that develops in an individual without any other apparent mental disorder in response to exceptional physical and mental stress and which usually peaks after 2- 5 days and resolve within a month. The GCAA will not usually grant medical certification while the individual is experiencing an acute reaction. Once the condition has resolved, return to flying duties is likely.

(ii) Post traumatic stress disorder (PTSD)

This arises as delayed or protracted response to a stressful event or situation of a brief or long duration, of an exceptional threatening or catastrophic nature which is likely to cause pervasive distress in almost anyone. The disorders in this section are thought to arise always as a direct consequence of acute severe stress or continued trauma. These disorders can be regarded as maladaptive responses to severe or continued stress, in that they interfere with successful coping mechanisms and therefore lead to problems of social functioning.

Predisposing factors, such as personality traits (e.g. compulsive, asthenic) or previous history of neurotic illness may lower the threshold for the development of the syndrome or aggravate its course but they are neither necessary nor sufficient to explain its occurrence.

Typical features include episodes of repeated reliving of the trauma in intrusive memories ("flashbacks"), dreams or nightmares, occurring against the persisting background of a sense of "numbness" and emotional blunting, detachment from other people, unresponsiveness to surroundings, anhedonia and avoidance of activities and situations reminiscent of the trauma.

It usually starts with autonomic hyperarousal with hypervigilance and enhanced startle reaction and insomnia.

Anxiety and depression are commonly associated with the above symptoms and signs, and suicidal ideation is not infrequent. The onset follows the trauma with a latency period that may range from a few weeks to months. The course is fluctuating but recovery can be expected in the majority of cases. In a small proportion of cases the condition may follow a chronic course over many years with eventual transition to an enduring personality change.

The use of beta blockade and anti-depressive medications, together with psychotherapy offers considerable hope of alleviation of symptoms.

The importance of this stress reaction in aviators lies not only in the symptomatic disorders described above but the very real potential for the development of loss of confidence in, and a fear of flying. Such a development would almost certainly lead to disqualification from continuing certification in a high proportion of such individuals. The role of the authorised medical examiner is paramount in such situations. The GCAA will not usually grant aeromedical certification to individual who suffers from acute symptoms of PTSD. Certification may be considered once an individual's symptoms are controlled and the applicant is considered to pose no threat to the safety of air navigation or flight safety.

Medical certification of the pilots diagnosed with PTSD depends upon the successful resolution of symptoms and maintenance of symptom remission.

The GCAA highlights the pilot should report any adverse changes in anxiety symptoms. Failure to report a change in status would result in removal of his medical authorisation to fly. The validity should be every 6 months with a specialised psychiatrist reporting the pilot's mental health status and progress.

(iii) Adjustment disorders

The manifestations vary and include depressed mood, anxiety or worry in a combination of these a feeling of inability to cope, as well as some degree of disability in the performance of daily routines. GCAA will not usually grant aeromedical certification to individual who suffers from acute symptoms of adjustment disorders.

(6) Mixed anxiety and depressive disorder

Anxiety and depression or neurotic depression should be used when symptoms of anxiety and depression are both present but neither is clearly predominant and neither type of symptom is present to the extent that justifies a diagnosis, if each is considered separately.

(7) Somatoform Disorders

The common features of this group of disorders are the presence of physical symptoms that suggest an underlying physical condition, but are not explained by that medical condition. The symptoms cause clinically significant distress or impairment in social, occupational or other areas of functioning and are not intentional. The individual shows a refusal to discuss the possibility of a psychological cause, even if the symptoms onset and evolution prove a close relationship to unhappy life events or hardships and conflicts.

With this kind of disorders there is behaviour or focusing on catching the attention of the people around; it is common that the individuals have an acute feelings of their incapacity to persuade the physicians about the somatic nature of their illness and the need of a new investigation.

Somatoform disorders include:

(i) Somatization disorder

The main features are multiple, recurrent and frequently changing physical symptoms that have persisted many years before the individual's coming to the psychiatrist.

The symptoms can affect each part of the body, nevertheless, the most common sensations are gastrointestinal ones (pain, feeling bloated and full of gas, regurgitation of food, nausea, vomiting) and skin symptoms (unpleasant numbness or tinkling, burning sensations, itching). Sexual and menstrual complaints are also common. The course of the disorder is chronic and fluctuating and is often associated with disruption of social, interpersonal and family behaviour.

(ii) Hypochondrical disorder

The essential feature is a persistent preoccupation with the possibility of having one or more serious and progressive physical disorders. The individuals show persistent somatic complaints or a persistent preoccupation with their physical appearance.

Normal or common place sensations are often considered by these individuals as abnormal and distressing, and attention is usually focused upon only one or two organs or systems of the body. Marked depression and anxiety are often present and may justify additional diagnosis.

There is persistent refusal to accept medical reassurance that there is no real physical cause for the symptoms in discussion.

(iii) Somatoform autonomic dysfunction

Symptoms are presented by the individual as if they were due to a physical disorder of a system or organ that is largely or completely under autonomic innervations and control, i.e. the cardiovascular, gastrointestinal, respiratory and urogenital systems.

The most common and significant complains are the ones referring to the cardiovascular system (cardiac neurosis or Da Costa's syndrome or neurocirculatory asthenia), to the respiratory system (hyperventilation, psychogenic cough), to the gastrointestinal system (gastric neurosis, neurotic diarrhoea, irritable bowel syndrome, flatulence) and also to the urogenital system (dysuria and increased frequency of micturition).

The symptoms are usually of two types neither of which indicates a physical disorder of the organ or system concerned. Firstly, there are complaints based upon objective signs of autonomic arousal, such as palpitations, sweating, flushing, tremor and expression of fear and distress about the possibility of a physical disorder. Secondly, there are subjective complaints of a non-specific or changing nature, such as fleeting aches and pains, sensations of burning, heaviness, tightness and feelings of being bloated and distended, which are referred by the individual to a specific organ or system.

(iv) Aeromedical Assessment of Neurosis and Somatoform Disorders

(A) The initial applicant

If the applicant has suffered a psychiatric illness of significant severity requiring a period, or periods, of psychotropic medication, or has required admission to a psychiatric hospital or undergone prolonged out patient care, he should normally be assessed as unfit for both commercial flying and air traffic control duties. (Referral for formal psychiatric assessment may allow a fit assessment for a private pilot and Cabin crew in certain circumstances.)

(B) Established flight crew

The established pilot has proved himself to be competent by successfully completing flying training. The decision as to his suitability to maintain a medical certificate may, therefore, be considered more sympathetically than is the case with the initial applicant.

a) During the acute phase of any neurotic illness the presence of anxiety or depression is likely to interfere with decision making and the individual should be assessed as temporarily unfit to follow his profession until there has been full recovery.

b) The use of psychotropic medication to treat psycho neurotic illness is incompatible with aviation duty and while any form of major or minor psychotropic drug aeromedical fitness is deemed to be suspended. This suspension should remain in force until a suitable period has elapsed following the cessation of medication to ensure that stability is maintained. Cases of cabin crew diagnosed with psycho

neurotic illness may be permitted by the GCAA to return to flying duties, when satisfactory control is demonstrated by the use of medication.

c) A single episode which clears completely in less than three months should be considered compatible with a return to flying.

d) A protracted illness with poor response to treatment or characterised by relapses will normally lead to permanent unfit assessment.

(c) Personality disorders

Personality disorders are always troublesome and are more likely to cause administrative or operational problems rather than frank medical problems. They imply lasting, deeply ingrained, inflexible behaviour patterns which, if severe enough, impair social interactions or produce symptomatic subjective distress in response to external stressors. In lesser form these are referred to as personality traits which exist for years in the 'odd', non-conforming personality and do not cause severe problems.

A number of specific personality disorders are identified including:

a) Anti-social personality disorder (impulsive, aggressive, manipulative),

b) Borderline personality disorder (impulsive, self-destructive, unstable),

c) Dependent personality disorder (dependent, submissive, clinging);

d) Histrionic personality disorder (emotional, dramatic, theatrical);

e) Narcissistic personality disorder (boastful, egotistical, superiority complex);

f) Obsessive –compulsive personality disorder (perfectionist, rigid, controlling);

g) Paranoid personality disorder (suspicious, distrustful);

h) Schizoid personality disorder (socially distant, detached), etc.

While personality trait are unique and may enable a person to excel in a particular field, individuals with identifiable personality disorders are likely to have attitudes or perform acts that may be prejudicial to fight safety, such individuals fail to meet the psychiatric medical standards and requirements and will be disqualified from aeromedical certification.

Certification may be considered if a board of psychiatrist and psychologist with experience in aviation medicine- confirm that a Pilot with a personality disorder represents a low risk to aviation safety.

(d) Alcohol screening tests

(1) Indications

(A) Screening as part of over 60 medical certification.

(B) As part of the medical evaluation determined by the AME during the regulatory

medical examination.

(C) New cases of cardiac arrhythmias especially Atrial Fibrillation, Insomnia, Mood disorders, Liver function derangement, Isolated Hypertriglyceridaemia, Newly diagnosed Hypertension, Newly diagnosed Diabetes, Suspicious Musculoskeletal injuries e.g. Rib fractures or Metacarpal fractures or Road Traffic Accidents, New onset of Gout.

(D) Any elevated MCV, isolated elevated GGT, elevated ferritin and elevated CDT detected on routine testing not related with clinical findings and investigated appropriately.

(E) Referral following an aviation incident or work related issues.

(F) 3rd party notifications for suspected Drug or Alcohol misuse.

(G) Drink/Drug drive arrests whether local or international

(2) Screening tools:

(i) A detailed interview and system review should be conducted with emphasis on the following:

(A) Alcohol intake – amount /type/how often

(B) Smoking history

(C) Family history of substance misuse

(D) Physical dependence – withdrawal symptoms

(E) Sickness absence record-pattern of frequent, short term, last minute leave is often seen with substance-use disorder Neurological issues

(F) Cardiac – arrhythmias/hypertension

(G) Gastroenterology – Gastritis/GORD

(H) Injuries- recurrent or unexplained

(I) Legal and social problems

(J) Marital disharmony

(K) Psychological problems

(ii) Examination

(A) Physical dependence – signs of withdrawal (e.g. irritability, restlessness, apprehension …)

(B) General appearance- complexion

(C) Liver damage – spider naevi, hepatomegaly

(D) Hypertension

(E) Pancreatitis

(F) Cardiomegaly, arrhythmias

(iii) Questionnaire

AUDIT (Alcohol Use Disorders Identification Test) – score of 8 or more suggests that there could be a problem with alcohol.

It should be correlated with history and clinical examination and blood tests.

(iv) Laboratory testing

(A) **GGT (Gamma-Glutamyl Trasferase):** Is raised in about 80% of heavy drinkers, but is not a completely specific marker for harmful use of alcohol.

(B) **MCV (mean Corpuscular Volume):** The MCV is raised above normal values in about 60% of alcohol dependent people and, like GGT, is not a completely specific marker. The value takes 1-3 months to return to normal following abstinence.

(C) **CDT (Carbohydrate Deficient Transferring):** CDT has similar properties to GGT in so far its use as a screening test is concerned. It is more specific to heavy drinking than GGT, but perhaps less sensitive to intermittent "binge" drinking. In persons who consume significant quantities of alcohol (> 4 or 5 standard drinks per day for two weeks or more), CDT will increase and is an important marker for alcohol –use disorder. CDT usually increases within one week of the onset of heavy drinking and recovers 1 to 3 weeks after cessation of drinking. Any elevation of CDT requires immediate grounding, a liver ultrasound to assess for biliary disease and a full report from a substance abuse specialist to the GCAA regarding alcohol intake.

(D) **Others if indicated** (LFTs, Triglycerides, Ferritin, Liver Ultrasound, Urine EtG/ PeTH).

(v) In the presence of high index of suspicion, the AME will without delay evaluate the applicant to all the assessments as per GCAA Alcohol Use Disorder Form and then the AME should refer the case to the SAME and/or GCAA for further evaluation recommendation**.**

(vi) The GCAA /or the SAME will take the following actions:

(A) Review the case:

1) In the case SAME is reviewing the form; he/she should send all reports to the GCAA without delay with a further recommended management strategy if the case is deemed low risk.

2) Temporary suspends the applicant's licence if deemed a moderate or high risk.

3) Refer the licence holder to trained, experienced Psychologist, acceptable to the GCAA for further assessments.

4) Refer the licence holder for CogScreen.

5) Refer the licence holder to a trained, experienced Substance Abuse Specialist acceptable to the GCAA if there are any areas for concern.

(vii) Upon confirming the diagnosis of Alcohol Use Disorder as per DSM V and completion of the treatment plan, the SAME will send to the GCAA a comprehensive report including summaries from Psychologist, Substance Abuse Specialist and Cognitive SIM check report recommending the re-instatement and follow up programme.

If no diagnosis is made, the SAME will forward a recommendation including follow up reviews and testing if needed to the GCAA.

(viii) The GCAA will convene an Aeromedical board.

Note 1: Re-instatement of suspended cases will not be considered without full assessment by SAME, Psychologist and Substance Abuse specialist.

Note 2: Grounding period for licence holders with suspected and/or diagnosed Alcohol Use Disorder depend on the individual assessment of the case and circumstances.

Note 3: This protocol applied only to Non- dependent Alcohol Use Disorder as per DSM –V criteria.

Note 4: For the purpose of this protocol, The GCAA will only accept a report from an experienced Psychologist and or HIMS trained.

Note 5: For the purpose of the diagnosis, The GCAA will only accept reports from an experienced Substance Abuse Specialist who is preferably HIMS trained and has some prior experience in aviation.

Note 6: The GCAA highly recommend that any correspondence with the licence holder with this medical condition to be recorded officially especially the requirements to refrain from alcohol use totally.

(3) Protocol reinstatement and follow up

(i) Following treatment, the applicant will be required to remain abstinent from all alcohol or any other mood-altering substances (especially sleep medications and analgesics with an addictive potential) thereafter.

(ii) All additional medications or substances thereafter to be discussed and approved by the SAME or designate in writing.

(iii) Accidental or inadvertent intake of alcohol or unauthorized substances shall not be accepted as an acceptable explanation thereafter.

(iv) Upon receiving a satisfactory medical board recommendation, the following limitations will be required for licensing:

(A) OML restriction for Class 1 licence holder.

(B) Abstinence from all alcohol.

(C) Monitoring, preferably by an employee assistance professional or designated peer.

(D) Periodic re-evaluation by a Substance Abuse Specialist. This shall be determined on an individual basis by the treatment facility and treating SAME and the medical board.

(E) Support groups. Involvement in a group such as Alcoholics Anonymous (AA) (3 meetings per week) can provide affected individuals with a continuing source of support during their ongoing rehabilitation process. Three support group meetings per week and a log of all meetings attended should be kept for review with SAME.

(F) Monthly Senior AME contact.

(G) Monthly Blood tests (PeTH, CDT, MCV, GGT) Urine, breath and or other tests as deemed appropriate by the SAME or specialists at any future point.

(H) A minimum of fifteen unannounced breath alcohol testing per year. This may include the non-work related testing. Attention is required to randomly execute the testing in the pilots who are doing limited number of flights per year.

(v) Removal of OML

(A) Minimum three years post reinstated licence, the applicant may apply for a removal of OML.

(B) The SAME should send all initial reports, investigation result, and substance abuse specialist report along with all documentation of successful follow up program to the GCAA.

(C) The GCAA will convene an aeromedical board.

(D) The AMS will evaluate all the reports and if in the documentation of appropriate treatment and abstinence is acceptable the AMS will lift the OML restriction and any other requirements as appropriate to the case.

Note 1: If relapse occurs at any time during the follow up program, the pilot will be removed permanently from flying duties.

Note 2: Failure to meet any of the mitigation strategies enforced with the reinstatement will lead to permanent suspension. The SAME should immediately advise the GCAA about this failure.

Note 3: CDT has proven successful in monitoring drinking status in patients under alcohol treatment. Rather than using a cut-off point for monitoring abstinence and relapses, a % change in raw CDT value from a baseline measurement is the most sensitive and appropriate method. Individuals who remain abstinent experience an average 30% decrease in CDT value from baseline; whereas, those who relapse show a 10% increase in their CDT concentrations. CDT seems to be better than traditional markers at monitoring patients for increased alcohol consumption or progress towards abstinence. It may therefore be used in some cases where PeTH testing proves challenging.

Note 4: All Substance Abuse Specialist report should follow the specification set in Appendix 2.

(e) DSH (deliberate self-harm)

It is not unknown, but uncommon, for an individual to use an aircraft as a means of committing suicide and a brief review of assessing an individual 'at risk' is relevant.

There are differences between those who successfully complete the act of suicide and those who survive after overdose or deliberate self-harm.

Those who commit suicide are more often male and the majority suffers from a psychiatric disorder. The act is carefully planned, precautions taken against discovery, and the method is usually violent. The majority is suffering from a depressive disorder, many have significant social problems and alcoholism is a feature in about 15% of cases. In the younger age groups personality disorders feature largely, often associated with alcohol or drug abuse, and adverse social factors.

Deliberate self-harm is usually an impulsive act, committed in such a way as to invite discovery.

Over dosage with minor tranquillisers, antidepressants and non-opiate analgesics are common. Here again personality disorders with alcohol and drug abuse are prominent features together with social isolation and deprivation, but frank psychiatric illness is uncommon. In assessing potential risk the following factors should be considered:

(1) a history of direct statement of intent:

(2) a history of previous self-harm;

(3) a previous or current depressive disorder, particularly those in the early phase of recovery;

(4) alcohol dependence, particularly where physical complications or severe social damage exists;

(5) Drug dependence;

(6) Social deprivation or loneliness.

At the initial selection interview those with a history of previous suicidal attempts should be very carefully and searchingly evaluated psychiatrically and it would be wise not to allow such individuals to enter a flying career.

Those who develop depressive illnesses should be excluded from flying and fully evaluated on recovery before reinstatement in a flying role. It is particularly important that those with alcohol dependence or abuse are assessed as temporarily unfit following diagnosis. Those individuals with significant personality disorders should be carefully excluded at the initial examination, if at all possible.

(f) Alcohol

(1) Alcohol is a contributory factor in a number of aircraft accidents every year. It is now well established that even small amounts of alcohol in the blood produce a significant and measurable deterioration in the performance of skilled tasks. Research has shown that blood alcohol concentrations of 0.04% (0.04 gm/100ml) are associated with a highly significant increase in errors committed by both experienced and in-experienced pilots even in simple aircraft. This level may be produced after consuming two units of alcohol, e.g. 5cl of whiskey or 0·5L of beer.

(2) The number of units in an alcoholic drink is given by the volume of the drink in centilitres.

(3) multiplied by the strength in % weight/volume (%w/v).

Examples:

(i) 50 cl (0·5L) of beer of 5%w/v contains 2·5 units. (5% of 50 = 2·5).

(ii) 2·5 cl of whiskey of 40%w/v contains 1 unit. (40% of 2·5 = 1).

(iii) 75 cl (1 bottle) of wine of 12%w/v contains 9 units. (12% of 75 = 9).

(4) Alcohol is removed from the body at a relatively constant rate (0·15 promille each hour-0.015%-) regardless of the concentration present. Pilots should not fly for at least 12 hours after taking small amounts of alcohol and proportionally longer if larger amounts are consumed. It should also be remembered that alcohol can have delayed effects on the blood sugar and the inner ear. The effects on the inner ear can be prolonged and increase susceptibility to disorientation and even motion sickness. It is prudent for a pilot to abstain from alcohol at least 24 hours before flying.

(5) It should be remembered that alcohol's effects can be enhanced or prolonged significantly if it is taken by an individual who is suffering from an illness or who is taking medication.

(6) The GCAA considers a blood alcohol level of less than 0·2 promille (0.02%) as the upper limit for licence holder on duty (hence, a blood alcohol level of 0.02% or more is considered positive), as well as a 12 hour abstention period prior to specified reporting time for aviation duty.

(g) Psychotropic Drugs and Substance Abuse

The use of such drugs or substances has a basic effect of detaching the person from reality as well as more complex short and long term effects. These effects are not compatible with the control of an aircraft and individuals using such drugs or substances are not fit to be members of flight crew/or control duties.

GM2 MED B.055

Please refer GM1 MED.B.055, (1) Mood disorder for certification requirements. Class 2 may be certified with OSL restriction.

MED.B.060 Psychology

(a) Applicants shall have no established psychological deficiencies, which are likely to interfere with the safe exercise of the privileges of the applicable licence(s).

(b) A psychological evaluation may be required as part of, or complementary to, a specialist psychiatric or neurological examination.

(c) A psychological evaluation by an approved Psychologist may be required as part of initial GCAA examination for Class 1 licence applicant.

(d) A psychological evaluation by an approved Psychologist shall be done for all initial over 60 applicants.

(e) To assess for neurocognitive decline in older pilots testing should be completed at age 55 and follow the guidelines in Appendix 5.

AMC1 MED.B.060 Psychology (Class 1)

(a) Where there is suspicion or established evidence that an applicant has a psychological disorder, the applicant should be referred for psychological opinion and advice.

(b) Established evidence should be verifiable information from an identifiable source which evokes doubts concerning the mental fitness or personality of a particular individual. Sources for this information can be accidents or incidents, problems in training or proficiency checks, delinquency or knowledge relevant to the safe exercise of the privileges of the applicable licence.

(c) The psychological evaluation may include a collection of biographical data, the administration of aptitude as well as personality tests and psychological interview.

(d) The psychologist should submit a written report to the AME, AeMC or GCAA as appropriate, detailing his/her opinion and recommendation.

AMC2 MED.B.060 Psychology (Class 2)

Applicants with a psychological disorder may need to be referred for psychological or neuropsychiatric opinion and advice.

GM1 MED.B.060 Psychology

Any company wishes to mandate initial Psychometric for their Class 1 applicant should use the service of a GCAA approved Psychologist whenever applicable and use an international acceptable tools for this purpose. Details of assessment can be found in Appendix 5.

MED.B.065 Neurology

(a) Applicants shall have no established medical history or clinical diagnosis of any neurological condition which is likely to interfere with the safe exercise of the privileges of the applicable licence(s).

(b) Applicants with an established history or clinical diagnosis of:

(1) epilepsy;
(2) recurring episodes of disturbance of consciousness of uncertain cause;

shall be assessed as unfit.

(c) Applicants with an established history or clinical diagnosis of:

(1) epilepsy without recurrence after age 5;
(2) epilepsy without recurrence and off all treatment for more than 10 years;
(3) epileptiform EEG abnormalities and focal slow waves;
(4) progressive or non-progressive disease of the nervous system;
(5) inflammatory disease of the central or peripheral nervous system;
(6) migraine;
(7) a single episode of disturbance of consciousness of uncertain cause;
(8) loss of consciousness after head injury;
(9) penetrating brain injury;
(10) spinal or peripheral nerve injury;
(11) disorders of the nervous system due to vascular deficiencies including haemorrhagic and ischaemic events.

shall undergo further evaluation before a fit assessment can be considered. Applicants for a Class 1 medical certificate shall be referred to the GCAA. Fitness of Class 2 applicants shall be assessed in consultation with the GCAA.

AMC1 MED.B.065 Neurology (Class 1)

(a) Epilepsy

(1) A diagnosis of epilepsy is disqualifying, unless there is unequivocal evidence of a syndrome of benign childhood epilepsy associated with a very low risk of recurrence, and unless the applicant has been free of recurrence and off treatment for more than 10 years. One or more convulsive episodes after the age of 5 are disqualifying. In the case of an acute symptomatic seizure, which is considered to have a very low risk of recurrence, a fit assessment may be considered after neurological review.

(2) An applicant may be assessed as fit by the GCAA with a multi-pilot limitation if:

(i) there is a history of a single afebrile epileptiform seizure;

(ii) there has been no recurrence after at least 10 years off treatment;

(iii) there is no evidence of continuing predisposition to epilepsy.

(b) Conditions with a high propensity for cerebral dysfunction

An applicant with a condition with a high propensity for cerebral dysfunction should be assessed as unfit. A fit assessment may be considered after full evaluation.

(c) Clinical EEG abnormalities

(1) Electroencephalography is required when indicated by the applicant's history or on clinical grounds.

(2) Epileptiform paroxysmal EEG abnormalities and focal slow waves should be disqualifying; in correlation with clinical history and other investigation.

(d) Neurological disease

Any stationary or progressive disease of the nervous system which has caused or is likely to cause a significant disability is disqualifying. However, in case of minor functional losses associated with stationary disease, a fit assessment may be considered after full evaluation.

(e) Episode of disturbance of consciousness

In the case of a single episode of disturbance of consciousness, which can be satisfactorily explained, a fit assessment may be considered, but a recurrence should be disqualifying.

(f) Head injury

An applicant with a head injury which was severe enough to cause loss of consciousness or is associated with penetrating brain injury should be reviewed by a consultant neurologist. A fit assessment may be considered if there has been a full recovery and the risk of epilepsy is sufficiently low.

(g) Spinal or peripheral nerve injury, myopathies

An applicant with a history or diagnosis of spinal or peripheral nerve injury or myopathy should be assessed as unfit. A fit assessment may be considered if neurological review and musculoskeletal assessments are satisfactory.

AMC2 MED.B.065 Neurology (Class 2)

(a) Epilepsy

An applicant may be assessed as fit if:

(1) there is a history of a single afebrile epileptiform seizure, considered to have a very low risk of recurrence;
(2) there has been no recurrence after at least 10 years off treatment;
(3) there is no evidence of continuing predisposition to epilepsy.

(b) Conditions with a high propensity for cerebral dysfunction

An applicant with a condition with a high propensity for cerebral dysfunction should be assessed as unfit. A fit assessment may be considered after full evaluation.

(c) Neurological disease

Any stationary or progressive disease of the nervous system which has caused or is likely to cause a significant disability is disqualifying. In case of minor functional loss associated with stationary disease, a fit assessment may be considered after full evaluation.

(d) Head injury

An applicant with a head injury which was severe enough to cause loss of consciousness or is associated with penetrating brain injury may be assessed as fit if there has been a full recovery and the risk of epilepsy is sufficiently low.

GM1 MED.B.065 Neurology (Class 1&2)

Migraine

(a) Aeromedical disposition should be based on individual risk assessment and the evaluation will be based on the following criteria:

(1) Detailed history of headaches and satisfactory Neurologist report

(2) Presence or absence of significant neurological symptoms (e.g Hemiparesthesia, Hemiplegia, Retinal /occipital phenomena, Autonomic symptoms of nausea, vomiting etc).

(3) Treatment used to treat the attack or prevent the attack

(4) Frequency of the attacks

(5) Presence of specific precipitant factors

(b) Generally, If no underlying disease is found and the individual remains free of further attacks for a period of 3 to 6 months, a return to aviation duties may be approved with restricted licence

(c) If the migraine attacks are infrequent and due to a specific precipitants, and avoidance of this precipitants results in no further migraines an unrestricted licence may be granted if a period of more than 2 years since the last episode has elapsed.

(d) Frequent migraine attacks are incompatible with any form of flying.

(e) Aeromedical board for revocation should be considered if the migraine remain frequent and uncontrolled for 2 years or more.

(f) Accredited Medical conclusion for Migraine cases usually is accepted for aeromedical disposition, however GCAA may request for aeromedical board if required.

GM2 MED.B.065 Neurology (Class 1&2)

Traumatic Brain Injury

Aeromedical disposition should be based on individual risk of developing serious sequalae for all classes of Medical certification.

(a) **The evaluation will be based on the following criteria:**

(1) reaction time

(2) Memory

(3) Performance & fatigue

(4) attention, initiation and proper sequencing of tasks,

(5) Planning and anticipating the future,

(6) and difficulty establishing automatic responses to a normal fear.

(b) **Neurologist evaluation report which should include the following :**

(1) Prediction of Neuropsychological consequences which should include the duration of post-traumatic amnesia

(2) Post-Concussion Syndrome

(3) Presence of Focal Neurological Deficit

(4) Presence or prediction of Posttraumatic Epilepsy using the below markers :

(i) A past history of febrile convulsions in childhood and/or a family history of epilepsy

(ii) Early post-traumatic epilepsy that occurs within the first week following injury

(iii) Demonstrated haemorrhage within the brain parenchyma

(5) Severity of Head injuries

(6) Confirm the disqualifying condition associated with the head injury whether temporary or permanent disqualifying

(7) Requirements for any specific treatment or surgical procedure or rehabilitation

(8) Prognosis and grounding period required to stabilise the condition.

Note :for the purpose of GCAA Medical certification ,GCAA recommend the use of the service of approved Neurologist .

(c) **Sleep deprivation / Photostimulation EEG.**

(d) **Medical Flight tests to include one at night**

(e) **Disqualifying medical condition for GCAA Medical certification :**

(1) Presence of Epilepsy;

(2) Penetrating skull injuries;

(3) Debilitating neurological deficits;

(4) Reduced Cognitive functioning and or

(5) Brain abscess will be permanently disqualifying from all types of medical certification.

(f) If there is no loss of consciousness, no post-traumatic amnesia, no epilepsy and the physician neurological examination is normal, radiological investigation is normal ,the license holder will be returned to aviation duties without the requirements for aeromedical evaluation board .

MED.B.070 Visual System

(a) Applicants shall not possess any abnormality of the function of the eyes or their adnexa or any active pathological condition, congenital or acquired, acute or chronic, or any sequelae of eye surgery or trauma, which is likely to interfere with the safe exercise of the privileges of the applicable licence(s).

(b) Examination

(1) For a Class 1 medical certificate:

(i) a comprehensive eye examination shall form part of the initial examination and shall be undertaken when clinically indicated and periodically depending on the refraction and the functional performance of the eye.

(ii) a routine eye examination shall form part of all revalidation and renewal examinations.

(2) For a Class 2 medical certificate:

(i) a routine eye examination shall form part of the initial and all revalidation and renewal examinations.

(ii) a comprehensive eye examination shall be undertaken when clinically indicated.

(c) Distant visual acuity, with or without correction, shall be:

(1) in the case of Class 1 medical certificates, 6/9 (0,7) or better in each eye separately and visual acuity with both eyes shall be 6/6 (1,0) or better;

(2) in the case of Class 2 medical certificates, 6/12 (0,5) or better in each eye separately and visual acuity with both eyes shall be 6/9 (0,7) or better. An applicant with substandard vision in one eye may be assessed as fit in consultation with the GCAA subject to satisfactory ophthalmic assessment;

(3) applicants for an initial Class 1 medical certificate with substandard vision in one eye shall be assessed as unfit. At revalidation, applicants with acquired substandard vision in one eye shall be referred to the GCAA and may be assessed as fit if it is unlikely to interfere with safe exercise of the licence held.

(d) An applicant shall be able to read an N5 chart (or equivalent) at 30-50 cm and an N14 chart (or equivalent) at 100 cm, with correction, if prescribed.

(e) Applicants for a Class 1 medical certificate shall be required to have normal fields of vision and normal binocular function.

(f) Applicants who have undergone eye surgery may be assessed as fit subject to satisfactory ophthalmic evaluation.

(g) Applicants with a clinical diagnosis of keratoconus may be assessed as fit subject to a satisfactory examination by an ophthalmologist. Applicants for a Class 1 medical certificate shall be referred to GCAA.

(h) Applicants with:

1) astigmatism;

2) anisometropia;

may be assessed as fit subject to satisfactory ophthalmic evaluation.

(i) Applicants with diplopia shall be assessed as unfit.

(j) Spectacles and contact lenses. If satisfactory visual function is achieved only with the use of correction:

1) (i) for distant vision, spectacles or contact lenses shall be worn whilst exercising the privileges of the applicable licence(s);

(ii) for near vision, a pair of spectacles for near use shall be kept available during the exercise of the privileges of the licence(s);

2) a spare set of similarly correcting spectacles shall be readily available for immediate use whilst exercising the privileges of the applicable licence(s);

3) the correction shall provide optimal visual function, be well-tolerated and suitable for aviation purposes;

4) if contact lenses are worn, they shall be for distant vision, monofocal, non-tinted and well tolerated;

5) applicants with a large refractive error shall use contact lenses or high-index spectacle lenses;

6) no more than one pair of spectacles shall be used to meet the visual requirements;

7) orthokeratological lenses shall not be used.

AMC1 MED.B.070 Visual system (Class 1)

(a) Eye examination

1) At each aero-medical revalidation examination, an assessment of the visual fitness should be undertaken and the eyes should be examined with regard to possible pathology.

2) All abnormal and doubtful cases should be referred to an ophthalmologist.

Conditions which indicate ophthalmological examination include, but are not limited to, a substantial decrease in the uncorrected visual acuity, any decrease in best corrected visual acuity and/or the occurrence of eye disease, eye injury, or eye surgery.

3) Where specialist ophthalmological examinations are required for any significant reason, this should be imposed as a limitation on the medical certificate.

(b) Comprehensive eye examination

A comprehensive eye examination by an eye specialist is required at the initial examination. All abnormal and doubtful cases should be referred to an ophthalmologist. The examination should include:

1) history;

2) visual acuities - near, intermediate and distant vision (uncorrected and with best optical correction if needed);

3) examination of the external eye, anatomy, media (slit lamp) and fundoscopy;

4) ocular motility;

5) binocular vision;

6) colour vision;

7) visual fields;

8) tonometry on clinical indication; and

9) objective refraction hyperopic initial applicants with a hyperopia of more than +2 dioptres and under the age of 25 should undergo objective refraction in cycloplegia.

(c) Routine eye examination

A routine eye examination may be performed by an AME and should include:

1) history;

2) visual acuities - near, intermediate and distant vision (uncorrected and with best optical correction if needed);

3) examination of the external eye, anatomy, media and fundoscopy;

4) further examination on clinical indication.

(d) Refractive error

1) At initial examination an applicant may be assessed as fit with:

(i) hypermetropia not exceeding +5.0 dioptres;

(ii) myopia not exceeding –6.0 dioptres;

(iii) astigmatism not exceeding 2.0 dioptres;

(iv) anisometropia not exceeding 2.0 dioptres

provided that optimal correction has been considered and no significant pathology is demonstrated.

2) Initial applicants who do not meet the requirements in (1)(ii), (iii) and (iv) above should be referred to GCAA. A fit assessment may be considered following review by an ophthalmologist.

3) At revalidation an applicant may be assessed as fit with:

(i) hypermetropia not exceeding +5.0 dioptres;

(ii) myopia exceeding –6.0 dioptres;

(iii) astigmatism exceeding 2.0 dioptres;

(iv) anisometropia exceeding 2.0 dioptres

provided that optimal correction has been considered and no significant pathology is demonstrated.

4) If anisometropia exceeds 3.0 dioptres, contact lenses should be worn.

5) If the refractive error is +3.0 to +5.0 or –3.0 to –6.0 dioptres, there is astigmatism or anisometropia of more than 2 dioptres but less than 3 dioptres, a review should be undertaken 5 yearly by an eye specialist.

6) If the refractive error is greater than –6.0 dioptres, there is more than 3.0 dioptres of astigmatism or anisometropia exceeds 3.0 dioptres, a review should be undertaken 2 yearly by an eye specialist.

7) In cases (5) and (6) above, the applicant should supply the eye specialist's report to the AME. The report should be forwarded to the GCAA as part of the medical examination report. All abnormal and doubtful cases should be referred to an ophthalmologist.

(e) Uncorrected visual acuity

No limits apply to uncorrected visual acuity.

(f) Substandard vision

1) Applicants with reduced central vision in one eye may be assessed as fit if the binocular visual field is normal and the underlying pathology is acceptable according to ophthalmological assessment. A satisfactory medical flight test and a multi-pilot limitation are required.

2) An applicant with acquired substandard vision in one eye may be assessed as fit with a multi-pilot limitation if:

(i) the better eye achieves distant visual acuity of 6/6 (1.0), corrected or uncorrected;

(ii) the better eye achieves intermediate visual acuity of N14 and N5 for near;

(iii) in the case of acute loss of vision in one eye, a period of adaptation time has passed from the known point of visual loss, during which the applicant should be assessed as unfit;

(iv) there is no significant ocular pathology; and

(v) a medical flight test is satisfactory.

3) An applicant with a visual field defect may be assessed as fit if the binocular visual field is normal and the underlying pathology is acceptable to the licensing authority.

(g) Keratoconus

Applicants with keratoconus may be assessed as fit if the visual requirements are met with the use of corrective lenses and periodic review is undertaken by an ophthalmologist.

(h) Heterophoria

Applicants with heterophoria (imbalance of the ocular muscles) exceeding:

1) at 6 metres:

2.0 prism dioptres in hyperphoria,

10.0 prism dioptres in esophoria,

8.0 prism dioptres in exophoria and

2) at 33 centimetres:

1.0 prism dioptre in hyperphoria,

8.0 prism dioptres in esophoria,

12.0 prism dioptres in exophoria

should be assessed as unfit. The applicant should be reviewed by an ophthalmologist and if the fusional reserves are sufficient to prevent asthenopia and diplopia a fit assessment may be considered.

(i) Eye surgery

The assessment after eye surgery should include an ophthalmological examination.

1) After refractive surgery, a fit assessment may be considered, provided that:

(i) pre-operative refraction was not greater than +5 dioptres;

(ii) post-operative stability of refraction has been achieved (less than 0.75 dioptres variation diurnally);

(iii) examination of the eye shows no post-operative complications;

(iv) glare sensitivity is within normal standards;

(v) mesopic contrast sensitivity is not impaired;

(vi) review is undertaken by an eye specialist.

2) Cataract surgery entails unfitness. A fit assessment may be considered after 3 months.

3) Retinal surgery entails unfitness. A fit assessment may be considered 6 months after successful surgery. A fit assessment may be acceptable earlier after retinal laser therapy. Follow-up may be required.

4) Glaucoma surgery entails unfitness. A fit assessment may be considered 6 months after successful surgery. Follow-up may be required.

5) For (2), (3) and (4) above, a fit assessment may be considered earlier if recovery is complete.

(j) Correcting lenses

Correcting lenses should permit the licence holder to meet the visual requirements at all distances.

Note: Bifocal contact lenses and contact lenses correcting for near vision only are not acceptable.

AMC2 MED.B.070 Visual system (Class 2)

(a) Eye examination

1. At each aero-medical revalidation examination an assessment of the visual fitness of the licence holder should be undertaken and the eyes should be examined with regard to possible pathology. Conditions which indicate further ophthalmological examination include, but are not limited to, a substantial decrease in the uncorrected visual acuity, any decrease in best corrected visual acuity and/or the occurrence of eye disease, eye injury, or eye surgery.

2. At the initial assessment, the examination should include:

   (i) history;

   (ii) visual acuities - near, intermediate and distant vision (uncorrected and with best optical correction if needed);

   (iii) examination of the external eye, anatomy, media and fundoscopy;

   (iv) ocular motility;

   (v) binocular vision;

   (vi) colour vision and visual fields;

   (vii) further examination on clinical indication.

3. At the initial assessment the applicant should submit a copy of the recent spectacle prescription if visual correction is required to meet the visual requirements.

(b) Routine eye examination

A routine eye examination should include:

1) history;

2) visual acuities - near, intermediate and distant vision (uncorrected and with best optical correction if needed);

3) examination of the external eye, anatomy, media and fundoscopy;

4) further examination on clinical indication.

(c) Visual acuity

In an applicant with amblyopia, the visual acuity of the amblyopic eye should be 6/18 (0,3) or better. The applicant may be assessed as fit, provided the visual acuity in the other eye is 6/6 (1,0) or better, with or without correction, and no significant pathology can be demonstrated.

(d) Substandard vision

1) Reduced stereopsis, abnormal convergence not interfering with near vision and ocular misalignment where the fusional reserves are sufficient to prevent asthenopia and diplopia may be acceptable.

2) An applicant with substandard vision in one eye may be assessed as fit subject to a satisfactory flight test if the better eye:

(i) achieves distant visual acuity of 6/6 (1,0), corrected or uncorrected;

(ii) achieves intermediate visual acuity of N14 and N5 for near;

(iii) has no significant pathology.

3) An applicant with a visual field defect may be considered as fit if the binocular visual field is normal and the underlying pathology is acceptable.

(e) Eye surgery

1) The assessment after eye surgery should include an ophthalmological examination.

2) After refractive surgery a fit assessment may be considered provided that there is stability of refraction, there are no postoperative complications and no increase in glare sensitivity.

3) After cataract, retinal or glaucoma surgery a fit assessment may be considered once recovery is complete.

(f) Correcting lenses

Correcting lenses should permit the licence holder to meet the visual requirements at all distances.

Note: Bifocal contact lenses and contact lenses correcting for near vision only are not acceptable.

GM1 MED.B.070 Visual system (Class1 &2)

1. Refractive Surgery

1.1. Radial Keratotomy

In this operation, a limited number of radial incisions are made through the corneal stroma whereby the anterior surface is flattened. The method is used to reduce or eliminate myopia.

Experiences so far show that the myopia is reduced, and to a greater degree, in patients with larger amount of nearsightedness. It is not possible to predict the effect: some patients end up with hyperopia. Although complications due to the incisions are few, infections occur and have caused blindness. From the functional point of view, two problems are most relevant to aircraft personnel.

One is that in some patients the refractive state is not stable and can vary more than 1 dioptre during the day. Another is increased glare sensitivity due to the corneal scars.

Applicants who undergo radial keratomy and whose eyes have established should thereafter have an ophthalmological assessment every two years for Class 1 and 3 and every 5 years for Class 2.

Note 1: If the diurnal fluctuation in visual acuity is significant (i.e. loss of more than one Snellen line for Class 1 and 3 licence applicants and more than two Snellen lines for Class 2 licence applicants), even if an applicant's visual acuity is still within the pass standard, this fluctuation constitutes failure to meet the visual requirements of the standards concerned.

Note 2: This procedure is obsolete and should not be used anymore. However there are applicants who received these procedure years ago.

Note 3: Applicant who undergo this procedure, are not permitted to return to flying/or controlling duties while the refraction is still not stable. So extended eye examination is required before recertification, with particular concentration on stability of visual acuity.

Evidence of stability requires:

A variation not exceeding 0.25 dioptre in refraction

A visual acuity changing by not more than one Snellen line

A visual acuity which at least satisfies the minimum standards for the class of licence, at three paired serial measurements. Measurement should be in the morning and late in the day and should be delayed for at least three months following surgery.

1.2. Laser-in-situ-Keratomileusis (LASIK)

During the laser in situ keratomileusis (LASIK) a corneal flap is shaved by a microkeratome. The cornea is flapped back and a laser ablation is performed in the stromal bed. After the laser procedure the corneal shave is returned back. The applicant should be aware of the possible adverse side effects of

the procedure, and that in some cases it may take up to 6 months for complete recovery. The possible complications of LASIK are more severe than in PRK (Photo Refractive Keratectomy), and mostly related to the use of the microkeratome. The flap can be dislocated or be lost and it can be loosened long after surgery. An irregular astigmatism can be produced by the microkeratom. Also with this procedure glare and instability of refraction can occur.

1.2.1. Recertification Requirements

Extended Eye Examination by Ophthalmologist and the evaluation should demonstrate:

- Visual acuity
- Field of vision
- Night glare
- Haziness
- Surgical healing of the flap is complete
- Significant dry eye syndrome
- Conjunctival injection/ inflammation
- Diffuse Lamellar Keratitis (DLK)
- Epithelial ingrowths
- Irregular flap (folds, wrinkles, striae)
- Incomplete/partial or complete flap displacement
- Retinal detachment
- Macular haemorrhage
- Decreased quality of vision in low light conditions or a loss of contrast sensitivity
- Visual aberrations such as glare, diplopia, ghosting, or starbursts
- Infection
- Stability of refraction is demonstrated with a diurnal variation of less than 0.75D in each eye.

1.3. Phakic Intraocular Lenses

It has been shown that corneal refractive surgery presents bad results in high refractive errors. To correct high refractive errors, a second artificial lens is implanted in addition to the own lens. There are two possible locations to place the lens: in the anterior or in the posterior chamber of the eye. The procedure works for myopia from -10 to -18 diopters and for hyperopia of +3 to +10 diopters. It is also a procedure that is reversible. Lens implantation is a well-known procedure. But it is an intraocular

surgery with the possibility of infections, loss of the eye, pupillary block glaucoma, and development of cataract, retinal detachment, corneal edema or opacity with resulting keratoplasty due to loss of endothelial cells. For high hyperopia up to +9 diopters a clear lens extraction with intraocular lens implantation is performed. This procedure is not reversible and it is combined with the loss of accommodation and therefore not very useful in young patient eyes.

2. Assessment

A fit assessment may be possible after an appropriate time period depending on the preoperative refraction, the thickness of the cornea, and the experience of the surgeon, the performed procedure and the side effects of the individual case. A fit assessment may be possible, provided that there is no postoperative problems have occurred and especially if the intraocular pressure is not increased.

Note: In case, where the candidate did not inform his/her AME about any surgical procedure mentioned above, the candidate will be classified as holding a disqualified medical certificate and this will be considered a breach of GCAA regulation. The applicant will be subjected to penalty and he may lose his licence permanently.

3. Medical management of LASER injuries guidelines

Laser beams represent a potential threat to mission effectiveness and flight safety because of their ability to damage aircraft sensors and the eye. Laser based systems and devices are proliferating and pose a threat to the eye, both temporarily and permanently, from friendly and hostile sources. The frequency of laser beam exposures is likely to increase.

Medical force protection and prevention in operational units should include training and awareness of the threat by direct flight surgeon (AME) involvement in flying safety and aircrew training programs. For example, awareness that many lasers, e.g. Class 2 and 3A pointers, although very bright, cause no more than momentary dazzle or temporary flash blindness effects may help reduce fear and anxiety associated with these events. On the other hand, more powerful lasers, to include laser pointers rated Class 3B or higher, are potentially dangerous, especially when the source is at close range. Laser beams can be invisible in the form of infrared (IR) and ultraviolet (UV) wavelengths. The risk of permanent ocular injury diminishes at increasing distances from the source. However, laser beam exposures may disrupt operations during critical phases of flight and have psychological effects at distances far beyond those associated with ocular damage. Flight crew should be knowledgeable as to the entire laser beam threat spectrum, including appropriate steps to be taken if exposed.

3.1 Purpose:

The purpose of these guidelines is to provide guidelines and instructions for AME dealing with potential laser bean exposure in flight crew and ground personnel. The intent is to provide an evaluation and initial management process to assess and respond to laser beam exposures where ocular adnexal injury may have occurred.

3.2 Laser Effects on visual performance:

Lasers may interfere with vision either temporarily or permanently in one or both eyes. At low energy levels, lasers may produce temporary reduction in visual performance in critical tasks, such as flying aircraft. Also the glare induced by the laser scattering on scratches on the cockpit windscreen which can fog out landing lights and can be a risk to safe control of the craft. At higher energy levels they may produce serious long-term visual loss, even permanent blindness.

Pilots who sustain minimal injuries or even no injury from low energy laser exposures may develop serious psychological problems and become ineffective in the performance of their duties.

3.2.1 Eye Injuries:

Cornea

1. Ultraviolet and low energy far-infrared radiation can injure the epithelial layer of the cornea; a condition that is painful and visually handicapping. At lower powers, this injury is primarily due to a photochemical reaction. **A latency period of hours may exist** between the time of exposure and the development of the corneal pathology. Minimal corneal lesions heal within a few days, but meanwhile they produce a decrement in visual performance.

2. High energy far-infrared radiation is absorbed mainly by the cornea, producing immediate burns at all corneal layers .An infrared laser can produce a burn resulting in immediate visual incapacitation and may lead to permanent cornea scarring. Very high energy can perforate the cornea; this perforation may lead to loss of the eye.

Retina

1. Temporary changes in the ability to see can be produced without permanent damage.
2. Absorbed energy heats the retinal tissue. Heat from lasers causes thermal coagulation of the photoreceptor cells and other retinal structures. The surrounding retina will be threatened by inflammatory processes and edema. These processes result in scotoma (blind spots), varying in size depending on the extent of the retinal damage.
3. Sub retinal hemorrhage/Vitreous Hemorrhage, Extensive or centrally located hemorrhage can produce a significant loss of vision.
4. Retinal detachment – this occurs when the energy of the laser is enough to create a hole in the retina, and its onset will be from days to months after the injury
5. Laser damage to the retinal/choroidal areas may produce brief, severe pain.
6. A major long-term effect of laser retinal injury is the scarring process which may

degrade vision weeks or even months after the injury.

3.3 AME Role:

The key to evaluating and managing any laser eye injury or suspected laser beam exposure is immediate involvement of the AME. The AME is responsible for coordinating and determining the appropriate care and action to be taken. The AME should always approach a laser eye injury as a potentially serious ocular injury. An early consultation with an eye specialist is paramount for all suspecting case.

3.4 Evaluation of suspected Laser injuries by Eye Specialist:

3.4.1 History:

A detailed operational and medical history with respect to the nature and characteristics of the laser beam exposure. Important details include characteristics such as intensity, colour, constant or flicker nature of the light source, duration of exposure, location, estimated beam diameter, range, tracking, source, location (airborne or ground), glare, pain, photophobia, and any immediate or delayed symptoms. It is important to note that some laser beams are invisible to the human eye (e.g., UV and IR) and may induce sudden visual symptoms.

The use of personal protective equipment should be documented if used (including glasses or contact lenses).

Past ocular and family eye histories should be included.

Use of the Laser Beam Incident Questionnaire will aid in both the medical assessment and intelligence aspects of the incident. The Laser Incident Questionnaire is meant to provide medical and laser experts with enough information to aid in initial treatment of exposed personnel. Involved personnel will undergo more extensive interviews by additional medical, operational, and military intelligence personnel.

Once the diagnosis of Laser eye injuries diagnosed, notifications should be made as soon as possible to the AME who should notify the GCAA as soon as time and circumstances permit.

3.4.2 Physical examination

- In any suspected laser eye injury, the patient should be re-examined as clinically indicated, ideally in 24 hours, but at least within 72 hours.
- the Eye doctor should use the GCAA Ophthalmology form (MED- 01)
    - External Examination of the skin around the eyes and its adnexa
    - Near Visual Acuity Test.

- Distant Visual Acuity Test.
- Amsler Grid Test.
- Pupils.
- Stereopsis.
- Colour Vision.
- Slit Lamp.
- Retinal Examination
- **Coherence Tomography (OCT)**. Use of OCT can be very beneficial to aid in the determination of subtle retinal effects from laser beam exposure. OCT allows for examination of the nerve fibre layer, retinal pigment epithelium and choriocapillaris. It has been used to demonstrate and document retinal injuries by lasers when no symptomatic changes have been present. This type of the test should be considered and requested by the AME if a laser beam injury is suspected.
- Funds Fluorescein angiography

MED.B.075 Colour vision

(a) Applicants shall be required to demonstrate the ability to perceive readily the colours that are necessary for the safe performance of duties.

(b) Examination

1) Applicants shall pass the Ishihara test for the initial issue of a medical certificate.

2) Applicants who fail to pass in the Ishihara test shall undergo GCAA approved advanced colour perception testing to establish whether they are colour safe.

(c) In the case of Class 1 medical certificates, applicants shall have normal perception of colours or be colour safe. Applicants who fail further colour perception testing shall be assessed as unfit. Applicants for a Class 1 medical certificate shall be referred to the GCAA.

(d) In the case of Class 2 medical certificates, when the applicant does not have satisfactory perception of colours, his/her flying privileges shall be limited to daytime only.

AMC1 MED B.075 Colour vision (Class 1)

(a) The Ishihara test (24 plate version) is considered passed if all the 24 plates, presented in a random order, are identified without error.

(b) Those failing the Ishihara test should be examined by advanced colour vision testing approved by the GCAA (CAD).

AMC2 MED B.075 Colour vision (Class 2)

(a) The Ishihara test (24 plate version) is considered passed if the first 15 plates, presented in a random order, are identified without error.

(b) Those failing the Ishihara test should be examined by a GCAA approved advanced colour testing (CAD).

(c) Colour vision should be tested on clinical indication at revalidation or renewal examinations.

GM1 MED B.075 Colour vision

1. Screening tests for Colour Vision

- **Frequency -** At all Aeromedical examination
- **Approved screening test -** Ishihara, 24 plates

1.2 Screening test

1.2.1 Plate testing procedure

Reliable colour vision testing using the plates requires that a standardised procedure be followed carefully. The main points are;

(a) Illumination

The preferred method used is the daylight or artificial daylight source which should give an illumination equivalent to the standard illumination 'C' or 'D' of CIE (Commission Intrenational e de l'E clairage).

(b) Position

The plates should be shown at right angles to the visual axis of the applicant at about 75 cm distance.

(c) Exposure time

Plates are exposed in random sequence and each plate is exposed for a maximum of five seconds.

1.2.2 Screening test result

(i) Normal/colour safe applicant -The Ishihara test (24 plate version) is to be considered passed if all plates are identified without error, without uncertainty or hesitation (less than 3 seconds per plate).

(ii) Colour unsafe, Class 1 cannot be certificated without advanced colour vision testing

2. Approved Advance test for initial Class 1 is CAD test

2.1 Indication for advanced testing

(i) Initial Applicants for Class 1 who fail the Ishihara's test, or

(ii) Renewal Applicants who previously passed screening test and failed the current screening testing, or

(iii) Holder of Foreign waiver at initial GCAA Medical application, or

(iv) Current holder of GCAA Medical Class 1 who had previously granted a waiver based on foreign waiver/or advance colour vision tests not approved by GCAA.

Note: Current GCAA Licence Holders who had previously passed Anomaloscopy or Lantern testing acceptable to GCAA (Holmes Wright, Beynes, or Spectrolux) are not required to take CAD test.

2.2 Result of advance colour vision testing

(i) Colour safe: Applicants who fail the Ishihara's test but pass advanced testing

(ii) Colour unsafe: An applicant who fails the advance colour perception tests

(iii) Class 2 applicants who fails to meet the colour perception standards (i.e. who fail both the Ishihara plate and the CAD test, but who meets all other standards) is eligible for issue of an operationally restricted licence (Valid only for day flying only).

(iv) Cabin crew members should be able to correctly identify 9 of the first 15 plates of the 24-plate edition of Ishihara pseudo isochromatic plates. Alternatively, cabin crew members should demonstrate that they are safe.

MED.B.080 Otorhino-laryngology

(a) Applicants shall not possess any abnormality of the function of the ears, nose, sinuses or throat, including oral cavity, teeth and larynx, or any active pathological condition, congenital or acquired, acute or chronic, or any sequelae of surgery or trauma which is likely to interfere with the safe exercise of the privileges of the applicable licence(s).

(b) Hearing shall be satisfactory for the safe exercise of the privileges of the applicable licence(s).

(c) Examination

(1) Hearing shall be tested at all examinations.

(i) In the case of Class 1 medical certificates and Class 2 medical certificates, when an instrument rating is to be added to the licence held, hearing shall be tested with pure tone audiometry at the initial examination and, at subsequent revalidation or renewal examinations, every 5 years until the age 40 and every 2 years thereafter.

(ii) When tested on a pure-tone audiometer, initial applicants shall not have a hearing loss of more than 35 dB at any of the frequencies 500, 1000 or 2000 Hz, or more than 50 dB at 3000 Hz, in either ear separately. Applicants for revalidation or renewal, with greater hearing loss shall demonstrate satisfactory functional hearing ability.

(iii) Applicants with hypoacusis shall demonstrate satisfactory functional hearing ability.

(2) A comprehensive ear, nose and throat examination shall be undertaken for the initial issue of a Class 1 medical certificate and periodically thereafter when clinically indicated.

(d) Applicants for a Class 1 medical certificate with:

(1) an active pathological process, acute or chronic, of the internal or middle ear;
(2) unhealed perforation or dysfunction of the tympanic membrane(s);
(3) dysfunction of the Eustachian tube(s);
(4) disturbance of vestibular function;
(5) significant restriction of the nasal passages;
(6) sinus dysfunction;
(7) significant malformation or significant, acute or chronic infection of the oral cavity or upper respiratory tract;
(8) significant disorder of speech or voice; and
(9) any sequelae of surgery of the internal or middle ear.

shall undergo further medical examination and assessment to establish that the condition does not interfere with the safe exercise of the privileges of the licence held.

(e) Aero-medical assessment:

(1) applicants for a Class 1 medical certificate with the disturbance of vestibular function shall be referred to GCAA;
(2) fitness of Class 2 applicants with the disturbance of vestibular function shall be assessed in consultation with GCAA.

AMC1 MED.B.080 Otorhino-laryngology (Class 1)

(a) Hearing

1) The applicant should understand correctly conversational speech when tested with each ear at a distance of 2 metres from and with the applicant's back turned towards the AME.

2) The pure tone audiogram should cover the 500 Hz, 1000 Hz, 2000 Hz and 3000 Hz frequency thresholds.

3) An applicant with hypoacusis should be referred to GCAA. A fit assessment may be considered if a speech discrimination test or functional flight deck hearing test demonstrates satisfactory hearing ability. A vestibular function test may be appropriate.

4) If the hearing requirements can only be met with the use of hearing aids, the hearing aids should provide optimal hearing function, be well tolerated and suitable for aviation purposes.

(b) Comprehensive otorhinolaryngological examination

A comprehensive otorhino-laryngological examination should include:

1) history;

2) clinical examination including otoscopy, rhinoscopy, and examination of the mouth and throat;

3) tympanometry or equivalent;

4) clinical assessment of the vestibular system.

(c) Ear conditions

1) An applicant with an active pathological process, acute or chronic, of the internal or middle ear should be assessed as unfit. A fit assessment may be considered once the condition has stabilised or there has been a full recovery.

2) An applicant with an unhealed perforation or dysfunction of the tympanic membranes should be assessed as unfit. An applicant with a single dry perforation of non-infectious origin and which does not interfere with the normal function of the ear may be considered for a fit assessment.

(d) Vestibular disturbance

An applicant with disturbance of vestibular function should be assessed as unfit. A fit assessment may be considered after full recovery. The presence of spontaneous or positional nystagmus requires complete vestibular evaluation by an ENT specialist. Significant abnormal caloric or rotational vestibular responses are disqualifying. Abnormal vestibular responses should be assessed in their clinical context.

(e) Sinus dysfunction

An applicant with any dysfunction of the sinuses should be assessed as unfit until there has been full recovery.

(f) Oral/upper respiratory tract infections

A significant, acute or chronic infection of the oral cavity or upper respiratory tract is disqualifying. A fit assessment may be considered after full recovery.

(g) Speech disorder

A significant disorder of speech or voice is disqualifying.

(h) Air passage restrictions

Applicants with significant restriction of the nasal air passage on either side, or significant malformation of the oral cavity or upper respiratory tract may be assessed as fit if ENT evaluation is satisfactory.

(i) Eustachian tube(s)

Applicants with permanent dysfunction of the Eustachian tube(s) may be assessed as fit if ENT evaluation is satisfactory.

(j) Sequelae of surgery of the internal or middle ear

Applicants with sequelae of surgery of the internal or middle ear should be assessed as unfit until recovery is complete, the applicant is asymptomatic, and the risk of secondary complication is minimal.

AMC2 MED.B.080 Otorhino-laryngology (Class 2)

(a) Hearing

1) The applicant should understand correctly conversational speech when tested with each ear at a distance of 2 metres from and with the applicant's back turned towards the AME.

2) An applicant with hypoacusis may be assessed as fit if a speech discrimination test or functional cockpit hearing test demonstrates satisfactory hearing ability. An applicant for an instrument rating with hypoacusis should be assessed in consultation with the licensing authority.

3) If the hearing requirements can be met only with the use of hearing aids, the hearing aids should provide optimal hearing function, be well tolerated and suitable for aviation purposes.

(b) Examination

An ear, nose and throat (ENT) examination should form part of all initial, revalidation and renewal examinations.

(c) Ear conditions

1) An applicant with an active pathological process, acute or chronic, of the internal or middle ear should be assessed as unfit until the condition has stabilised or there has been a full recovery.

2) An applicant with an unhealed perforation or dysfunction of the tympanic membranes should be assessed as unfit. An applicant with a single dry perforation of non-infectious origin which does not interfere with the normal function of the ear may be considered for a fit assessment.

(d) Vestibular disturbance

An applicant with disturbance of vestibular function should be assessed as unfit pending full recovery.

(e) Sinus dysfunction

An applicant with any dysfunction of the sinuses should be assessed as unfit pending full recovery.

(f) Oral/upper respiratory tract infections

A significant acute or chronic infection of the oral cavity or upper respiratory tract is disqualifying until full recovery.

(g) Speech disorder

A significant disorder of speech or voice should be disqualifying.

(h) Air passage restrictions

An applicant with significant restriction of the nasal air passage on either side, or significant malformation of the oral cavity or upper respiratory tract may be assessed as fit if ENT evaluation is satisfactory.

(i) Eustachian tube function

An applicant with significant dysfunction of the Eustachian tubes may be assessed as fit in consultation with the licensing authority.

(j) Sequelae of surgery of the internal or middle ear

An applicant with sequelae of surgery of the internal or middle ear should be assessed as unfit until recovery is complete, the applicant is asymptomatic, and the risk of secondary complication is minimal.

GM1 MED.B.080 Otorhino-laryngology (Class 1&2)

(a) Hearing Aids

For initial Class 1 applicants, hearing aids are not usually acceptable.

In an applicant who already holds a medical certificate, any type of hearing aid is acceptable for recertification, e.g. bone-anchored or intra-aural. Following insertion of the hearing aid, a functional hearing assessment should be performed and if satisfactory a return to certification is possible. A multi-crew restriction may be required for Class 1 applicants.

Note: For many pilots increasing the volume of the head set may be preferable and enhance hearing more than wearing hearing aids.

For removable hearing aids, audiometry, if required, should be undertaken both with and without hearing aids.

(b) Ear Conditions

A fit assessment can be considered after full recovery from a condition affecting the ear following provision of a satisfactory ENT specialist report.

If there is incomplete recovery from the condition, evidence that the condition has stabilised for an appropriate period of time is required. The audiogram standards should be met or a satisfactory functional hearing assessment is required.

(c) Perforation

Recertification is possible after a minimum period of six weeks following a single dry perforation of non-infectious origin. An ENT specialist report is required confirming complete healing and the pilot should be pain free. A satisfactory audiogram is required for Class 1 recertification.

(d) Stapedectomy

To ensure full healing, recertification is only allowed a minimum of three months after surgery, subject to a satisfactory specialist report confirming no complications, the absence of dizziness, spontaneous or positional nystagmus and a satisfactory hearing result.

(e) Grommet insertion

This is acceptable for certification at both initial and revalidation/renewal.

(f) Benign Positional Vertigo/Labyrinthitis

In view of the recurrence risk of this condition and the sudden incapacitating nature of the symptoms, the earliest a pilot can be considered for recertification is after they have been symptom-free and off any treatment for at least 4 weeks. Class 1 holders require an OML for a minimum period of 3 months from recertification. The use of any medication to treat vestibular symptoms, e.g. Betahistine is not acceptable for medical certification.

(g) Meniere's Disease

A diagnosis of Meniere's Disease, untreated or treated is not acceptable for Class 1 or 2 medical initial or recertification.

(h) Speech discrimination test or functional hearing test

This test should be based on the following ICAO guidance:

Hearing loss greater than the requirements may be acceptable provided that there is normal hearing performance against a background noise that reproduces or simulates the masking properties of the flight deck noise in the cockpit upon speech and beacon signals.

It is important that the background noise be representative of the noise in the cockpit of the type of aircraft for which the applicant's licence and ratings are valid. The frequency composition of the background noise is defined only to the extent that the frequency range 600 to 4 800 Hz (speech frequency range) is adequately represented. In the speech material for

discrimination testing, both aviation-relevant phrases and phonetically balanced words are normally used. Alternatively, a practical hearing test conducted in communication environment representative of the one for which the certificate holder's licence and ratings are valid may be used.

The Functional Hearing Test form should be us

MED.B.085 Dermatology

Applicants shall have no established dermatological condition likely to interfere with the safe exercise of the privileges of the applicable licence(s) held.

AMC1 MED.B.085 Dermatology (Class 1)

(a) Referral to GCAA should be made if doubt exists about the fitness of an applicant with eczema (exogenous and endogenous), severe psoriasis, bacterial infections, drug induced, or bullous eruptions or urticaria.

(b) Systemic effects of radiant or pharmacological treatment for a dermatological condition should be considered before a fit assessment can be considered.

(c) In cases where a dermatological condition is associated with a systemic illness, full consideration should be given to the underlying illness before a fit assessment may be considered.

AMC2 MED.B.085 Dermatology (Class 2)

In cases where a dermatological condition is associated with a systemic illness, full consideration should be given to the underlying illness before a fit assessment can be considered.

MED.B.090 Oncology

(a) Applicants shall have no established primary or secondary malignant disease likely to interfere with the safe exercise of the privileges of the applicable licence(s).

(b) After treatment for malignant disease, applicants shall undergo satisfactory oncological evaluation before a fit assessment can be made. Class 1 applicants shall be referred to GCAA. Fitness of Class 2 applicants shall be assessed in consultation with GCAA.

(c) Applicants with an established history or clinical diagnosis of intracerebral malignant tumour shall be assessed as unfit.

AMC1 MED.B.090 Oncology (Class 1)

(a) Applicants who underwent treatment for malignant disease may be assessed as fit by GCAA if:

(1) there is no evidence of residual malignant disease after treatment;
(2) time appropriate to the type of tumour has elapsed since the end of treatment;
(3) the risk of inflight incapacitation from a recurrence or metastasis is sufficiently low;

(4) there is no evidence of short or long-term sequelae from treatment.

(5) satisfactory oncology follow-up reports are provided to GCAA.

(b) A multi-pilot limitation should be applied as appropriate.

(c) Applicants receiving ongoing chemotherapy or radiation treatment should be assessed as unfit.

(d) Applicants with pre-malignant conditions of the skin may be assessed as fit if treated or excised as necessary and there is regular follow-up.

AMC2 MED.B.090 Oncology (Class 2)

(a) Applicants may be considered for a fit assessment after treatment for malignant disease if:

(1) there is no evidence of residual malignant disease after treatment;

(2) time appropriate to the type of tumour has elapsed since the end of treatment;

(3) the risk of in-flight incapacitation from a recurrence or metastasis is sufficiently low;

(4) there is no evidence of short or long-term sequelae from treatment that may adversely affect flight safety;

(5) arrangements for an oncological follow-up have been made for an appropriate period of time.

(b) Applicants receiving ongoing chemotherapy or radiation treatment should be assessed as unfit.

(c) Applicants with pre-malignant conditions of the skin may be assessed as fit if treated or excised as necessary and there is a regular follow-up.

SUBPART C - REQUIREMENTS FOR MEDICAL FITNESS OF CABIN CREW

SECTION 1 - GENERAL REQUIREMENTS

MED.C.001 General

Cabin crew members shall only perform the duties and responsibilities required by aviation safety rules on an aircraft if they comply with the applicable requirements of this Chapter.

MED.C.005 Aero-medical assessments

(a) Cabin crew members shall undergo aero-medical assessments to verify that they are free from any physical or mental illness which might lead to incapacitation or an inability to perform their assigned safety duties and responsibilities.

(b) Each cabin crew member shall undergo an aero-medical assessment before being first assigned to duties on an aircraft, and after that at intervals of maximum 60 months.

(c) Aero-medical assessments shall be conducted by an AME or AeMC, if the requirements of MED.D.040 are complied with.

AMC1 MED.C.005 Aero-medical assessments

When conducting aero-medical examination and/or assessments of cabin crew, their medical fitness should be assessed with particular regard to their physical and mental ability to:

(1) undergo the training required for cabin crew to acquire and maintain competence, e.g. actual fire-fighting, slide descending, using Protective Breathing Equipment (PBE) in a simulated smoke-filled environment, providing first aid;

(2) manipulate the aircraft systems and emergency equipment to be used by cabin crew, e.g. cabin management systems, doors/exits, escape devices, fire extinguishers, taking also into account the type of aircraft operated e.g. narrow- bodied or wide-bodied, single/multi-deck, single/multi-crew operation;

(3) continuously sustain the aircraft environment whilst performing duties, e.g. altitude, pressure, re-circulated air, noise; and the type of operations such as short/medium/long/ultralong haul; and

(4) perform the required duties and responsibilities efficiently during normal and abnormal operations, and in emergency situations and psychologically demanding circumstances e.g. assistance to crew members and passengers in case of decompression; stress management, decision-making, crowd control and effective crew coordination, management of disruptive passengers and of security threats. When relevant, operating as single cabin crew should also be taken into account when assessing the medical fitness of cabin crew.

SECTION 2 - REQUIREMENTS FOR AERO-MEDICAL ASSESSMENT OF CABIN CREW

MED.C.020 General

Cabin crew members shall be free from any:

(a) abnormality, congenital or acquired;

(b) active, latent, acute or chronic disease or disability;

(c) wound, injury or sequelae from operation; and

(d) effect or side effect of any prescribed or non-prescribed therapeutic, diagnostic or preventive medication taken that would entail a degree of functional incapacity which might lead to incapacitation or an inability to discharge their safety duties and responsibilities.

MED.C.025 Aero-medical assessments

(a) An initial aero-medical assessment shall include at least:

1) an assessment of the applicant cabin crew member's medical history; and

2) a clinical examination of the following:

(i) cardiovascular system;

(ii) respiratory system;

(iii) musculoskeletal system;

(iv) otorhino-laryngology;

(v) visual system; and

(vi) colour vision.

(b) Each subsequent aero-medical re-assessment shall include:

1) an assessment of the cabin crew member's medical history; and

2) a clinical examination if deemed necessary in accordance with aero-medical best practice.

(c) For the purpose of (a) and (b), in case of any doubt or if clinically indicated, a cabin crew member's aero-medical assessment shall also include any additional medical examination, test or investigation that are considered necessary by the AME or AeMC.

AMC1 MED.C.025 Aero-medical assessments

Aero-medical examinations and/or assessments of cabin crew members should be conducted according to the specific medical requirements in AMC2 to AMC18 MED.C.025.

(a) for the initial cabin crew aero-medical assessment at an AeMC

1) an assessment of the applicant cabin crew member's medical history which should be done by the SAME, AME or Aviation Nurse; and

2) a clinical examination should include the following:

(i) Pulse, BP and Oxygen Saturations to check cardiovascular system abnormalities;

(ii) PFT to exclude respiratory system abnormalities;

(iii) GLAS screening examination test to exclude musculoskeletal system abnormalities;

(iv) Audiogram or functional test during SEP training if applicable to check otorhino-laryngology abnormalities;

(v) Visual Acuity test to exclude visual system abnormalities; and

(vi) Ishihara test for colour vision or alternatively functional test during SEP training;

(vii) Drug test

(b) Each subsequent aero-medical re-assessment should include:

1) an assessment of the cabin crew member's medical history; and

2) a clinical examination if deemed necessary in accordance with aero-medical best practice.

(c) For the purpose of (a) and (b), in case of any doubt or if clinically indicated, a cabin crew member's aero-medical assessment should also include any additional medical examination, test or investigation that are considered necessary by the AME or AeMC.

(d) The responsibility for signing the medical would lie with the AME and ultimately with the Accountable Manager (AM) who should undertake an audit on the medicals performed under the AMC the paragraph (a) & (b) above to ensure compliance with the regulation.

AMC2 MED.C.025 Cardiovascular system

(a) Examination

1) A standard 12-lead resting electrocardiogram (ECG) and report should be completed on clinical indication, at the first examination after the age of 40 and then at least every five years after the age of 50. If cardiovascular risk factors such as smoking, abnormal cholesterol levels or obesity are present, the intervals of resting ECGs should be reduced to two years.

2) Extended cardiovascular assessment should be required when clinically indicated.

(b) Cardiovascular system - general

1) Cabin crew members with any of the following conditions:

(i) aneurysm of the thoracic or supra-renal abdominal aorta, before surgery;

(ii) significant functional abnormality of any of the heart valves; or

(iii) heart or heart/lung transplantation should be assessed as unfit.

2) Cabin crew members with an established diagnosis of one of the following conditions:

(i) peripheral arterial disease before or after surgery;

(ii) aneurysm of the abdominal aorta, before or after surgery;

(iii) minor cardiac valvular abnormalities;

(iv) after cardiac valve surgery;

(v) abnormality of the pericardium, myocardium or endocardium;

(vi) congenital abnormality of the heart, before or after corrective surgery;

(vii) a cardiovascular condition requiring systemic anticoagulant therapy;

(viii) recurrent vasovagal syncope;

(ix) arterial or venous thrombosis; or

(x) pulmonary embolism

should be evaluated by a cardiologist before a fit assessment can be considered.

(c) Blood pressure

Blood pressure should be recorded at each examination.

1) The blood pressure should be within normal limits.

2) The initiation of medication for the control of blood pressure should require a period of temporary suspension of fitness to establish the absence of any significant side effects.

(d) Coronary artery disease

1) Cabin crew members with:

(i) cardiac ischaemia;

(ii) symptomatic coronary artery disease; or

(iii) symptoms of coronary artery disease controlled by medication should be assessed as unfit.

2) Cabin crew members who are asymptomatic after myocardial infarction or surgery for coronary artery disease should have fully recovered before a fit assessment can be considered.

(e) Rhythm/conduction disturbances

1) Cabin crew members with any significant disturbance of cardiac conduction or rhythm should undergo cardiological evaluation before a fit assessment can be considered.

2) Cabin crew members with a history of:

(i) ablation therapy; or

(ii) pacemaker implantation

should undergo satisfactory cardiovascular evaluation before a fit assessment can be made.

3) Cabin crew members with:

(iv) symptomatic sinoatrial disease;

(v) complete atrioventricular block;

(vi) symptomatic QT prolongation;

(vii) an automatic implantable defibrillating system; or

(v) a ventricular anti-tachycardia pacemaker should be assessed as unfit.

(f) Thromboembolic disorders

Whilst anticoagulation therapy is initiated, cabin crew members should be assessed as unfit. After a period of stable anticoagulation, a fit assessment may be considered with limitation(s), as appropriate. Anticoagulation should be considered stable if, within the last 6 months, at least 5 INR values are documented, of which at least 4 are within the INR target range and the haemorrhagic risk is acceptable. In cases of anticoagulation medication not requiring INR monitoring, a fit assessment may be considered after a stabilisation period of 3 months. Cabin crew members with pulmonary embolism should also be evaluated by a cardiologist. Following cessation of anticoagulant therapy, for any indication, cabin crew members should undergo a re-assessment.

(g) Syncope

(1) In the case of a single episode of vasovagal syncope which can be satisfactorily explained, a fit assessment may be considered.

(2) Cabin crew members with a history of recurrent vasovagal syncope should be assessed as unfit. A fit assessment may be considered after a 6-month period without recurrence, provided cardiological evaluation is satisfactory. Neurological review may be indicated.

AMC3 MED.C.025 Respiratory system

(a) Cabin crew members with significant impairment of pulmonary function should be assessed as unfit. A fit assessment may be considered once pulmonary function has recovered and is satisfactory.

(b) Cabin crew members should be required to undergo pulmonary function tests on clinical indication.

(c) Cabin crew members with a history or established diagnosis of:

1) asthma;

2) active inflammatory disease of the respiratory system;

3) active sarcoidosis;

4) pneumothorax;

5) sleep apnoea syndrome/sleep disorder; or

6) major thoracic surgery

should undergo respiratory evaluation with a satisfactory result before a fit assessment can be considered.

(d) Cabin crew members who have undergone a pneumonectomy should be assessed as unfit.

AMC4 MED.C.025 Digestive system

(a) Cabin crew members with any sequelae of disease or surgical intervention in any part of the digestive tract or its adnexa likely to cause incapacitation in flight, in particular any obstruction due to stricture or compression, should be assessed as unfit.

(b) Cabin crew members should be free from herniae that might give rise to incapacitating symptoms.

(c) Cabin crew members with disorders of the gastro-intestinal system, including:

1) recurrent dyspeptic disorder requiring medication;

2) pancreatitis;

3) symptomatic gallstones;

4) an established diagnosis or history of chronic inflammatory bowel disease; or

5) after surgical operation on the digestive tract or its adnexa, including surgery involving total or partial excision or a diversion of any of these organs

may be assessed as fit subject to satisfactory evaluation after successful treatment and full recovery after surgery.

AMC5 MED.C.025 Metabolic and endocrine systems

(a) Cabin crew members should not possess any functional or structural metabolic, nutritional or endocrine disorder which is likely to interfere with the safe exercise of their duties and responsibilities.

(b) Cabin crew members with metabolic, nutritional or endocrine dysfunction may be assessed as fit, subject to demonstrated stability of the condition and satisfactory aero- medical evaluation.

(c) Diabetes mellitus

1) Cabin crew members with diabetes mellitus requiring insulin may be assessed as fit if it can be demonstrated that adequate blood sugar control has been achieved and hypoglycaemia awareness is established and maintained. Limitations should be imposed as appropriate. A requirement to undergo specific regular medical examinations (SIC) and a restriction to operate only in multi-cabin crew operations should be placed as a minimum.

2) Cabin crew members with diabetes mellitus not requiring insulin may be assessed as fit if it can be demonstrated that adequate blood sugar control has been achieved and hypoglycaemia awareness, if applicable considering the medication, is achieved.

3) Anti-diabetic medications: refer to appendix 6

AMC6 MED.C.025 Haematology

Cabin crew members with a haematological condition, such as:

(a) abnormal haemoglobin including, but not limited to, anaemia, polycythaemia or haemoglobinopathy;

(b) coagulation, haemorrhagic or thrombotic disorder;

(c) significant lymphatic enlargement;

(d) acute or chronic leukaemia; or

(e) enlargement of the spleen

may be assessed as fit subject to satisfactory aero-medical evaluation.

AMC7 MED.C.025 Genitourinary system

(a) Urine analysis should form part of every aero-medical examination and/or assessment. The urine should not contain any abnormal element(s) considered to be of pathological significance.

(b) Cabin crew members with any sequela of disease or surgical procedures on the kidneys or the urinary tract, in particular any obstruction due to stricture or compression likely to cause incapacitation should be assessed as unfit.

(c) Cabin crew members with a genitourinary disorder, such as:

1) renal disease; or

2) a history of renal colic due to one or more urinary calculi

may be assessed as fit subject to satisfactory renal/urological evaluation.

(d) Cabin crew members who have undergone a major surgical operation in the urinary apparatus involving a total or partial excision or a diversion of its organs should be assessed as unfit and be re-assessed after full recovery before a fit assessment can be made.

AMC8 MED.C.025 Infectious disease

Cabin crew members who are HIV positive will not be assessed as fit.

AMC9 MED.C.025 Obstetrics and gynaecology

(a) Cabin crew members who have undergone a major gynaecological operation should be assessed as unfit until full recovery.

(b) Pregnancy

1) A pregnant cabin crew member may be assessed as fit only during the first 16 weeks of gestation following review of the obstetric evaluation by the AME.

2) A limitation not to perform duties as single cabin crew member should be considered.

3) The AME should provide written advice to the cabin crew member and supervising physician regarding potentially significant complications of pregnancy resulting from flying duties.

AMC10 MED.C.025 Musculoskeletal system

(a) A cabin crew member should have sufficient standing height, arm and leg length and muscular strength for the safe exercise of their duties and responsibilities.

(b) A cabin crew member should have satisfactory functional use of the musculoskeletal system.

(c) Cabin crew members with any significant sequelae from disease, injury or congenital abnormality affecting the bones, joints, muscles or tendons with or without surgery require full evaluation prior to a fit assessment.

(d) Cabin crew members with inflammatory, infiltrative, traumatic or degenerative disease of the musculoskeletal system may be assessed as fit provided the condition is in remission or is stable and the affected cabin crew member is not taking any medication that may lead to unfitness.

AMC11 MED.C.025 Psychiatry

(a) Cabin crew members with a mental or behavioural disorder due to alcohol or other problematic substance use should be assessed as unfit pending recovery and freedom from problematic substance use and subject to satisfactory psychiatric evaluation.

(b) Cabin crew members with an established history or clinical diagnosis of schizophrenia, schizotypal or delusional disorder should be assessed as unfit.

(c) Cabin crew members with a psychiatric condition such as:

1) mood disorder;

2) neurotic disorder;

3) personality disorder; or

4) mental or behavioural disorder

should undergo satisfactory psychiatric evaluation before a fit assessment can be made.

(d) Cabin crew members with a history of a single or repeated acts of deliberate self-harm should be assessed as unfit. Cabin crew members should undergo satisfactory psychiatric evaluation before a fit assessment can be considered.

AMC12 MED.C.025 Psychology

(a) Where there is established evidence that a cabin crew member has a psychological disorder, he/she should be referred for psychological opinion and advice.

1) The psychological evaluation may include a collection of biographical data, the review of aptitudes, and personality tests and psychological interview.

2) The psychologist should submit a report to the AME, detailing the results and recommendation.

(d) The cabin crew member may be assessed as fit to perform cabin crew duties, with limitation if and as appropriate.

AMC13 MED.C.025 Neurology

(a) Cabin crew members with an established history or clinical diagnosis of:

1) epilepsy; or

2) recurring episodes of disturbance of consciousness of uncertain cause should be assessed as unfit.

(b) Cabin crew members with an established history or clinical diagnosis of:

1) epilepsy without recurrence after five years of age and without treatment for more than ten years;

2) epileptiform EEG abnormalities and focal slow waves;

3) progressive or non-progressive disease of the nervous system;

4) a single episode of disturbance of consciousness of uncertain cause;

5) loss of consciousness after head injury;

6) penetrating brain injury; or

7) spinal or peripheral nerve injury

should undergo further evaluation before a fit assessment can be considered.

AMC14 MED.C.025 Visual system

(a) Examination

1) a routine eye examination should form part of the initial and all further assessments and/or examinations; and

2) an extended eye examination should be undertaken when clinically indicated.

(b) Distant visual acuity, with or without correction, should be with both eyes 6/9 or better.

(c) A cabin crew member should be able to read an N5 chart (or equivalent) at 30–50 cm, with correction if prescribed.

(d) Cabin crew members should be required to have normal fields of vision and normal binocular function.

(e) Cabin crew members who have undergone refractive surgery may be assessed as fit subject to satisfactory ophthalmic evaluation.

(f) Cabin crew members with diplopia should be assessed as unfit.

(g) Spectacles and contact lenses:

If satisfactory visual function is achieved only with the use of correction:

1) in the case of myopia, spectacles or contact lenses should be worn whilst on duty;

2) in the case of hyperopia, spectacles or contact lenses should be readily available for immediate use;

3) the correction should provide optimal visual function and be well tolerated;

4) orthokeratologic lenses should not be used.

AMC15 MED.C.025 Colour vision

Cabin crew members should be able to correctly identify 9 of the first 15 plates of the 24-plate edition of Ishihara pseudoisochromatic plates. Alternatively, cabin crew members should demonstrate that they are colour safe.

AMC16 MED.C.025 Otorhino-laryngology

(a) Hearing should be satisfactory for the safe exercise of cabin crew duties and responsibilities. Cabin crew with hypoacusis should demonstrate satisfactory functional hearing abilities.

(b) Examination

1) An ear, nose and throat (ENT) examination should form part of all examinations and/or assessments.

2) Hearing should be tested at all assessments and/or examinations:

(i) the cabin crew member should understand correctly conversational speech when tested with each ear at a distance of 2 meters from and with the cabin crew member's back turned towards the examiner;

(ii) Notwithstanding (i) above, hearing should be tested with pure tone audiometry at the initial examination and when clinically indicated.

(iii) at initial examination the cabin crew member should not have a hearing loss of more than 35 dB at any of the frequencies 500 Hz, 1 000 Hz or 2 000 Hz, or more than 50 dB at 3 000 Hz, in either ear separately.

(c) Cabin crew members with:

1) an active pathological process, acute or chronic, of the internal or middle ear;

2) unhealed perforation or dysfunction of the tympanic membrane(s);

3) disturbance of vestibular function;

4) significant restriction of the nasal passages;

5) sinus dysfunction;

6) significant malformation or significant, acute or chronic infection of the oral cavity or upper respiratory tract;

7) significant disorder of speech or voice

should undergo further medical examination and assessment to establish that the condition does not interfere with the safe exercise of their duties and responsibilities.

AMC17 MED.C.025 Dermatology

In cases where a dermatological condition is associated with a systemic illness, full consideration should be given to the underlying illness before a fit assessment may be made.

AMC18 MED.C.025 Oncology

(a) After treatment for malignant disease, cabin crew members should undergo satisfactory oncological and aero-medical evaluation before a fit assessment may be considered.

(b) Cabin crew members with an established history or clinical diagnosis of intracerebral malignant tumour should be assessed as unfit. Considering the histology of the tumour, a fit assessment may be considered after successful treatment and full recovery.

GM1 MED.C.025 Aero-medical assessments

(a) When conducting aero-medical examinations and/or assessments, typical cabin crew duties as listed in (b) and (c), particularly those to be performed during abnormal operations and emergency situations, and cabin crew responsibilities to the travelling public should be considered in order to identify:

1) any physical and/or mental conditions that could be detrimental to the performance of the duties required from cabin crew; and

2) which examination(s), test(s) or investigation(s) should be undergone to complete an appropriate aero-medical assessment.

(b) Main cabin crew duties and responsibilities during day-to-day normal operations

1) During pre/post-flight ground operations with/without passengers on board:

(i) monitoring of situation inside the aircraft cabin and awareness of conditions outside the aircraft including observation of visible aircraft surfaces and information to flight crew of any surface contamination such as ice or snow;

(ii) assistance to special categories of passengers (SCPs) such as infants and children (accompanied or unaccompanied), persons with disabilities or reduced mobility, medical cases with or without medical escort, and inadmissible, deportees and passengers in custody;

(iii) observation of passengers (any suspicious behaviour, passengers under the influence of alcohol and/or drugs, mentally disturbed), observation of potential able-bodied persons, crowd control during boarding and disembarkation;

(iv) safe stowage of cabin luggage, safety demonstrations and cabin secured checks, management of passengers and ground services during re-fuelling, observation of use of portable electronic devices;

(v) preparedness to carry out safety and emergency duties at any time, and security alertness.

2) During flight:

(i) operation and monitoring of aircraft systems, surveillance of the cabin, lavatories, galleys, crew areas and flight crew compartment;

(ii) coordination with flight crew on situation in the cabin and turbulence events/effects;

(ii) management and observation of passengers (consumption of alcohol, behaviour, potential medical issues), observation of use of portable electronic devices;

(iv) safety and security awareness and preparedness to carry out safety and emergency duties at any time, and cabin secured checks prior to landing.

(c) Main cabin crew duties and responsibilities during abnormal and emergency operations

1) In case of planned or unplanned emergency evacuation: briefing and/or commands to passengers including SCPs and selection and briefing to able-bodied persons; crowd control monitoring and evacuation conduct including in the absence of command from the flight crew; post-evacuation duties including assistance, first aid and management of survivors and survival in particular environment; activation of applicable communication means towards search and rescue services.

2) In case of decompression: checking of crew members, passengers, cabin, lavatories, galleys, crew rest areas and flight crew compartment, and administering oxygen to crew members and passengers as necessary.

3) In case of pilot incapacitation: secure pilot in his/her seat or remove from flight crew compartment; administer first aid and assist operating pilot as required.

4) In case of fire or smoke: identify source/cause/type of fire/smoke to perform the necessary required actions; coordinate with other cabin crew members and flight crew; select appropriate extinguisher/agent and fight the fire using portable breathing equipment (PBE), gloves, and protective clothing as required; management

of necessary passengers movement if possible; instructions to passengers to prevent smoke inhalation/suffocation; give first aid as necessary; monitor the affected area until landing; preparation for possible emergency landing.

5) In case of first aid and medical emergencies: assistance to crew members and/or passengers; correct assessment and correct use of therapeutic oxygen, defibrillator, first-aid kits/emergency medical kit contents as required; management of events, of incapacitated person(s) and of other passengers; coordination and effective communication with other crew members, in particular when medical advice is transmitted by frequency to flight crew or by a telecommunication connection.

6) In case of disruptive passenger behaviour: passenger management as appropriate including use of restraint technique as considered required.

7) In case of security threats (bomb threat on ground or in-flight and/or hijack): control of cabin areas and passengers' management as required by the type of threat, management of suspicious device, and protection of flight crew compartment door.

8) In case of handling of dangerous goods: observing safety procedures when handling the affected device, in particular when handling chemical substances that are leaking; protection and management of self and passengers and effective coordination and communication with other crew members.

GM 2 MED.C.025 Psychiatry

GCAA Protocol to Licence Depressed Cabin Crew on Treatment

(a) Initial diagnosis of a Depressive episode (according to ICD 10) and treatment must be initiated by a GCAA approved Psychiatrist.

(b) The treatment options include Cognitive Behavioral Therapy (CBT), and or Selective Serotonin Re-uptake Inhibitors (SSRI's).

- The SSRI's allowed to be used are Citalopram, Escitalopram, Sertraline and Fluoxetine.
- Other treatment options must be assessed on individual basis.

(c) Initial grounding post commencement of treatment to:

- Check for potential side effects
- Improvement in the condition
- Stability

(d) Once stable and there is absence of any side effects confirmed by the treating Psychiatrist, the medical certificate will be reinstated by the GCAA.

(e) The Cabin crew will be reviewed every 3 months, unless indicated otherwise by treating psychiatrist.

(f) After returning to flying duties the Cabin Crew must ground himself if he feels a worsening of his condition. Any change in his condition must immediately be evaluated by Psychiatrist.

- Any suicidal ideation during the course of stability will necessitate grounding and further Psychiatric re-evaluation
- Evidence of non-compliance with treatment or ignorance of Psychiatric or AME reviews, necessitates immediate grounding.

(g) Once treatment has completed, Cabin crew should be reviewed as directed by the Psychiatrist.

GM 3 MED.C.025 Aero-medical assessments

(a) Requirements for Aviation nurses designation

1) Be fully qualified and licenced by the Health authority appropriate to the region.
2) Have undertaken a GCAA acceptable training course in aviation medicine.
3) Should work in an approved GCAA facility or, AeMC.
4) Should have training on collection of urine for the purpose of drug testing
5) Have adequate knowledge and skills necessary for performing the specialist investigation and test required for clinical assessment of Cabin crew (Audiogram, ECG, etc.)
6) Have periodic competency checks by the SAME.

(b) Musculoskeletal Screening examination **"GALS"**

Gait	- Appearance	-Movement
Arms	- Appearance	-Movement
Legs	- Appearance	-Movement
Spine	- Appearance	- Movement

GM 4 MED.C.025 Aero-medical assessments

COLOUR VISION – GENERAL

Examples of colours of which the perception is required for the safe performance of cabin crew members' duties are: cabin crew indication panels, pressure gauges of emergency equipment (e.g. fire extinguishers) and cabin door status.

SECTION 3 - ADDITIONAL REQUIREMENTS FOR APPLICANTS FOR, OR HOLDERS OF, A CABIN CREW LICENCE

MED.C.030 Cabin crew medical certificate

(a) After completion of each aero-medical assessment, applicants for, and holders of, a cabin crew licence:

1) shall be provided with a cabin crew medical certificate by the AME or AeMC; and

2) shall provide the related information, or a copy of their cabin crew medical certificate to the operator(s) employing their services.

(b) Cabin crew medical certificate

A cabin crew medical certificate shall indicate the date of the aero-medical assessment, whether the cabin crew member has been assessed fit or unfit, the date of the next required aero-medical assessment and, if applicable, any limitation(s). Any other elements shall be subject to medical confidentiality in accordance with MED.A.015.

AMC1 MED.C.030 Cabin crew medical certificate

The cabin crew medical certificate after completion of each aero-medical assessment should be issued in English; and according to the GCAA Medical requirements in the E- Medical Service.

MED.C.035 Limitations

(a) If holders of a cabin crew licence do not fully comply with the medical requirements specified in Section 2, the AME or AeMC shall consider whether they may be able to perform cabin crew duties safely if complying with one or more limitations.

(b) Any limitation(s) to the exercise of the privileges granted by the cabin crew licence shall be specified on the cabin crew medical certificate and shall only be removed by an AeMC.

AMC1 MED.C.035 Limitations

When assessing whether the holder of a cabin crew licence may be able to perform cabin crew duties safely if complying with one or more limitations, the following possible limitations should be considered:

(a) a restriction to operate only in multi-cabin crew operations (MCL); can only be inserted by SAME or AME in consultation with AMS.

(b) a restriction to specified aircraft type(s) (OAL) or to a specified type of operation (OOL); can only be inserted by SAME or AME in consultation with AMS.

(c) a requirement to undergo the next aero-medical examination and/or assessment at an earlier date than required by MED.C.005(b) (TML); can only be inserted by SAME or AME in consultation with AMS.

(d) a requirement to undergo specific regular medical examination(s) (SIC); can only be inserted by SAME or AME in consultation with AMS.

(e) a requirement for visual correction (CVL), or by means of corrective lenses only (CCL); can be inserted by SAME or AME.

(f) a requirement to use hearing aids (HAL); can only be inserted by SAME or AME in consultation with AMS; and

(g) special restriction as specified (SSL); can only be inserted by SAME or AME in consultation with AMS.

SUBPART D - AERO-MEDICAL EXAMINERS (AME), SENIOR AEROMEDICAL EXAMINERS (SAME), GCAA Approved Specialists including Psychologist

SECTION 1 - AERO-MEDICAL EXAMINERS

MED.D.001 Privileges

(a) The privileges of an AME are to issue, revalidate and renew Class 2 medical certificates medical certificates, and to conduct the relevant medical examinations and assessments.

(b) Holders of an AME certificate may apply for an extension of their privileges to include medical examinations for the revalidation and renewal of Class 1 medical certificates, if they comply with the requirements in MED.D.015.

(c) The scope of the privileges of the AME, and any condition thereof, shall be specified in the certificate.

MED.D.005 Application

(a) Application for a certificate as an AME shall be made in a form and manner specified by the GCAA.

(b) Applicants for an AME certificate shall provide the GCAA with:

1) personal details and official address;

2) documentation demonstrating that they comply with the requirements established in MED.D.010, including a certificate of completion of the training course in aviation medicine appropriate to the privileges they apply for;

3) a written declaration that the AME will issue medical certificates on the basis of the requirements of this Chapter.

(c) When the AME undertakes aero-medical examinations in more than one location, they shall provide the GCAA with relevant information regarding all practice locations.

AMC1 MED.D.005 Application

1. AME, SAME and Specialist designation

1.1 Documentation and administrative procedure for designating AME, SAME & Specialists

(a) Expression of Intent: All applicants for the designation shall apply in writing expressing the intent to practice as an AME, SAME or approved Specialist and requesting to be licenced as a GCAA designated AME or approved specialist. The application shall be made to the Head of Aeromedical section, Civil Aviation Authority, U.A.E.

(b) First Correspondence from the GCAA: On receipt of the informal application the requisite GCAA relevant designation application form will be sent to the candidate along with list of required equipment (see GM1 MED.D.010), within a period of 10 working days.

(c) Application: The applicant should fill the formal application form and return it to the Licensing department, supplying all the necessary supporting documents.

(d) Facility Survey: in the case of AME or SAME application, the Aeromedical inspector will review the documents and if the candidate is selected for designation the GCAA will inform the candidate and will setup a date and time for the facility survey. Once the facility survey is satisfactorily completed the GCAA should inform the applicant in writing of the disposal of his or her application and at this stage he should make any payment required.

(e) For all kind of application the candidate may be required to undertake a competency evaluation exams and/or an interview with the Head of aeromedical section.

(f) Once selected for designation, a training session will be arranged with the IT team on the use of the E-Medical Service and the following items should be sent to the physician:

(i) Letter of approval from the GCAA, describing the privileges granted,

(ii) Facility approval certificate,

(iii) AME stamp and the official GCAA forms,

(iv) AME resources,

(v) guidance material and supplies.

(a) AME Designation letter shall expire 2 years after the date issued. Facility approval shall expire 1 year after the date issued.

(h) Requirements for the Overseas Facility Survey: For the approval of the overseas medical facilities the individual or the organisation requesting the approval would be required to make all the necessary arrangements for the GCAA official conducting the survey.

(i) Once the AME leave the business or his service is terminated that particular number will be blocked and cannot be used by other AME. Each stamp is intended for the exclusive use of the individual examiner to whom it is issued and should not be used by any other practitioner. In case of lost stamp or Designated AME letter, the AME is responsible to inform the GCAA immediately.

Note 1: The designee shall be informed that misuse of the Medical Certificate and Civil Aviation Medical Examination Report, could have a detrimental effect on air safety. Accordingly security of these forms should be maintained.

Note 2: GCAA forms and supplies may be obtained from GCAA official website addressing the intent to practice as an AME and requesting to be licenced as a GCAA.

1.2 Renewal procedure

(a) Thirty days before expiration of designation, the AME, SAME and approved specialist shall apply to the Licensing department, forwarding relevant application form with a cheque of 300 Dirham and in the case of AME and SAME total numbers of examinations done per classes of medical and total number of boards done during his/her designation should be included in the renewal form.

(b) The Aeromedical Inspector shall check the CME record for all designated examiners applying for renewal, if the record is satisfactory, and the risk assessment form is satisfactory for the class of the medical, the Aeromedical Inspector recommend his designation renewal with same previous privileges. If the evaluation result of the risk assessment is unsatisfactory, then the Aeromedical inspector will recommend other measures to control the current risk in accordance with the GCAA internal procedure.

(c) Formal interview with the Aeromedical Inspector or exam may be required for some designated examiners who meets designation criteria but the risk assessment evaluation is un- satisfactory.

(d) In case of disqualification for renewal a letter of regret will be dispatched to the physician within a period of 10 working days.

(e) Physicians who's completed the application form re-designation is not received within 30 days will not be re-designated. The Head of the Aeromedical section shall be notified of those physicians who decline or fail to be re-designated.

(f) Physicians who continue to work as UAE designated examiner with expired designation will be subjected to penalties, which may vary from warning letter to permanent suspension.

1.3 Termination or non-renewal of designation

The GCAA may terminate or not renew any designation

Termination or non-renewal of designation may be based in whole or in part on the following criteria;

(a) No examinations performed after 24 months of initial designation.

(b) AME/SAME Performance of less than ten examinations per year to maintain proficiency.

(c) Disregard or failure to demonstrate the knowledge of UAE rules, regulations, GCAA policies, and procedures.

(d) Careless or incomplete reporting of the results of medical certification examinations.

(e) Failure to comply with the mandatory AME training requirements.

(f) Movement of the location of practice.

(h) Unprofessional performance of examinations.

(i) Failure to promptly mail reports of medical examinations to the GCAA.

(j) Loss, restriction, or limitation of a licence to practice medicine.

(k) Any action that compromises public trust or interferes with the AME's/SAME's ability to carry out the responsibilities of his or her designation.

(l) Any illness or medical condition that may affect the physician's sound professional judgment or ability to schedule or perform examinations.

(m) Arrest, indictment, or conviction for violation of a law.

(n) Request by the physician for termination of designation.

(o) Any other reason the GCAA deems appropriate.

2. Distribution

There shall be a determined need for an AME/SAME/Specialist /AeMC in the area, based on adequacy of coverage related to the pilot population. Other variables, such as geographic locations and aviation activity levels, shall be considered when assessing the local needs for designation of additional AMEs.

3. Facility and Equipment requirement

3.1 Requirements for Medical facility

For the conduct of the medical examination, Examiner's shall have adequate facilities for performing the required examinations and possess or agree to obtain the following equipment prior to conducting any GCAA examinations.

(a) The facility shall be approved by the Ministry of health or other Health Authorities wherever applicable.

(b) The facility shall hold and maintain recognized accreditations assuring an effective implementation of a customer satisfaction code of conduct and process of complaints (related to services delivered) handling and management such as ISO 10001 and 10002 accreditations.

(b) Each facility should have at least one GCAA designated AME available to function at it.

(c) Standard Snellen Test and Near Vision Acuity Test Card vision testing.

(d) Colour Vision Test Apparatus. Ishihara, 24 plate editions.

(e) Standard physician diagnostic instruments and aids including those necessary to perform urinalysis.

(f) Electrocardiographic equipment. All Examiners should have access to digital electrocardiographic equipment with electronic transmission capability.

(g) Audiometric equipment. All Examiners should have access to audiometric equipment or a capability of referring applicants to other medical facilities for audiometric testing.

(h) Laboratory equipment's which should be available within the facility include those for routine aviation medicals namely blood and urine tests. Other required tests to be done in the clinic laboratory by a trained technician or if not available, at another laboratory within a reasonable driving distance from the main facility.

(i) X-Ray facilities and Drug screening facilities should either be available on premises or within a reasonable driving distance from the main facility.

(j) Pulmonary function test machine (Spirometry) and Peak expiratory flow rate, these machine should be an available within all the facilities.

(k) A suitable computer, document scanner, modem and software package for communication with GCAA, as the process of e-work will be established for data transfer to the GCAA in the coming year.

Note: The payment of the fee (5000 Dhs) must be completed before submitting the application to GCAA. For the companies who have direct billing system with GCAA, the finance department will take the necessary action.

3.2 Facilities and Equipment Required for the Specialist Facility

(a) The specialist shall have adequate facility for performing the required examinations and possess or agree to obtain such equipment prior to conducting any GCAA examinations;

(b) There should be a provision for chaperones to be made available at the request of those to be examined at the premises.

4. RISK BASED AUDIT PROGRAM ON AME PERFORMNACE

The GCAA is adopting a new strategy for evaluating the designated AME using the concepts and principles of Safety management System (SMS). The new system will use objectives tools along with audit findings and evidences from daily review of applications. All elements will be used to fill the risk assessment form. The AMS will use a scientific methodology to identify, assesses, controls and monitors medical certification and its safety risks throughout the GCAA approved clinics. This methodology will be used to prioritize risks and to assist in the allocation of resources for the selection and implementation of required risk controls. This process will determine area of audits and percentage of reviewed applications.

Moreover for sake of effective risk assessment implementation all current designated examiners are required to appear for an exam; to identify the overall level of knowledge about GCAA rules and regulations.

5. AME CODE OF PRACTICE

Code of practice (professional ethics)

The Aeromedical section will adopt a code of professional responsibility relating to aviation medicine practice within the boundaries of the UAE this code of practice will discuss difficult issues, difficult decisions that will often need to be made, and provide a clear account of what behaviour is considered “correct" or "right" in the circumstances. It is a good way to state clearly the AMS's position on important subjects like equality, ethics, contracts, conflict of interest and duty of care. This code of practice applies to all designated examiners by the GCAA including the AME, Senior AME and Specialists.

Failure to follow this guidance will put your designation at risk.

1. Confidentiality

The AME is committed to maintaining the highest degree of integrity in all his/her dealings with potential, current and past clients, both in terms of normal commercial confidentiality, and the protection of all personal information received in the course of providing the GCAA examination services concerned. The AME should:

(a) Protect and promote the health of his/her licence holders/Applicant and the public health.

(b) Treat all licence holders/Applicant as individuals and respect their dignity.

(c) Treat licence holders/Applicant politely and considerately.

(d) Respect licence holders/Applicant’ right to confidentiality.

(e) Act without delay if he/she has good reason to believe that his/her colleague may be putting patients or public health at risk.

(f) Identify the relevant legal and ethical considerations, to help him/her make the aeromedical disposition decisions that respect licence holders’, privacy, autonomy and choices and that also benefit the wider aviation community. If in doubt, he/she should seek the advice of experienced colleagues, or the GCAA AMS as a regulatory body.

(g) Inform patients about disclosures for regulatory purposes to the GCAA AMS for review and get the patient’s express consent for this purpose.

(h) Understand that confidentiality is an important duty, but it is not absolute. He/she can disclose personal information if:

1) it is required by law,

2) it is justified in the public interest.

2. Ethics

All GCAA services should be done honestly and honourably, and designated peoples are expected to do the same. The AME advice, strategic assistance and the methods imparted through his/her training, take proper account of ethical considerations, together with the protection and enhancement of the moral position of the licence holders and the AME.

The AME should:

(a) Provide a good standard of practice and care

(b) Keep his/her professional knowledge and skills up to date

(c) Recognise and work within the limits of his/her competency

(d) Work with colleagues in the ways that best serve licence holders/Applicant' interests

(e) Work in partnership with the licence holders/Applicant

(f) Listen to licence holders and respond to their concerns about their licensing issues

(g) Respect licence holders' right to reach decisions with health management team about their treatment and care which does not contradict his licensing issue.

3. Duty of care

AME's actions and advice will always conform to relevant law, and all businesses related to civil aviation activities should avoid causing any adverse effect on the human rights of people in the organizations they deal with, the local and wider aviation environments, and the safety of society at large. The AME is personally accountable for his/her professional practice and should always be prepared to justify his/her decisions and actions.

Conflict of interest

Due to the sensitive nature of our particular aviation regulatory services, designated examiner generally try to avoid any dealings with licence holders seeking help when they don't meet the GCAA requirements. A possible conflict of interest exists when the AME has a material personal interest, either direct or indirect, in a proposed transaction involving the aviation activity. When the AME has an interest in a transaction being considered by the examinee, the AME should disclose that conflict before the GCAA to take action on the matter.

Quality assurance

The AME should maintain the quality of what he/she does through constant ongoing review with GCAA staff, of all aims, activities, outcomes and the cost-effectiveness of every activity. Regular review meetings and regular progress reports should be maintained.

Professional conduct

All activities should be conducted professionally and with integrity. The AME should take great care to be completely objective in his/her judgment and any recommendations that he/she give, so that

issues are never influenced by anything other than the best and proper interests of aviation community.

Equality and discrimination

The AME should be fair and objective in his/her advice and actions, and should never be influenced in his/her decisions, actions or recommendations by issues of gender, race, creed, colour, age or personal disability.

MED.D.010 Requirements for the issue of an AME certificate

Applicants for an AME certificate with the privileges for the initial issue, revalidation and renewal of Class 2 medical certificates shall:

(a) be fully qualified and licenced for the practice of medicine and hold a Certificate of Completion of specialist training;

(b) have undertaken a training course in aviation medicine, acceptable to the GCAA;

(c) demonstrate to the GCAA that they:

1) have adequate facilities, procedures, documentation and functioning equipment suitable for aero-medical examinations;

2) have in place the necessary procedures and conditions to ensure medical confidentiality, and

3) Have adequate knowledge and skills necessary for examination and assessment for Class 2.

AMC1 MED.D.010 Requirements for the issue of an AME certificate

(a) Basic training course for AMEs

The basic training course for AMEs should consist of 60 hours theoretical and practical training, including specific examination techniques.

(b) The syllabus for the basic training course should cover at least the following subjects:

(i) Introduction to aviation medicine;

(ii) physics of atmosphere and space;

(iii) basic aeronautical knowledge;

(iv) Aviation physiology;

(v) ophthalmology, including demonstration and practical;

(vi) otorhinolaryngology, including demonstration and practical;

(vii) radiology and general medicine;

(viii) urology;

(ix) psychiatry in aviation medicine;

(x) onchology;

(xi) dentistry;

(xii) accidents, escape and survival;

(xiii) Legislation, rules and regulations;

(xiv) Air evacuation, including demonstration and practical;

(xv) Medication and flying.

(c) Minimum foundation knowledge required for a medical examiner

All Aeromedical examiners will be involved to some extent in making fitness decisions concerning medical conditions. To do this the medical examiner should build on a sound understanding of the regulatory framework, responsibilities and accountabilities, including the process of flexibility as per Standard 1.2.4.9 of Annex 1. This will be achieved by employing knowledge of clinical aviation medicine, taking into account aspects of risk management.

As background for evaluating aeromedical issues, examiners need to learn about the psychological and physiological challenges of flight.

These subjects could be taught in a knowledge-based manner or as part of a competency-based programme:

1) Aviation physiology

(i) Cognition and aviation

(ii) Decision making and communication in aviation

(iii) Sleep and fatigue as related to commercial aviation

(iv) Physics of the atmosphere; effects of altitude on trapped gas

(v) Effects of hypoxia

(vi) Functional aspects of vision relevant to aviation

(vii) Spatial disorientation

(viii) Effects of acceleration

2) Aspects of incapacitation in flight

(i) Effects of ageing as related to flight safety

(ii) Cardiological conditions relevant to flight

(iii) Neurological conditions relevant to flight

(iv) Ophthalmological conditions relevant to flight

(v) Ear/nose/throat conditions relevant to flight

(vi) Respiratory conditions relevant to flight

(vii) Psychiatric conditions relevant to flight

(viii) Metabolic/endocrine conditions relevant to flight

(ix) Other conditions relevant to flight (especially gastro-enterological, haematological, urological, renal,

(x) gynaecological/obstetric, orthopaedic and oncological disease)

(xi) Medication relevant to flight

3) Public Health

(i) Introduction to the World Health Organization International Health Regulations (2005)

(ii) Knowledge of SARPs related to public health:

(A) Annex 6 — Operation of Aircraft: On board medical supplies

(B) Annex 9 — Facilitation: Public Health Emergency preparedness planning, Aircraft General Declaration

(C) Annex 11 — Air Traffic Services: Aspects relevant to public health emergencies in contingency planning

(D) Annex 14 — Aerodromes: Aspects relevant to public health emergencies in aerodrome emergency planning Procedures for Air Navigation Services — Air Traffic Management: See Part III, Chapter 18, Appendix

(E) Annex 18 — The Safe Transport of Dangerous Goods by Air: Carriage of medical items by air e.g.

(F) radioactive materials and biological specimens

4) Regulatory medicine

(i) Convention on International Civil Aviation and its Annexes

(ii) ICAO Standards and Recommended Practices, with focus on medically related SARPs

(iii) Licence types and differences in medical requirements between them

(iv) ICAO Annex 1: difference between "Licence" and "Medical Assessment". Validity periods of Medical Assessments

(v) Application of "Flexibility Standard" 1.2.4.9 in Annex 1 and accredited medical conclusion

(vi) Evaluation of evidence — critical appraisal of specialist reports and data

(vii) Decrease in medical fitness — administrative process for an "unfit" decision

(viii) Other medical regulations in the ICAO Annexes (psychoactive substances, fatigue, oxygen)

(ix) Principles of risk management

(x) Principles of safety management, as applied to aviation medicine

MED.D.015 Requirements for the extension of privileges

Applicants for an AME certificate extending their privileges to the revalidation and renewal of Class 1 medical certificates shall hold a valid certificate as an AME and have:

(a) conducted at least 30 examinations for the issue, revalidation or renewal of Class 2 medical certificates over a period of no more than 2 years preceding the application;

(b) undertaken an advance training course in aviation medicine, and

(c) undergone practical training at an AeMC or at an approved clinic under supervision of the GCAA.

AMC1 MED.D.015 Requirements for the extension of privileges

(a) Advanced training course for AMEs

The advanced training course for AMEs should consist of another 60 hours of theoretical and practical training, including specific examination techniques.

(b) The syllabus for the advanced training course should cover at least the following subjects:

(i) Pilot working environment;

(ii) Aerospace physiology, including demonstration and practical;

(iii) Ophthalmology, including demonstration and practical;

(iv) Otorhinolaryngology, including demonstration and practical;

(v) Cardiology and general medicine, including demonstration and practical;

(vi) Neurology/psychiatry, including demonstration and practical;

(vii) Human factors in aviation, including demonstration and practical;

(viii) Tropical medicine;

(ix) Hygiene, including demonstration and practical;

(x) Space medicine.

(c) Practical training in an AeMC should be under the guidance and supervision of the head of the AeMC.

(d) After the successful completion of the practical training, a report of demonstrated competency should be issued.

MED.D.020 Training courses in aviation medicine

(a) Training courses in aviation medicine shall be accepted by the GCAA. The organisation providing the course shall demonstrate that the course syllabus is adequate and that the persons in charge of providing the training have adequate knowledge and experience.

(b) Except in the case of refresher training, the courses shall be concluded by a written examination on the subjects included in the course content.

(c) The organisation providing the course shall issue a certificate of completion to applicants when they have obtained a pass in the examination.

AMC1 MED.D.020 Training courses in aviation medicine

If the doctor is undertaking EASA training courses, he should complete both basic and advance courses to be eligible to perform all classes of medical examination. Completion of basic course only, the doctor will be designated to conduct examination for Class 2 and cabin crew classes only.

All courses should include practical training sessions or visits (e.g. Simulator visit or ATC tower visit … etc.)

AMC2 MED.D.020 Training courses in aviation medicine

Refresher training in aviation medicine

(a) During the period of authorisation, an AME and SAME should attend 20 hours of refresher training.

(b) A proportionate number of refresher training hours should be provided by, or conducted under the direct supervision of the GCAA or the Medical Inspector.

(c) Attendance at scientific meetings, congresses and flight deck experience may be approved by the GCAA for a specified number of hours against the training obligations of the AME.

(d) Scientific meetings that should be accredited by the GCAA are:

1) International Academy of Aviation and Space Medicine Annual Congresses;

2) Aerospace Medical Association Annual Scientific Meetings; and

3) other scientific meetings, as organised or approved by the Medical Assessor.

(e) Other refresher training may consist of:

1) flight deck experience;

2) jump seat experience;

3) simulator experience; and

4) aircraft piloting.

(f) As a requirement for continued designation, the Approved specialist should attend 20 hours approved refresher training, or scientific meeting related directly to his Specialist. ; Plus at least 5 hours related to Aviation medicine.

MED.D.025 Changes to the AME certificate

(a) AME shall notify the GCAA of the following changes which could affect their certificate:

1) the AME is subject to disciplinary proceedings or investigation by a medical regulatory body;

2) there are any changes to the conditions on which the certificate was granted, including the content of the statements provided with the application;

3) the requirements for the issue are no longer met;

4) there is a change of aero-medical examiner's practice location(s) or correspondence address.

(b) Failure to inform the GCAA shall result in the suspension or revocation of the privileges of the certificate, on the basis of the decision of the GCAA that suspends or revokes the certificate.

MED.D.030 Validity of AME certificates

An AME certificate shall be issued for a period not exceeding 2 years. It shall be revalidated subject to the holder:

(a) continuing to fulfil the general conditions required for medical practice and maintaining registration as a medical practitioner according to national law;

(b) undertaking refresher training in aviation medicine within the last 2 years;

(c) having performed at least 10 aero-medical examinations every year;

(d) remaining in compliance with the terms of their certificate; and

(e) exercising their privileges in accordance with this Chapter.

MED.D.035 AME roles and responsibilities

An AME shall be responsible for:

(a) ensuring the following during medical assessment of an applicant:

1) Verify identity of the applicant under medical certification;

2) Answer the medical history questions in the medical assessment report, in conjunction with the applicant, and ensure that the applicant understands each such question;

3) Conduct, personally, all medical examinations at an established office address, and assume responsibility for the accuracy and completeness of the total report of examination even if nurses may be employed to perform limited parts of the examinations (e.g. measurement of visual acuity, hearing (Audiogram), blood pressure, PFT and pulse, and conduct of urinalysis and electrocardiography);

4) Declare physically and mentally fit applicants that are able to exercise safely the privileges of their licences;

(b) maintaining familiarity with general medical knowledge applicable to aviation, including a detailed knowledge and understanding of UAE regulations, policies, and procedures and guidance material related to medical certification;

SECTION 2 - SENIOR AERO-MEDICAL EXAMINERS

MED.D.040 Privileges

(a) In addition to MED.D.001, the GCAA may grant to a Senior AME the privilege to:

1) conduct reinstatement of medical certificate and

2) issue, revalidate and renew Class 1 medical certificates medical certificates, and to conduct the relevant medical examinations and assessments.

(b) The scope of the privileges of the AME, and any condition thereof, shall be specified in the certificate.

MED.D.045 Application

(a) Application for a certificate as a Senior AME shall be made in a form and manner specified by the GCAA.

(b) Applicants for a Senior AME certificate shall provide the GCAA with:

1) personal details and professional address;

2) documentation demonstrating that they comply with the requirements established in MED.D.050, including a certificate of completion of the training course in aviation medicine appropriate to the privileges they apply for;

3) a written declaration that the Senior AME will issue medical certificates on the basis of the requirements of this Chapter.

(c) When the Senior AME undertakes aero-medical examinations in more than one location, they shall provide the GCAA with relevant information regarding all practice locations.

(d) When the applicant meets all the requirements established in MED.D.050 except the experience in GCAA regulation, the GCAA may grant authorization if the SAME passes the GCAA interview successfully and his/her performance record within the designation period is satisfactory.

AMC1 MED.D.045 Application

Refer to AMC1 MED.D.005 Application.

MED.D.050 Requirements for the issue of a Senior Aeromedical Examiners (SAME) certificate

Applicants for a SAME certificate with the privileges for the initial issue, revalidation and renewal of all classes of medical certificates shall:

(a) Hold Diploma or Master or PhD degree in Aviation medicine.

(b) Have Three years' experience in aviation medicine.

(c) Be of 2 years' experience as GCAA designated Examiner for Class 1 medical certificate.

(d) Be of good performance report within the period of his designation, and

(e) Participate in GCAA activities and establish good co-operation with GCAA Aeromedical section.

(f) Have excellent ethical conduct.

(g) Demonstrate to the GCAA that they:

- Have adequate facilities, procedures, documentation and functioning equipment suitable for aero-medical examinations; and
- Have in place the necessary procedures and conditions to ensure medical confidentiality.
- Have adequate knowledge and skills necessary for examination and assessment for all classes.
- Acceptable level of competency in assessment and examination for all classes of medical certificate.

GM1 MED.D.050 Requirements for the issue of a Senior Aeromedical Examiners (SAME) certificate

Senior AME is title granted by the GCAA only and it's based on the AME performances that show a remarkable performance and had contributed to the field of aviation medicine in the UAE and this designation will depend on adequacy of coverage related to the pilot population as well. A final interview will be conducted by the Head of Aeromedical section before designation.

In certain circumstances the GCAA might permit AME in the low risk category after performing risk assessment evaluation to act as SAME with limited privileges; this will be subjected to periodic re-evaluation of the performance and risk assessment. The GCAA maintains the right to withdraw this privilege if deemed necessary.

MED.D.055 Training courses in aviation medicine

The provisions of MED.D.020 shall apply to a SAME.

MED.D.060 Changes to the SAME certificate

The provisions of MED.D.025 shall apply to a SAME.

MED.D.065 Validity of SAME certificates

A SAME certificate shall be issued for a period not exceeding 2 years. It shall be revalidated subject to the holder:

(a) continuing to fulfil the general conditions required for medical practice and maintaining registration as a medical practitioner according to national law;

(b) undertaking refresher training in aviation medicine within the last 2 years;

(c) having performed at least 10 aero-medical examinations every year;

(d) remaining in compliance with the terms of their certificate; and

(e) exercising their privileges in accordance with this Chapter.

MED.D.070 SAME roles and responsibilities

In addition to the provisions of MED.D.035, a SAME who has been granted the privilege of reinstatement of Medical Certificate suspended as stated in MED.D.040 shall ensure that when exercising this privilege that he or she is not overriding the AMEs involved in this process.

SECTION 3 - SPECIALISTS OTHER THAN PSYCHOLOGISTS

MED.D.080 Privileges

(a) The privileges of a Specialist are to:

1) evaluate the medical condition of all classes of GCAA medical examination in accordance with the GCAA protocol and international guidelines and recommend for the issue, revalidation and renewal of medical certificate, and to conduct the relevant medical examinations and assessments;

2) investigate and treat the medical condition of the applicant;

3) plan, coordinate, and perform investigations known to resolve or prevent issues that could impact overall aeromedical disposition of applicant;

(b) The scope of the privileges of the Specialist, and any condition thereof, shall be specified in the certificate.

MED.D.085 Application

(a) Application for a certificate as Specialist shall be made in a form and manner specified by the GCAA.

(b) Applicants for an approved GCAA Specialist certificate shall provide the GCAA with:

1) personal details and professional address;

2) documentation demonstrating that they comply with the requirements established in MED.D.090, including a certificate of completion of the training course in aviation medicine appropriate to the privileges they apply for;

3) a written declaration that the he/she will evaluate the medical conditions on the basis of the requirements of this Chapter.

(c) When the approved specialist undertakes aero-medical examinations in more than one location, they shall provide the GCAA with relevant information regarding all practice locations.

AMC1 MED.D.085 Application

Refer to AMC1 MED.D.005 Application.

MED.D.090 Requirement for Specialist designation

Applicants for a Specialist certificate with the privileges stated in MED.D.080 shall:

(a) possess an unrestricted licence to practice medicine in the geographical area in which the designation is sought, issued by Health Authority of the region.

(b) have clinical experience in the specialty field of at least 5 years.

(c) hold a training certificate in Aviation or Aerospace Medicine, or if the Specialist is commercial or private pilots himself.

(d) be engaged in the practice of medicine at an established office address.

(e) have a past professional performance and personal conduct suitable for a position of responsibility and trust.

(f) have undertaken a training course in aviation medicine, acceptable to the GCAA;

(g) demonstrate to the GCAA that they:

1) have adequate facilities, procedures, documentation and functioning equipment suitable for aero-medical examinations;

2) have in place the necessary procedures and conditions to ensure medical confidentiality, and

3) have adequate knowledge and skills necessary for examination, including excellent risk assessment skills.

MED.D.091 Requirement for Substance Abuse Professional (SAP) designation

Applicants for a for Substance Abuse Professional certificate with the privileges stated in MED.D.080 shall:

a) licensed psychiatrist trained in addiction to practice medicine in the geographical area in which the designation is sought, issued by Health Authority of the region.
b) have clinical experience in in the diagnosis and treatment of substance abuse-related disorders for at least 5 years.
c) be engaged in the practice of medicine at an established office address.
d) have a past professional performance and personal conduct suitable for a position of responsibility and trust.
e) have undertaken a training course in aviation medicine, acceptable to the GCAA;
f) demonstrate to the GCAA that they:

1) have adequate facilities, procedures, documentation and functioning equipment suitable for aero-medical examinations;

2) have in place the necessary procedures and conditions to ensure medical confidentiality, and

3) have adequate knowledge and skills necessary for examination, including excellent risk assessment skills.

MED.D.095 Training courses in aviation medicine

The provisions of MED.D.020 shall apply to Specialist.

MED.D.100 Changes to the Specialist certificate

The provisions of MED.D.025 shall apply to Specialist.

MED.D.105 Validity of Specialist certificate

A Specialist certificate shall be issued for a period not exceeding 2 years. It shall be revalidated subject to the holder:

(a) continuing to fulfil the general conditions required for medical practice and maintaining registration as a medical practitioner according to national law;

(b) undertaking refresher training in aviation medicine within the last 2 years;

(d) remaining in compliance with the terms of their certificate; and

(e) exercising their privileges in accordance with this Chapter.

MED.D.110 Roles and Responsibility of Approved Specialist

A Specialist shall:

(a) maintain an excellent reputation as an expert within an industry, a business process, or a function and ensuring an excellent client relations and client management skills;

(b) work with the AME or GCAA to avoid or resolve issues that might impact the successful completion of the applicant fitness assessment;

(c) Work closely with AME, medical board members or GCAA team members to design and develop management plan to return the applicant to aviation duties on appropriate time scale.

(d) participate in aeromedical committee and in aeromedical conferences;

(e) Determine and supporting the implementation of a GCAA policy, generally by providing the investigation;

(f) Review the results of testing personally and manage the report writing.

(g) Be accountable for the quality of the service he delivers and personally conduct physical examination in accordance the best practices.

(h) Refer the case to another Specialist in the same field in case he/she is not sure of whether he/she should recommend the issue of a medical certificate. The final report shall remain with him/her.

(i) Be a member of an Aeromedical Board as and when requested by the GCAA to review medical assessment for a particular applicant if the medical standards are not met in his/her particular fields.

SECTION 4 - PSYCHOLOGIST

MED.D.115 Privileges

The GCAA will grant the privileges based on the designation given.

(a) GCAA approved Psychologist are granted the privileges to:

(1) Evaluate the medical condition of GCAA Cabin crew class medical examination in accordance with the GCAA protocol and international guidelines;

(2) Recommend for the issue, revalidation and renewal of medical certificate,

(3) Conduct the relevant medical examinations and assessments;

(4) Investigate and treat the medical condition of the applicant related to Psychology;

(5) Plan, coordinate, and perform investigations known to resolve or prevent issues that could impact overall aeromedical disposition of applicant;

(6) Assess substance abuse cases for GCAA Cabin crew Medical class, provided he/she has applicable qualification & experience in the subject.

(b) GCAA approved Senior Psychologist are granted the privileges to :

(1) Evaluate the medical condition of all classes of GCAA medical examination in accordance with the GCAA protocol and international guidelines;

(2) Recommend for the issue, revalidation and renewal of medical certificate, and to conduct the relevant medical examinations and assessments;

(3) Investigate and treat the medical condition of the applicant related to Psychology; plan, coordinate, and perform investigations known to resolve or prevent issues that could impact overall aeromedical disposition of applicant;

(4) Assess the neurocognitive function for over 60 GCAA license holder

(5) Assess the neurocognitive function for complicated Medical condition (e.g Depressions, head injury cases)

(6) Evaluate pilots with performance problems or training problems.

(7) Assess substance abuse cases for all classes of GCAA medical examination, provided he/she has applicable qualification and experience in the subject.

GM.1 MED.D.115

The scope of the privileges of the approved Psychologist or Senior Psychologist, and any condition thereof, shall be specified in the certificate.

MED.D.120 Application

(a) Application for a certificate as Psychologist or Senior Psychologist shall be made in a form and manner specified by the GCAA;

(b) Applicants for an approved GCAA Psychologist or Senior Psychologist certificate shall provide the GCAA with:

(1) personal details and professional address;

(2) documentation demonstrating that they comply with the requirements established in MED.D.090, including all the required training certificates;

(3) a written declaration that he/she will evaluate the medical conditions on the basis of the requirements of this Chapter.

(c) when the approved Psychologist or Senior Psychologist undertakes aero-medical examinations in more than one location, they shall provide the GCAA with relevant information regarding all practice locations.

AMC1 MED.D.120 Application

Refer to AMC1 MED.D.005 Application

MED.D.125 Requirement for Psychologist designation

Applicants for a Psychologist or senior psychologist certificate with the privileges stated in MED.D.115 shall:

(a) possess an unrestricted licence to practice clinical psychology in the geographical area in which the designation is sought, issued by Health Authority of the region;

(b) have a clinical experience in the below psychological assessment fields, acceptable to the GCAA:

(1) Clinical assessment for initial recruitment or post upgrade for safety sensitive jobs;

(2) Clinical counselling for safety sensitive jobs;

(3) Psychometric assessment;

(4) Personality assessment;

(5) Neuropsychology assessment, applicable to senior psychologist only.

(c) hold a training certificate in Aviation or Aerospace Medicine acceptable to the GCAA or if the Psychologist is commercial or private pilots himself.

(d) psychologist shall have practical knowledge of the conditions in which the holders of licences and ratings carry out their duties;

(e) be engaged in the practice of psychology at an established office address;

(f) have a past professional performance and personal conduct suitable for a position of responsibility and trust. (reference from previous employer is required)

(g) demonstrate to the GCAA that they:

(1) have adequate facilities, procedures, documentation and appropriate psychological tools suitable for aero-medical assessment;

(2) have in place the necessary procedures and conditions to ensure medical confidentiality;

(3) have adequate knowledge and skills necessary for examination, and assessment.

AMC1 MED.D.125 Requirement for Psychologist designation

Acceptable by the GCAA is a combination of clinical experience, applicant case register and complicity of the cases handled.

AMC2 MED.D.125 Requirement for Psychologist designation

(a) For a Psychologist: evidence of specific training in clinical, and specific supervision from an appropriately supervisor during the academic internship period; and should Provide an academic transcript which include all courses taken and grades received.

(b) For a Senior Psychologist: all the above as well as specific training in neuropsychology assessment.

GM.1 MED.D.125 Requirement for Psychologist designation

Examples of practical knowledge are flight experience, simulator experience, on-site observation or any other hands on experience deemed by the aeromedical section to meet this requirement;

MED.D.130 Training courses in aviation medicine

The provisions of MED.D.020 shall apply to Psychologist in addition to the following training:

(a) specialized training in Human Factor acceptable by the GCAA; and

(b) Crew Resource Management (CRM) acceptable by the GCAA

MED.D.135 Changes to the Psychologist certificate

The provisions of MED.D.025 shall apply to Psychologist.

MED.D.140 Validity of Psychologist certificate

The provisions of MED.D.105 shall apply to Psychologist.

MED.D.145 Roles and Responsibility of Approved Psychologist

(a) the provisions of MED.D.110 shall apply to Psychologist

(b) findings suggesting deficits in the Intellectual/Neurocognitive domain, the psychologist shall refer the applicant to a senior GCAA designated psychologist in order to determine the extent and likely aeromedical significance of any neurocognitive deficit(s).

(c) administer the most current edition of the tests unless specified otherwise;

(d) administer additional tests (excluding neuropsychological assessments) if clinically necessary to assure a complete assessment;

(e) provide or arrange for psychotherapy if indicated;

(f) Additional responsibilities for a Senior psychologist are:

- all the privileges listed under point a), b), c), d), e) above;
- determine the extent and likely aeromedical significance of any neurocognitive deficit(s); and
- administer a comprehensive battery of neuropsychological assessments.

SECTION 5 AeMC – AERO-MEDICAL CENTRES

MED.D.150 Application

GENERAL

(a) The documentation for the approval of an AeMC shall include the names and qualifications of all medical staff, a list of medical and technical facilities for initial class 1 aero-medical examinations and of supporting specialist consultants.

(b) The AeMC shall provide details of clinical attachments to hospitals, medical institutions and/or specialists.

MED.D.155 Continued validity

EXPERIENCE

(a) At least 200 class 1 aero-medical examinations and assessments should be performed at the AeMC every year.

(b) In Member States where the number of aero-medical examinations and assessments mentioned in (a) cannot be reached due a low number of professional pilots, a proportionate number of class 1 aero-medical examinations and assessments should be performed.

(c) In these cases, the continuing experience of the Accountable Manager and aero-medical examiners on staff should also be ensured by them performing aero-medical examinations and assessments for:

(1) Class 2 medical certificates as established in Part-MED; and/or

(2) third country Class 1 medical certificates.

(d) Aero-medical research including publication in peer reviewed journals may also be accepted as contributing to the continued experience of the head of, and aero-medical examiners at, an AeMC.

MANAGEMENT

MED.D.160 Management system

The internal Verification system ensures that all AMEs comply with the approved standards while conducting examination, assessment, diagnosis and management before making any medical fitness decisions.

It ensures that given the same or a similar piece of evidence the Aeromedical Inspector and verifiers (in this context Accountable Manager) would come to the same conclusions.

(a) The Accountable Manager is responsible to develop an internal Audit procedure to confirm:

(1) Compliance of all AMEs with GCAA regulation, and

(2) The AeMC approved SOP.

(3) Performance of AVMED Nurses involved in special investigation part of the GCAA examination.

(4) Ensure the compliance of personnel involved in GCAA examination with the code of conduct.

(b) The Accountable Manager should monitor each activity within the centre on periodic review and document the audit reports securely within the facility for GCAA review and any other audit may be required for quality reason.

(a) The Accountable Manager will apply any quality improvement actions required to develop the processes where necessary and detail these in the report provided to the AMS for review and approval.

(d) The Nurses should have a sufficient training on AV MED and documented acceptable competency level in the performed special investigation:

(1) CAD test

(2) Visual acuity testing

(3) Ishihara plates test

(4) Urine dipstick test

(5) Urine drug testing

(6) ECG

(7) Audiogram

(8) Spirometry/PEF

(e) Sufficient number of Admin staff aware about all GCAA procedures

(f) Availability of CPD/CME program within the centre – directly related to GCAA activities.

(g) Presence of Code of practice (professional ethics) within the facility:

(1) It is styled as a code of professional responsibility, which will discuss difficult issues, difficult decisions that will often need to be made, and provide a clear account of what behaviour is considered "ethical" or "correct" or "right" in the circumstances.

(2) A code of practice is a good way to state clearly any organisation's position on important subjects like confidentiality, equality, ethics, contracts, conflict of interest and duty of care.

(3) Presence of sufficient number of good performer AMEs who will be permitted to do Class 1 and /or cabin crew medicals.

GM1 MED.D.160 Management system

RESEARCH

If aero-medical research is conducted at an AeMC, its management system should include processes to conduct that research and publish the results.

SOP

Standard Operation Procedures (SOP) are detailed and written instructions established to achieve uniformity of the performance of a specific function. It is a written process for the AMEs to perform the task of examination and assessment the same way each time it is completed. It is used to:

(a) Identify the responsible person for each task.

(b) Describe actions (i.e. what is to be completed).

(c) Train staff (new AME, Admin assistance, Nurses) on the processes.

(d) Monitor the clinic and AME performance.

SOPs ensure that all GCAA Aviation medicine activities conducted within the AeMC follows the updated GCAA regulation, Evidence Based Medicine, international best practices in Aviation medicine and the organizational policies; to protect the rights for all license holders attending GCAA examination at this centre.

SOPs provide autonomy within the clinical site and improve the quality of the data collected, thereby improving the quality of any research in the field.

SOPs are utilized as a reference and guideline as to how research will be conducted within the clinical site on any particular medical condition before issuing or denying any medical certificate.

SOPs may be a training source, but not the single one, for new AMEs

The Elements of SOP should have:

(a) Header – title, original version date, revision date, effective date, approved by

(b) Purpose – why one has the policy

(c) Responsibilities – who the policy pertains to

(d) Instruction/Procedures – how to accomplish the items of the policy

(e) References – what the policy is based on

MED.D.165 Personnel requirements

(a) The Accountable Manager should be:

(1) be an SAME
(2) have held class 1 privileges for at least 5 years and have performed at least 200 aero-medical examinations for a class 1 medical certificate before being nominated as head of an AeMC
(3) Be Of more than 5 years' experience as Aviation specialist
(1) Of excellent performance report within GCAA record
(5) Of good understanding to the local law and regulation of aviation medicine.

(b) The AeMC may provide practical AME training for persons fully qualified and licensed in medicine.

(c) The AeMC should ensure arrangement with designated hospital or medical institute for purpose of specialist medical examination

(d) The AeMC should ensure that the nurses have an appropriate training on the AV MED and documented acceptable level of competency in the performed special investigation:

- CAD test – if applicable
- Visual acuity testing
- Ishihara 24 plates test
- Urine dipstick test
- Urine drug testing

- ECG
- Audiogram
- Spirometry/PEF
- GALS – if applicable

GM1 MED.D.165 Personnel requirements

Roles and Responsibilities of Accountable Manager are, but not limited to:

(a) keep all the AMEs records.

(b) provide training on GCAA regulation to AMEs.

(c) keep track of scheduled reviews with AMEs and the regulator, and when problems arise, take appropriate corrective and preventive action.

(d) review the re-instatement forms personally or delegated the task to an SAME within same facility.

(e) identify their star performers as well as those whose performance is unacceptable.

(f) supervise all the AMEs medical examinations.

(g) release the reinstatements for all applicants.

(h) issue and insert any limitation on medical certificate.

(i) be focal point for all GCAA communication

(j) set training plan for designated AME who conduct cabin crew class medical examination if applicable to the AeMC and ensure Availability of CPD/CME program within the centre

MED.D.170 Facility requirements

MEDICAL-TECHNICAL FACILITIES

The medical-technical facilities of an AeMC should consist of the equipment of a general medical practice and, in addition, of (if the Specialist AME is available within same facility) :

(a) Cardiology

Facilities to perform:

(1) 12-lead resting ECG;

(2) stress ECG;

(3) 24-hour blood pressure monitoring; and

(4) 24-hour heart rhythm monitoring.

(b) Ophthalmology

Facilities for the examination of:

(1) near, intermediate and distant vision;

(2) external eye, anatomy, media and fundoscopy;

(3) ocular motility;

(4) binocular vision;

(5) colour vision;

(6) visual fields;

(7) refraction; and

(8) heterophoria.

(c) Hearing

(1) pure-tone audiometer

(d) Otorhinolaryngology

Facilities for the clinical examination of mouth and throat and:

(1) otoscopy;

(2) rhinoscopy;

(3) tympanometry or equivalent; and

(4) clinical assessment of vestibular system.

(a) Examination of pulmonary function

(1) spirometry

(b) Laboratory equipment

(c) Facilities for clinical examination of

(1) routine urine tests.

(2) drug testing

(h) The following facilities should be available at the AeMC or arranged with a service provider:

(1) clinical laboratory facilities; and

(2) ultrasound of the abdomen.

SUBPART E - REQUIREMENTS FOR AIR TRAFFIC CONTROLLERS MEDICAL

SECTION 1 - GENERAL

MED.E.001 Limitations to medical certificates

(a) Limitations to Class 3 medical certificates

1) If the applicant does not fully comply with the requirements for a Class 3 medical certificate but is considered to be not likely to jeopardise the safe exercise of the privileges of the licence, the AeMC or AME shall:

(i) refer the decision on fitness of the applicant to the GCAA as indicated in this Subpart; or

(ii) in cases where a referral to the GCAA is not indicated in this Subpart, evaluate whether the applicant is able to perform their duties safely when complying with one or more limitations endorsed on the medical certificate, and issue the medical certificate with limitation(s) as necessary.

2) The AeMC or AME may revalidate or renew a medical certificate with the same limitation without referring the applicant to the GCAA.

(b) When assessing whether a limitation is necessary, particular consideration shall be given to:

1) whether accredited medical conclusion indicates that in special circumstances the applicant's failure to meet any requirement, whether numerical or otherwise, is such that exercise of the privileges of the licence is not likely to jeopardise flight safety;

2) the applicant's experience relevant to the operation to be performed.

(c) Operational limitations

1) The Senior AME or the GCAA, in conjunction with the air navigation service provider, shall determine the operational limitations applicable in the specific operational environment concerned.

2) Appropriate operational limitations shall only be placed on the medical certificate by the Senior AME and /or GCAA.

(d) Any other limitation may be imposed on the holder of a medical certificate if required to ensure the safe exercise of the privileges of the licence.

(e) Any limitation imposed on the holder of a medical certificate shall be specified therein.

AMC1 MED.E.001 Limitations to Class 3 medical certificates

(a) An AeMC or AME may refer the decision on fitness of an applicant to the GCAA in borderline cases or where fitness is in doubt.

(b) In cases where a fit assessment may only be considered with a limitation, the AeMC, AME or the GCAA should evaluate the medical condition of the applicant with appropriate personnel from the ANSP and other experts, if necessary.

(c) Entry of limitations

1) Limitations VDL, VML, VNL, CCL, may be imposed by an AME or an AeMC.

2) Limitations VXL and VXN should be imposed with advice of the air navigation service provider.

3) Limitations SIC SSL, TML, HAL and RXO should only be imposed by the AeMC or GCAA.

(d) Removal of limitations

1) All limitations should only be removed by the GCAA.

AMC2 MED.E.001 Limitations to Class 3 medical certificates

LIMITATION CODES

(a) The following abbreviations for limitations should be used on the medical certificate as applicable:

Code	Limitation
TML	Restriction of the period of validity of the medical certificate
VDL	Wear correction for defective distant vision and carry spare set of spectacles
VXL	Correction for defective distant vision depending on the working environment
VML	Wear correction for defective distant, intermediate and near vision and carry spare set of spectacles
VNL	Have correction available for defective near vision and carry spare set of spectacles
VXN	Correction for defective near vision; correction for defective distant vision depending on the working environment
RXO	Specialist ophthalmological examinations
CCL	Correction by means of contact lenses
HAL	valid only when hearing aids are worn
SIC	Specific medical examination(s)
SSL	Special restrictions as specified

(b) The abbreviations for the limitation codes should be explained to the holder of a medical certificate as follows:

1) TML — Time limitation

The period of validity of the medical certificate is limited to the duration as shown on the medical certificate. This period of validity commences on the date of the medical examination. Any period of validity remaining on the previous medical certificate is no longer valid. The air traffic controller should present him/herself for

reassessment or examination when advised and should follow any medical recommendations.

2) VDL — Wear corrective lenses and carry a spare set of spectacles

Correction for defective distant vision: whilst exercising the privileges of the licence, the air traffic controller should wear spectacles or contact lenses that correct for defective distant vision as examined and approved by the AeMC or AME. Contact lenses may not be worn until cleared to do so by an AeMC or AME. A spare set of spectacles, approved by the AeMC or AME, should be readily available.

3) VXL — Correction for defective distant vision depending on the working environment

Correction for defective distant vision does not have to be worn if the air traffic controller's visual working environment is in the area of up to 100 cm. Applicants who do not meet the uncorrected distant visual acuity requirement but meet the visual acuity requirement for intermediate and near vision without correction and whose visual working environment is only the intermediate and near vision area (up to 100 cm) may work without corrective lenses.

4) VML — Wear multifocal spectacles and carry a spare set of spectacles

Correction for defective distant, intermediate and near vision: whilst exercising the privileges of the licence, the air traffic controller should wear spectacles that correct for defective distant, intermediate and near vision as examined and approved by the AeMC or AME. Contact lenses or full frame spectacles, when either correct for near vision only, may not be worn.

5) VNL — Have available corrective spectacles and a spare set of spectacles

Correction for defective near vision: whilst exercising the privileges of the licence, the air traffic controller should have readily available spectacles that correct for defective near vision as examined and approved by the AeMC or AME. Contact lenses or full frame spectacles when either correct for near vision only may not be worn.

6) VXN — Have available corrective spectacles and a spare set of spectacles; correction for defective distant vision depending on the working environment

Correction for defective distant vision does not have to be worn if the air traffic controller's visual working environment is in the area of up to 100 cm. Applicants who do not meet the uncorrected distant and uncorrected near visual acuity requirements, but meet the visual acuity requirement for intermediate vision without correction and whose visual working environment is only the intermediate and near vision area (up to 100 cm) should have readily available spectacles and a spare set that correct for defective near vision as examined and approved by the AeMC or AME. Contact lenses or full frame spectacles when either correct for near vision only may not be worn.

7) CCL — Wear contact lenses that correct for defective vision

Correction for defective distant vision: whilst exercising the privileges of the licence, the holder of a medical certificate should wear contact lenses that correct for defective distant vision, as examined and approved by the AeMC or AME. A

spare set of similarly correcting spectacles shall be readily available for immediate use whilst exercising the privileges of the licence.

8) RXO — Specialist ophthalmological examinations

Specialist ophthalmological examination(s), other than the examinations stipulated in this Part, are required for a significant reason.

9) HAL — Hearing aid(s)

Whilst exercising the privileges of the licence, the holder of the medical certificate should use hearing aid(s) that compensate for defective hearing as examined and approved by the AeMC or GCAA. A spare set of batteries should be available.

10) SIC — Specific regular medical examination(s)

This limitation requires the AeMC or AME to contact the GCAA before embarking upon renewal or revalidation medical assessment. It is likely to concern a medical history of which the AME should be aware prior to undertaking the assessment.

11) SSL — Special restrictions as specified

This limitation may be considered when an individually specified limitation, not defined in this paragraph, is appropriate to mitigate an increased level of risk to the safe exercise of the privileges of the licence. The description of the SSL should be entered on the medical certificate or in a separate document to be carried with the medical certificate.

SECTION 2 - MEDICAL REQUIREMENTS FOR CLASS 3 MEDICAL CERTIFICATES

MED.E.005 General

(a) Applicants for a medical certificate shall be free from any:

1) abnormality, congenital or acquired;

2) active, latent, acute or chronic disease or disability;

3) wound, injury or sequelae from operation;

4) effect or side effect of any prescribed or non-prescribed therapeutic, diagnostic or preventive medication taken that would entail a degree of functional incapacity which is likely to interfere with the safe performance of duties or could render the applicant likely to become suddenly unable to exercise the privileges of the licence safely.

MED.E.010 Cardiovascular system

(a) Examination

1) A standard 12-lead resting electrocardiogram (ECG) and report shall be completed at the examination for the initial issue of a medical certificate and then:

(i) every 4 years until the age of 30;

(ii) at all revalidation or renewal examinations thereafter; and

(iii) when clinically indicated.

2) An extended cardiovascular assessment shall be completed:

(i) when clinically indicated.

(ii) at the first revalidation or renewal examination at the age 60; and

(iii) every year thereafter.

3) Estimation of serum lipids, including cholesterol, shall be required at the examination for the initial issue of a medical certificate, at the first examination after having reached the age of 40, and every 5 years thereafter and when clinically indicated.

4) For Class 3 medical certificate, HBA1c shall be required at the first examination after having reached the age of 40, and every 5 years thereafter and when clinically indicated.

(b) Cardiovascular system — General

1) Applicants for a Class 3 medical certificate with any of the following conditions shall be assessed as unfit:

(i) aneurysm of the thoracic or supra-renal abdominal aorta before surgery;

(ii) significant functional or symptomatic abnormality of any of the heart valves;

(iii) heart or heart/lung transplantation.

2) Applicants for a Class 3 medical certificate with an established history or diagnosis of any of the following conditions shall be referred to the licensing authority before a fit assessment may be considered:

(i) peripheral arterial disease before or after surgery;

(ii) aneurysm of the thoracic or supra-renal abdominal aorta after surgery;

(iii) aneurysm of the infra-renal abdominal aorta before or after surgery;

(iv) functionally insignificant cardiac valvular abnormalities;

(v) after cardiac valve surgery;

(vi) abnormality of the pericardium, myocardium or endocardium;

(vii) congenital abnormality of the heart, before or after corrective surgery;

(viii) recurrent vasovagal syncope;

(ix) arterial or venous thrombosis;

(x) pulmonary embolism;

(xi) cardiovascular condition requiring systemic anticoagulant therapy.

(c) Blood pressure

1) Blood pressure shall be recorded at each examination.

2) The applicant's blood pressure shall be within normal limits.

3) Applicants for a Class 3 medical certificate:

(i) with symptomatic hypotension; or

(ii) whose blood pressure at examination consistently exceeds 160 mmHg systolic and/or 95 mmHg diastolic, with or without treatment shall be assessed as unfit.

4) The initiation of medication for the control of blood pressure shall require a period of temporary unfit assessment to establish the absence of significant side effects.

(d) Coronary artery disease

1) Applicants with any of the following conditions shall be assessed as unfit:

(i) symptomatic coronary artery disease;

(ii) symptoms of coronary artery disease controlled by medication.

2) Applicants for a Class 3 medical certificate with:

(i) suspected myocardial ischaemia;

(ii) asymptomatic minor coronary artery disease requiring no anti-anginal treatment

shall be referred to the GCAA and undergo cardiological evaluation to exclude myocardial ischaemia before a fit assessment may be considered.

3) Applicants with a history or diagnosis of:

(ii) myocardial infarction;

(iii) revascularisation and stenting for coronary artery disease

shall be referred to the GCAA and undergo a cardiological evaluation before a fit assessment may be considered.

(e) Rhythm/Conduction disturbances

1) Applicants for a Class 3 medical certificate with any significant disturbance of cardiac conduction or rhythm, intermittent or established, including any of the following:

(i) disturbance of supraventricular rhythm, including intermittent or established sinoatrial dysfunction, atrial fibrillation and/or flutter and asymptomatic sinus pauses;

(ii) complete left bundle branch block;

(iii) Mobitz type 2 atrioventricular block;

(iv) broad and/or narrow complex tachycardia;

(v) ventricular pre-excitation;

(vi) asymptomatic QT prolongation;

(vii) Brugada pattern on electrocardiography

shall be referred to the GCAA and undergo cardiological evaluation with satisfactory results before a fit assessment may be considered.

2) Applicants with any of the following:

(i) incomplete bundle branch block;

(ii) complete right bundle branch block;

(iii) stable left axis deviation;

(iv) asymptomatic sinus bradycardia;

(v) asymptomatic sinus tachycardia;

(vi) asymptomatic isolated uniform supra-ventricular or ventricular ectopic complexes;

(vii) first degree atrioventricular block;

(viii) Mobitz type 1 atrioventricular block

may be assessed as fit in the absence of any other abnormality and subject to satisfactory cardiological evaluation.

3) Applicants with a history of:

(i) ablation therapy;

(ii) pacemaker implantation

shall be referred to the GCAA and undergo cardiological evaluation with satisfactory results before a fit assessment may be considered.

4) Applicants with any of the following conditions shall be assessed as unfit:

(i) symptomatic sinoatrial disease;

(ii) complete atrioventricular block;

(iii) symptomatic QT prolongation;

(iv) an automatic implantable defibrillating system;

(v) a ventricular anti-tachycardia pacemaker.

AMC1 MED.E.010 Cardiovascular system

(a) Electrocardiography

1) An exercise electrocardiogram (ECG) when required as part of a cardiovascular assessment should be symptom limited and completed to a minimum of Bruce Stage IV or equivalent. It should be done by an approved GCAA Cardiologist.

2) Reporting of resting ECG should be done by the AME and reporting of exercise electrocardiograms should be by an Approved GCAA Cardiologist

3) The extended cardiovascular assessment should be undertaken by an approved Cardiologist.

(b) General

(1) Cardiovascular risk factor assessment

(i) Serum/plasma lipid estimation is case finding and significant abnormalities should require investigation and management under the supervision by the AeMC or AME in consultation with the GCAA if necessary.

(ii) An accumulation of risk factors (smoking, family history, lipid abnormalities, hypertension, etc.) should require cardiovascular evaluation by the AeMC or AME in consultation with the GCAA if necessary.

2) Extended cardiovascular assessment

(i) The extended cardiovascular assessment should be undertaken by an approved GCAA Cardiologist.

(ii) The extended cardiovascular assessment should include an exercise ECG or other test that will provide equivalent information.

(c) Peripheral arterial disease

Applicants with peripheral arterial disease, before or after surgery, should undergo satisfactory cardiological evaluation including an exercise ECG and 2D echocardiography. Further tests may be required which should show no evidence of myocardial ischaemia or significant coronary artery stenosis. A fit assessment may be considered provided:

1) exercise ECG is satisfactory; and

2) there is no sign of significant coronary artery disease or evidence of significant atheroma elsewhere, and no functional impairment of the end organ supplied.

(d) Aortic aneurysm

1) Applicants with an aneurysm of the infra-renal abdominal aorta may be assessed as fit following a satisfactory cardiological evaluation.

2) Applicants may be assessed as fit after surgery for an infra-renal aortic aneurysm without complications and subject to being free of disease of the carotid and coronary circulation.

(e) Cardiac valvular abnormalities

1) Applicants with previously unrecognised cardiac murmurs should require cardiological evaluation. If considered significant, further investigation should include at least 2D Doppler echocardiography.

2) Applicants with minor cardiac valvular abnormalities may be assessed as fit by the GCAA. Applicants with significant abnormality of any of the heart valves should be assessed as unfit.

3) Aortic valve disease

(i) Applicants with bicuspid aortic valve may be assessed as fit if no other cardiac or aortic abnormality is demonstrated. Regular cardiological follow-up, including 2D Doppler echocardiography, may be required.

(ii) Applicants with mild aortic stenosis may be assessed as fit. Annual cardiological follow-up may be required and should include 2D Doppler echocardiography.

(iii) Applicants with aortic regurgitation may be assessed as fit only if regurgitation is minor and there is no evidence of volume overload. There should be no demonstrable abnormality of the ascending aorta on 2D Doppler echocardiography. Cardiological follow-up including 2D Doppler echocardiography may be required.

4) Mitral valve disease

(i) Applicants with rheumatic mitral stenosis may only be assessed as fit in favourable cases after cardiological evaluation including 2D echocardiography.

(ii) Applicants with uncomplicated minor regurgitation may be assessed as fit.

Regular cardiological follow-up including 2D echocardiography may be required.

(iv) Applicants with mitral valve prolapse and mild mitral regurgitation may be assessed as fit.

(iv) Applicants with evidence of volume overloading of the left ventricle demonstrated by increased left ventricular end-diastolic diameter should be assessed as unfit.

(f) Valvular surgery

Applicants with cardiac valve replacement/repair should be assessed as unfit. After a satisfactory cardiological evaluation fit assessment may be considered.

1) Asymptomatic applicants may be assessed as fit by the licensing authority 6 months after valvular surgery subject to:

(i) normal valvular and ventricular function as judged by 2D Doppler echocardiography;

(ii) satisfactory symptom limited exercise ECG or equivalent;

(iii) demonstrated absence of coronary artery disease unless this has been satisfactorily treated by re-vascularisation;

(iv) no cardioactive medication is required;

(v) annual cardiological follow-up to include an exercise ECG and 2D Doppler echocardiography. Longer periods may be acceptable once a stable condition has been confirmed by cardiological evaluations.

2) Applicants with implanted mechanical valves may be assessed as fit subject to documented exemplary control of their anti-coagulant therapy. Age factors should form part of the risk assessment.

(g) Thromboembolic disorders

Applicants with arterial or venous thrombosis or pulmonary embolism should be assessed as unfit during the first 6 months of anticoagulation. A fit assessment, with a limitation if necessary, may be considered by the GCAA after 6 months of stable anticoagulation. Anticoagulation should be considered stable if, within the last 6 months, at least 5 INR values are documented, of which at least 4 are within the INR target range and the haemorrhagic risk is acceptable. Applicants with pulmonary embolism should also be evaluated by a cardiologist. Following cessation of anticoagulant therapy, for any indication, applicants should undergo a re-assessment by the GCAA.

(h) Other cardiac disorders

1) Applicants with a primary or secondary abnormality of the pericardium, myocardium or endocardium should be assessed as unfit. A fit assessment may be considered following complete resolution and satisfactory cardiological evaluation which may include 2D Doppler echocardiography, exercise ECG, 24-hour ambulatory ECG, and/or myocardial perfusion scan or equivalent test. Coronary angiography may be indicated. Regular cardiological follow-up may be required.

2) Applicants with a congenital abnormality of the heart, including those who have undergone surgical correction, should be assessed as unfit. Applicants with

minor abnormalities that are functionally unimportant may be assessed as fit following cardiological assessment. No cardioactive medication is acceptable. Investigations may include 2D Doppler echocardiography, exercise ECG and 24-hour ambulatory ECG. Regular cardiological follow-up may be required.

(i) Syncope

1) Applicants with a history of recurrent episodes of syncope should be assessed as unfit. A fit assessment may be considered after a sufficient period of time without recurrence provided cardiological evaluation is satisfactory.

2) A cardiological evaluation should include:

(i) a satisfactory symptom exercise ECG. If the exercise ECG is abnormal, a myocardial perfusion scan or equivalent test should be required;

(ii) a 2D Doppler echocardiogram showing neither significant selective chamber enlargement nor structural or functional abnormality of the heart, valves or myocardium;

(iii) a 24-hour ambulatory ECG recording showing no conduction disturbance, complex or sustained rhythm disturbance or evidence of myocardial ischaemia;

(iv) a tilt test carried out to a standard protocol showing no evidence of vasomotor instability.

3) Neurological review should be required.

4) Applicants who experienced loss consciousness without significant warning should be assessed as unfit.

(j) Blood pressure

1) Anti-hypertensive treatment should be agreed by the GCAA. Medication may include:

(i) non-loop diuretic agents;

(ii) Angiotensin Converting Enzyme (ACE) inhibitors;

(iii) angiotensin II receptor blocking agents;

(iv) long-acting slow channel calcium blocking agents;

(v) certain (generally hydrophilic) beta-blocking agents.

2) Following initiation of medication for the control of blood pressure, applicants should be re-assessed to verify that the treatment is compatible with the safe exercise of the privileges of the licence held.

(k) Coronary artery disease

1) Applicants with chest pain of an uncertain cause should undergo a full investigation before a fit assessment may be considered. Applicants with angina pectoris should be assessed as unfit, whether or not it is abolished by medication.

2) Applicants with suspected asymptomatic coronary artery disease should undergo a cardiological evaluation including exercise ECG. Further tests (myocardial perfusion scanning, stress echocardiography, coronary angiography or equivalent) may be required, which should show no evidence of myocardial ischaemia or significant coronary artery stenosis.

3) After an ischaemic cardiac event, including revascularisation, applicants without symptoms should have reduced any vascular risk factors to an appropriate level. Medication, when used to control cardiac symptoms, is not acceptable. All applicants should be on acceptable secondary prevention treatment.

   (i) A coronary angiogram obtained around the time of, or during, the ischaemic myocardial event and a complete, detailed clinical report of the ischaemic event and of any operative procedures should be available:

      (A) there should be no stenosis more than 50 % in any major untreated vessel, in any vein or artery graft or at the site of an angioplasty/stent, except in a vessel subtending a myocardial infarction. More than two stenoses between 30 % and 50 % within the vascular tree should not be acceptable;

      (B) the whole coronary vascular tree should be assessed as satisfactory by a cardiologist, and particular attention should be paid to multiple stenoses and/or multiple revascularisations;

      (C) an untreated stenosis greater than 30 % in the left main or proximal left anterior descending coronary artery should not be acceptable.

   (ii) At least 3 to 6 months from the ischaemic myocardial event, including revascularisation, the following investigations should be completed:

      (A) an exercise ECG showing neither evidence of myocardial ischaemia nor rhythm or conduction disturbance;

      (B) an echocardiogram or equivalent test showing satisfactory left ventricular function with no important abnormality of wall motion (such as dyskinesia or akinesia) and a left ventricular ejection fraction of 50 % or more;

      (C) in cases of angioplasty/stenting, a myocardial perfusion scan or equivalent test, which should show no evidence of reversible myocardial ischaemia. If there is any doubt about myocardial perfusion, in other cases (infarction or bypass grafting), a perfusion scan should also be required.

      (D) further investigations, such as a 24-hour ECG, may be necessary to assess the risk of any significant rhythm disturbance.

   (iii) Follow-up should be conducted annually (or more frequently, if necessary) to ensure that there is no deterioration of the cardiovascular status. It should include a cardiological evaluation, exercise ECG and cardiovascular risk assessment. Additional investigations may be required.

(iv) After coronary artery vein bypass grafting, a myocardial perfusion scan or equivalent test should be performed on clinical indication, and in all cases within 5 years from the procedure.

(v) In all cases, coronary angiography, or an equivalent test, should be considered at any time if symptoms, signs or non-invasive tests indicate myocardial ischaemia.

(vi) Applicants may be assessed as fit after successful completion of the 6-month or subsequent review with appropriate limitation

(l) Rhythm and conduction disturbances

1) Applicants with any significant rhythm or conduction disturbance may be assessed as fit after cardiological evaluation and with appropriate follow-up. Such evaluation should include:

(i) exercise ECG which should show no significant abnormality of rhythm or conduction, and no evidence of myocardial ischaemia. Withdrawal of cardioactive medication prior to the test should be required;

(ii) 24-hour ambulatory ECG which should demonstrate no significant rhythm or conduction disturbance;

(iii) 2D Doppler echocardiogram which should show no significant selective chamber enlargement or significant structural or functional abnormality, and a left ventricular ejection fraction of at least 50 %.

Further evaluation may include:

(iv) 24-hour ECG recording repeated as necessary;

(v) electrophysiological study;

(vi) myocardial perfusion imaging or equivalent test;

(vii) cardiac magnetic resonance imaging (MRI) or equivalent test;

(viii) coronary angiogram or equivalent test.

2) Applicants with supraventricular or ventricular ectopic complexes on a resting ECG may require no further evaluation, provided the frequency can be shown to be no greater than one per minute, for example on an extended ECG strip. The evaluation should be done by approved GCAA Cardiologist.

Applicants with asymptomatic isolated uniform ventricular ectopic complexes may be assessed as fit but frequent or complex forms require full cardiological evaluation.

3) Ablation

(i) Applicants who have undergone ablation therapy should be assessed as unfit for a minimum period of 2 months.

(ii) A fit assessment may be considered following successful catheter ablation provided an electrophysiological study (EPS) demonstrates satisfactory control has been achieved.

(iii) Where EPS is not performed, longer periods of unfitness and cardiological follow-up should be considered.

(iv) Follow-up should include a cardiological review.

4) Supraventricular arrhythmias

Applicants with significant disturbance of supraventricular rhythm, including sinoatrial dysfunction, whether intermittent or established, should be assessed as unfit. A fit assessment may be considered if cardiological evaluation is satisfactory.

(i) For initial applicants with atrial fibrillation/flutter a fit assessment should be limited to those with a single episode of arrhythmia which is considered to be unlikely to recur.

(ii) Applicants with asymptomatic sinus pauses up to 2.5 seconds on a resting ECG may be assessed as fit if exercise ECG, 2D echocardiography and 24- hour ambulatory ECG are satisfactory.

(iii) Applicants with symptomatic sino-atrial disease should be assessed as unfit.

5) Mobitz type 2 atrio-ventricular block

Applicants with Mobitz type 2 AV block may be assessed as fit after a full cardiological evaluation confirms the absence of distal conducting tissue disease.

6) Complete right bundle branch block

Applicants with complete right bundle branch block should require cardiological evaluation on first presentation.

7) Complete left bundle branch block

A fit assessment may be considered:

(i) Initial applicants may be assessed as fit after full cardiological evaluation showing no pathology. Depending on the clinical situation, a period of stability may be required.

(ii) Applicants for revalidation or renewal of a medical certificate with a de-novo left bundle branch block may be assessed as fit after cardiological evaluation showing no pathology. A period of stability may be required.

(iii) A cardiological evaluation should be required after 12 months in all cases.

8) Ventricular pre-excitation

Applicants with pre-excitation may be assessed as fit if they are asymptomatic, and an electrophysiological study, including an adequate drug-induced autonomic stimulation protocol, reveals no inducible re-entry tachycardia and the existence of multiple pathways is excluded. Cardiological follow-up should be required including a 24 hour

ambulatory ECG recording showing no tendency to symptomatic or asymptomatic tachy-arrhythmia.

9) Pacemaker

Applicants with a subendocardial pacemaker may be assessed as fit 3 months after insertion provided:

(i) there is no other disqualifying condition;

(ii) bipolar lead systems programmed in bipolar mode without automatic mode change have been used;

(iii) that the applicant is not pacemaker dependent;

(iv) regular cardiological follow-up should include a symptom limited exercise ECG that shows no abnormality or evidence of myocardial ischaemia.

10) QT prolongation

Applicants with QT-prolongation require cardiological evaluation. A fit assessment may be considered in asymptomatic applicants.

GM1 MED.E.010 Cardiovascular system

1. Cardiovascular risk assessment:

Indication:

(a) Hypertension

(b) Hyperlipidaemia

(c) Diabetes

(d) Smoking in combination with other risk factors

(e) Obesity, and lack of exercise

(f) Adults age 40, 45, 50, 55, 60 and then annually

(g) The Metabolic Syndrome (hypertension, hyperlipidaemia, insulin resistance and truncal obesity) carries a significantly increased risk of such event.

(h) Obstructive Sleep Apnoea

1.1 Method for CVD risk assessment

(a) Test required for assessment include but are not limited to Lipid profile ,Check for blood pressure, random blood glucose and HBA1c and ultrasensitive CRP

(b) The AME should use internationally recognised calculators/charts/or score cards for the estimation of CHD.

The preferred calculator for GCAA medical examination is as below; this calculator considers all the risks factors – the modifiable and non-modifiable:

http://www.patient.co.uk/doctor/Primary-Cardiovascular-Risk-Calculator.htm

1.2 Assessing and management of the cardiovascular risks

(a) Risk group less than 10% risk over 10 years

The licence may be issued without limitation once all modifiable risk factors have been discussed with the applicant. A management strategy should be detailed in the reports to the licensing authority.

(b) Risk group 10-20% over 10 years:

1) Modifiable risk factors should be addressed in conjunction with adjustment of current or the addition of approved prevention medications e.g. Statins

2) After the control of the modifiable risk factors, if the calculated risk remains in the intermediate zone, further cardiac evaluation by an approved cardiologist should be required.

3) If cardiac evaluation rules out significant risk of Ischemic heart events, the medical certificate may be issued with OML restriction, and annual approved cardiology follow up.

(c) Risk group > 20% over 10 years, or presence of diabetes , left ventricular hypertrophy , symptomatic carotid disease (CVA,TIA) ,or Peripheral Vascular Disease including Aneurysm, Abnormal Tests – ABIs)

1) The licence holder should be grounded

2) An approved cardiac consultation will be required with further cardiac evaluation to rule out any significant risk of ischemic heart events changes.

3) All the modifiable risk factor should be discussed with the applicant and a management strategy detailed in the report to the licensing authority.

4) On satisfactory the medical certificate may be issued with SIC restriction and cardiology follow up as detailed by the approved cardiologist.

GM2 MED.E.010 Cardiovascular system

a) VALVULAR HEART DISEASE

1. Upon initial diagnosis of Valvular Heart Disease, the applicant should be suspended and referred to Approved GCAA Cardiologist

2. The cardiologist should perform - A comprehensive transthoracic echocardiogram (TTE) with 2–dimensional (2D) imaging and Doppler interrogation should then be performed to correlate findings with initial impressions based on the initial clinical evaluation.

3. Other ancillary testing such as transesophageal echocardiography (TEE), computed tomography (CT) or cardiac magnetic resonance (CMR) imaging, stress testing, and diagnostic hemodynamic cardiac catheterization may be required If transthoracic echo is not enough to establish the diagnosis and severity.

4. Following the comprehensive assessment, the Cardiologist should submit a report to the AME with the following details:

A. Risk of progression of the valvular heart disease
B. Prognosis and timing of valve intervention
C. If the applicant is Symptomatic
D. If the applicant is Asymptomatic but has an evidence of severe valvular heart disease
E. Quantify hemodynamic severity (Pressure gradient , valve area…)
F. Left & right ventricular system function
G. Presence of LVH
H. Pulmonary artery pressure
I. Left ventricular thickness
J. Disease classification (mild/moderate/severe)
K. Propensity of the disease to develop arrhythmia
L. Presence of other anatomical abnormalities in the heart (concomitant valvular lesions)
M. Presence of Co-morbidity (HTN, CHD, DM, Smoker)
N. Treatment required for cardioversion if arrhythmia present
O. Need for anticoagulation
P. Need to use vasodilators
Q. Evidence of volume overloading of the left ventricle
R. A history of transient ischaemic attack (TIA)
S. Cardiology recommendation (The cardiologist should report if there is a need for long term anticoagulation (duration, medication dose and frequency) and the need for any labs monitoring

5. For reinstatement, the AME should determine the risk of incapacitation and mitigate the risks by imposing appropriate limitations on the MC.
6. Cases which require surgical intervention should be evaluated individually .
7. Follow up should be based on the Cardiologist evaluation. To determine the frequency of the visit and other required cardiac investigations.

b) Bicuspid Aortic Valve

1) Applicants with no other cardiac abnormality (2D Doppler flow rate <2.0 m/sec) may be assessed as fit without limitation and Biennial Cardiologist review will be required.
2) An aortic root diameter >4.5 cm is disqualifying for all classes.

c) Aortic Stenosis

On diagnosis of the condition, the AME should inform the GCAA and advise applicant not to exercise the privileges of his licence until cleared to do so by GCAA. This will be considered once investigations have been completed and results assessed as satisfactory to the GCAA.

1) Investigations required for recertification are:

i. Routine aviation medical examination

ii. Approved cardiologist's assessment and risk calculation

iii. Standard 24 lead ECG

iv. Doppler echocardiogram

v. Other investigations as necessary

2) Aeromedical Disposition

(a) Echocardiography

I. The systolic function should be normal (EF >60%) and aortic valve calcification should be minimal.

II. The principle measurement to determine medical certification of ATCO with Aortic stenosis is aortic valve area during Echocardiography. Based on European Sociality of Cardiology Guidelines:

Valve Area	Mean Aortic Gradient	Severity	certification
> 1.5cm2	0-30 mm Hg	Mild	Fit Class 3
1-1.5 cm^2	30-50 mm Hg	Moderate	Fit Class 3
< 1cm^2	> 50 mm Hg	Severe	unfit

III. Indexing valve area to Body Surface Area (BSA) can be useful in cases of unusually large or small BSA (Moderate 0.6- 9 $cm^{2/} m^2$;severe < 0.6 cm^2 / cm^2)

IV. Other factors to be considered in each case, including:

A. left ventricular Hypertrophy

B. reduced left ventricular diastolic function

C. reduced left ventricular ejection fraction

D. aortic regurgitation

V. A history of transient ischaemic attack (TIA) disqualifies for all classes of certification.

3) Subsequent Reviews

At annual intervals:

i. Routine aviation medical examination

ii. Approved cardiologist review

iii. Standard 24 lead ECG

iv. Doppler echocardiogram

d) Aortic regurgitation

Aortic regurgitation is well tolerated and even moderate regurgitation may be present for very many years. On diagnosis of the condition, the AME should inform the GCAA and advise the applicant not to exercise the privileges of his licence until cleared to do so by GCAA. This will not be considered until all investigations have been completed and results assessed as satisfactory to the GCAA.

1) Investigations required for recertification are:

i. Routine aviation medical examination

ii. Approved cardiologist's assessment

iii. Standard 24 lead ECG

iv. Doppler echocardiogram

v. Exercise ECG to Bruce protocols or equivalent

vi. Minor regurgitation in the absence of aortic root disease may be compatible with fit assessment for all the classes.

vii. Co-existent dilatation of the aortic root >4.5 cm is disqualifying.

viii. Evidence of volume overloading of the left ventricle (left ventricular end diastolic dilatation >6,0 cm) is disqualifies although minor increase in the left ventricular end diastolic diameter may be acceptable with Class 3.

2) Subsequent Reviews

At annual intervals:

i. Routine aviation medical examination

ii. Approved cardiologist review

iii. Standard 24 lead ECG

iv. Doppler echocardiogram

e) Mitral valve disease

1) **Rheumatic mitral stenosis/regurgitation**, unless minimal with the subject in sinus rhythm, disbars from all forms of certification. This is due to the excess risk of incapacitation, secondary to the unpredictable onset of atrial fibrillation, and a significant risk of cerebral embolism. In mitral stenosis the onset of atrial fibrillation, if the rate is rapid,may be associated with hypotension or pulmonary oedema.

2) **Non-rheumatic non-ischaemic mitral regurgitation** in subjects of pilot age is usually due to prolapse of either or both leaflets of the valve. When caused by rupture of the chordae or ischaemic injury to the papillary musculature, it disbars from certification.

3) **Mitral leaflet prolapse** is a common condition affecting up to five per cent of males and eight per cent of females, but definitions vary. It has been associated with a tendency to atrial and/or ventricular rhythm disturbances and atypical chest pain. There is a very small risk of cerebral embolus, sudden death and endocarditis (all < 0.02 per cent per annum) and also of chordal rupture. Thickening or significant redundancy of the valve leaflets is associated with a higher embolic risk and needs special consideration.

4) **Minor degenerative mitral regurgitation** in the presence of a pan or late systolic murmur, normal left ventricular dimensions on echocardiography and no other potentially disqualifying abnormality may be consistent with unrestricted certification but requires close cardiological review with early restriction if there is any change, especially in the end-systolic/diastolic diameters of the heart. Ischaemic mitral regurgitation is disqualifying.

5) **In non-rheumatic non-ischaemic mitral regurgitation**, annual cardiological review will be required, to include echocardiography and 24-hour ambulatory monitoring. Exercise ECG may also be indicated. A left ventricular systolic diameter > 4.1 cm and/or an end-diastolic diameter > 6.0 cm should disbar from all classes of certification. The presence of atrial fibrillation in this context is also disbarring.

f) Aortic Valve replacement

The GCAA may certificate ATCO with tissue or mechanical valves after comprehensive assessment by an approved GCAA Cardiologist.

- If mechanical valve there must be exemplary control of anticoagulant therapy and age should form part of the risk assessment.
- The ATCO should not have cardiac symptoms and on acceptable cardiac medication.
- Exercise ECG - Bruce protocol and symptom limited. Requirements are at least
- Any abnormality may require further investigation such as myocardial perfusion scanning.
- If coronary artery surgery was performed at the same time as the valve replacement, the appropriate post-CABG protocol will need to be completed as well.
- Echocardiogram - The valve should be functioning normally. Left ventricular size and function should show appropriate improvement compared with pre-operative measurements
- Annual cardiological review to include an exercise ECG and echocardiography

GM3 MED.E.010 Cardiovascular system

VENTRICULAR PRE-EXCITATION (WPW)

(a) initial applicant with pre-excitation will not be issued with GCAA medial certificate.

(b) Asymptomatic applicants with pre-excitation may be assessed as fit at revalidation with an appropriate limitation if they meet the following criteria:

1) Exercise ECG – Bruce protocol and symptom limited;

2) 24 hr ECG – No significant rhythm or conduction disturbance.

3) Echocardiogram- structurally normal heart and normal lV and RV function

(c) **Electrophysiological studies , should be done on all cases upon diagnosis and** should include an isoprenaline/adrenaline infusion sufficient to increase the sinus rate by 25%, and the following criteria should be met:

1) HV interval < 70 ms

2) No inducible atrio-ventricular re-entry tachycardia

3) An antegrade refractory period of accessory pathway >300 ms (>250 msec with isoprenalaine)

4) delta-delta interval during atrial fibrillation >300 ms (>250 msec with isoprenaline)

5) Cycle length with 1:1 accessory pathway conduction >300 ms (>250 msec with isoprenaline)

6) No evidence of multiple pathways

GM4 MED.E.010 Cardiovascular system

Post Catheter ablation of Pre-excitation (WPW) syndrome or atrioventricular nodal re-entry tachycardia (AVNRT)

a) Investigations required for recertification are:

1. Routine aviation medical examination
2. Approved cardiologist's assessment, without a history of arrhythmia (Tachycardia or Atrial Fibrillation)
3. Exercise ECG to Bruce protocols up to stage 4, symptom limited, should be achieved and no significant abnormality of rhythm or conduction or evidence of myocardial ischaemia should be demonstrable. Withdrawal of cardio-active medication prior to the test should be considered.
4. 24 hour ECG without evidence of significant rhythm or conduction disturbance
5. Echocardiogram -no significant selective chamber enlargement or significant structural or functional abnormality and left ventricular ejection fraction of at least 50%
6. Electrophysiological studies required for applicant with a history of significant tachycardia (syncope or haemodynamic compromise)

b) **In case of Pre-excitation -** no evidence of accessory pathway, conduction pre or post isoprenaline/adrenaline. For PWP where antegrade conduction was present pre-ablation, a satisfactory adenosine test may be sufficient.

c) AVNRT – No inducible tachycardia pre or post isoprenaline/adrenaline. Dual pathways and single echoes acceptable.

d) Further tests may be requested if needed according to cardiologist decision

e) Recertification

1. Applicants who have undergone successful ablation therapy should be assessed as fit Class 3.
2. Applicants who have undergone ablation and in whom a EPS is required, a fit assessment may be considered by the GCAA following successful catheter ablation and satisfactory post ablation EPS (undertaken at a minimum of 2 months after the ablation),
3. Applicant who have undergone successful ablation and in whom a EPS is required, and the applicant elect not to have a post ablation EPS, will be assessed as fit Class 3 after 1 year with satisfactory cardiac review.

GM5 MED.E.010 Cardiovascular system

COMPLETE LEFT BUNDLE BRANCH BLOCK

a) investigation required for recertification

1. Exercise ECG - Bruce protocol and symptom limited. Requirements are at least 9 minutes and no significant ECG (apart from LBBB) or blood pressure changes.
2. 24 hr ECG - No significant rhythm or conduction disturbance apart from LBBB
3. Echocardiogram - Structurally normal heart and normal LV and RV function (ejection fraction > 50%).
4. Coronary artery investigation - shall be required in all applicants over the age of 40.
5. A myocardial perfusion scan will normally be sufficient (Pharmacological stress should be used to avoid difficulties in the interpretation of septal perfusion).
6. EPS studies - should be performed if the PR interval is >200 msec, and possibly if the ECG shows an abnormal axis. The HV interval should be less than 100 msec.
7. Recertification

b) Satisfactory investigations will allow Class 3 renewal/revalidation certification.

c) Initial Class 3 applicants will need to show a 1 year period of stability, as above, before a certificate can be issued.

d) Require annual cardiology review and other requirements if deemed necessary

Note: ATCOs with long standing LBBB should expect to be asked to have occasional cardiology reviews to check that all remains well.

GM6 MED.E.010 Cardiovascular system

PACEMAKER

Requirements: The GCAA may permit ATCO with pacemaker provided that the:

1. Pacemaker is bipolar lead system and non-dependence shown by a satisfactory underlying rhythm
2. Exercise ECG to the Bruce protocol or equivalent. The test should be to maximum effort or symptom limited. Bruce stage 4 should be achieved and no significant abnormality of rhythm or conduction, nor evidence of myocardial ischaemia shall be demonstrated. Withdrawal of cardioactive medication prior to the test should be considered.
3. 24-hour ambulatory ECG which shall demonstrate no significant rhythm or conduction disturbance
4. Echocardiogram which shall show no significant selective chamber enlargement, or significant structural or functional abnormality, and a left ventricular ejection fraction of at least 50%.
5. Follow-up will be a minimum of a six monthly pacemaker check and an annual cardiology review and Holter monitoring if indicated.

Note 1: Experience has shown that any failures of pacemakers are most likely to occur in the first. 3 months after being fitted. Therefore, a fit assessment should not be considered before this period has elapsed.

Note 2: It is known that certain operational equipment may interfere with the performance of the pacemaker. The type of pacemaker used, therefore, should have been tested to ensure it does not suffer from interference in the operational environment. Supporting data and a performance statement to this effect should be available from the supplier.

GM 7 MED.E.010 Cardiovascular system- Hypertension

a) For diagnosing a person with Hypertension, please use the NICE guideline .(http://www.nice.org.uk/nicemedia/live/13561/56015/56015.pdf)or https://www.acc.org/~/media/Non-Clinical/Files-PDFs-Excel-MS-Word etc/Guidelines/2017/Guidelines_Made_Simple_2017_HBP.pdf

b) DIAGNOSING HYPERTENSION If blood pressure (BP) >140/90, take second measurement during examination. If second measurement substantially different, take a third measurement. If BP >140/90, perform 24hr ambulatory BP.

c) Evaluation required for recertification which should be done by GCAA Approved Cardiologist

1. Documentation of good blood pressure control which require 24-hour BP check at initial diagnosis and after Successful treatment, without significant side effects, this should be confirmed by undertaking a repeat 24 hr BP check no sooner than 10 days after starting treatment
2. Documentation of an absence of end organ damage
3. Initial evaluation should include
    i. Lipid levels- cholesterol, LDL, HDL, Total cholesterol/ HDL ratio, Triglycerides

ii. Random blood glucose and HBA1c and Renal Function Test,

iii. Full blood count,

iv. Liver function tests

v. Carbohydrate deficient transferrin (only if it protracted or uncontrolled High Blood pressure)

vi. Urine micro albumin

vii. Standard 12 lead ECG

viii. Cardiac echo

ix. (Ix) Fundoscopic examination

x. Ambulatory blood pressure monitoring should always be employed in cases of doubt (or for diagnosis of borderline hypertension or suspected white coat hypertension)

xi. Exclusion of secondary causes including an assessment of the risk of obstructive sleep apnoea

xii. Any pathology detected will require specialist evaluation and risk mitigation

4. Subsequent review annually which should be done by AME

i. Lipid levels- cholesterol, LDL, HDL, Total cholesterol/ HDL ratio,

ii. TriglyceridesC. Random blood glucose and HBA1c

iii. Renal Function test

iv. Standard 12 lead ECG & Echocardiogram

v. Urine micro albumin level

vi. Comment on evidence for hypertensive Fundoscopic findings

vii. Documentation of good blood pressure control (from clinic visit or daily review of the record from B.P measurement machine).

viii. Echocardiogram and other relevant cardiac assessment (Only if indicated by the Cardiologist)

Note: The re-evaluation by echocardiographic examination of known hypertensive patient should be requested if there is change in the clinical status, or for patients who are suspected with having left ventricular hypertrophy (LVH), left atrial (LA) dilatation, or concomitant heart diseases and with multiple risk factors (10-year cardiovascular risk ≥10%).

5. Aeromedical consideration

i. Diagnosis of secondary hypertension should be reviewed on case by case basis.

ii. The diagnosis of uncontrolled hypertension is disqualifying.

iii. Unrestricted Medical certificate is possible if adequate control of blood pressure is achieved (BP<140/90), There is no evidence of end-organ damage, there is no significant medication side effects and There is absence of other cardiovascular risk factors.

iv. A restricted Medical certificate may be required if there is evidence of end-organ damage; and /or presence of other cardiovascular risk factors (10-year cardiovascular risk ≥10%).

v. ATCO with complications of hypertension or multiple risk factors may need to be referred to or discussed with the AMS.

6. Acceptable treatments for Hypertension

a) Most modern antihypertensive agents are acceptable for control of hypertension in all license holders, provided the applicant is established on medication and has exhibited no adverse side effects from the drugs.

i. The angiotensin converting enzyme (ACE) inhibitors (such as enalapril, lisinopril, ramipril, perindopril),

ii. angiotensin receptor blockers (ARB) (e.g. losartan, valsartan, candesartan), which block the angiotensin II receptor and have a very low side effect profile and,

iii. the slow channel calcium-blockers (CCB) (such as amlodipine, nicardipine) are the products of choice, for use by flight crew subject to careful supervision

iv. Thiazide diuretics use in flight crew or Cabin crew member does not require any flying restriction and the Combinations of thiazide with spironolactone may also be compatible with flying

v. The Beta-blockers may be compatible with flying if they are prescribed for a condition having no adverse effect on flying safety. Selective B1 blockers (e.g. Atenolol) are preferred for flying personal

vi. Central antihypertensive drugs are considered Incompatible with flying duties e.g.clonidine, alphamethyldopa

vii. Vasodilators are also considered incompatible with flying duties e.g.prazosin,dihydralazin

b) The applicant must not perform his duties following the commencement of antihypertensive therapy or of a changed treatment regimen until such time as there are no significant side effects from medication,i.e within two weeks of the commencement of therapy or change in medication.

c) The ATCO's Medical condition will carry applicable limitations unless it can be demonstrated that his overall risk of cardiovascular event, taking into account his age, treated and untreated blood pressure levels and any other vascular risk factor presence, is normal or near normal in actuarial terms.

d) Any changes in medication or dosage should be notified to an AME and will require a two-week period of grounding. After two weeks the ATCO should provide their AME with a report from GCAA approved Cardiologist to confirm the changes, stability of BP and no treatment related side-effects.

Note: All Hypertension report should follow the specification set in Appendix 4.

GM 8 MED.E.010 Cardiovascular system - Atrial Fibrillation

a) Certification in the context of atrial fibrillation requires:

1. freedom from symptoms;
2. sinus rhythm and normotension;
3. normal TSH, LFTs and MCV;
4. no history of transient ischaemic attack (TIA);
5. absence of other risk factors for recurrence and/or for thromboembolic stroke, including age > 65 years,hypertension, diabetes, left ventricular hypertrophy, valvar heart disease, coronary heart disease(predicating need for warfarin);
6. normal cavity and structural dimensions of the heart, normal valves and normal Doppler flows on echocardiography. The left atrial internal diameter should be < 4.5 cm;
7. exercise walking time to be normal (> 10 minutes). In atrial fibrillation, the maximum heart rate should be< 230 bpm and the longest pause < 3.5 s;
8. three Holter recordings over two to three months to have shown no evidence of atrial fibrillation
9. arbitrarily defined as at least three to five consecutive normally conducted complexes;
10. Applicable restriction will be endorsed on the Medical certificate. After an event-free period of two years, the restriction may be considered for removal, subject to review.
11. These are rigorous standards, which will be achieved by only a minority. Subjects of ATCO age not fulfilling the above and who demonstrate paroxysmal/permanent atrial

fibrillation in spite of medication may require anticoagulation with warfarin or other anticoagulant medicine, which itself require an individual assessment of risk. Aspirin/clopidogrel may be recommended by the supervising cardiologist in the absence of treatment with warfarin. In the event of default, further fitness consideration will require satisfactory answers to the following:

i. is the thromboembolic rate acceptable without warfarin?

ii. are there symptoms at any time, i.e. on switching rhythm, and if so are they minimal?

iii. is the heart rate controlled well at rest and on exercise?

iv. is an approved/non-approved drug being taken?

12. AF permitted treatment

i. digoxin (mainly of value in controlling resting heart rate in the established condition);

ii. beta-blocking agents, usually atenolol or bisoprolol, which may to help preserve sinus rhythm and reduce the heart rate in atrial fibrillation. Sotalol also has some class III effect (as well as some pro-arrhythmic effect) and is permitted provided there is no demonstrated pro-arrhythmic effect;

iii. verapamil, which may help to preserve sinus rhythm and control the heart rate;

iv. diltiazem, both alone and combined with the foregoing (with care in the presence of beta-blockade) is helpful in rate management.

Note : None of these products is particularly effective, and in the long term atrial fibrillation is likely to become established. Their side-effect profile, however, is generally not high.

13. Medications not permitted include the following:

i. Class Ia anti-arrhythmic agents, such as:

A. quinidine (excessive risk of torsades de pointes and sudden cardiac death (SCD))

B. disopyramide (excessive anti-cholinergic side effects)

C. procainamide (lupus-like syndrome and occasionally agranulocytosis).

ii. Class Ib drugs (e.g. mexiletine) which are ineffective in atrial rhythm disturbances,

iii. Class Ic agents (flecainide, propafenone) which are effective in bringing about the restoration of sinus rhythm and its maintenance but which have undesirable effects such as tremor and visual disturbances. Both may provoke atrial flutter in a minority (about five per cent).

iv. The most effective class III drug, amiodarone, which has a high-side effect profile and thus cannot be considered. The most common side effect, photo-sensitization, is less important than the disturbance of sleep and sedation that it may cause. Patients receiving this drug develop corneal micro-deposits, which may give a halo effect around lights at night.

v. Class III drugs — moricizine, dofetilide and ibutilide.

vi. Warfarin.

Note : Aeromedical disposition of individual diagnosed with AF who require treatment will be done on case by case evaluation .

GM 9 MED.E.010 Cardiovascular system

ANTICOAGULATION

Applicants and licence holders taking anticoagulant medication which requires monitoring with INR testing, should measure their INR on a 'near patient' testing system within 12 hours prior to starting a shift pattern and then at least every three days during the shift pattern. The privileges of the licence should only be exercised if the INR is within the target range. The INR result should be recorded and the results should be reviewed at each aero-medical assessment.

MED.E.015 Respiratory system

(a) Applicants for a Class 3 medical certificate with significant impairment of pulmonary function shall be referred to the GCAA for the aero-medical assessment. A fit assessment may be considered once pulmonary function has recovered and is satisfactory.

(b) Examination

Pulmonary function tests are required at the initial examination and on clinical indication.

(c) Applicants with a history or established diagnosis of asthma requiring medication shall undergo a satisfactory respiratory evaluation. A fit assessment may be considered if the applicant is asymptomatic and treatment does not affect safety.

(d) Applicants with a history or established diagnosis of:

(1) active inflammatory disease of the respiratory system;

(2) active sarcoidosis;

(3) pneumothorax;

(4) sleep apnoea syndrome;

(5) major thoracic surgery;

(6) chronic obstructive pulmonary disease;

(7) lung transplantation

shall be referred to the GCAA and undergo respiratory evaluation with a satisfactory result before a fit assessment may be considered. Applicants with an established diagnosis of the conditions specified

in (2) and (4) shall undergo satisfactory cardiological evaluation before a fit assessment can be considered.

AMC1 MED.E.015 Respiratory system

(a) Examination

1) Spirometric examination is required for initial examination. An FEV1/FVC ratio less than 70 % should require evaluation by a specialist in respiratory disease before a fit assessment can be considered.

2) Posterior/anterior chest radiography may be required at initial, revalidation or renewal examinations when indicated on clinical or epidemiological grounds.

(b) Chronic obstructive airways disease

Applicants with chronic obstructive airways disease should be assessed as unfit. Applicants with only minor impairment of their pulmonary function may be assessed as fit after specialist respiratory evaluation. Applicants with pulmonary emphysema may be assessed as fit following specialist evaluation showing that the condition is stable and not causing significant symptoms.

(c) Asthma

Applicants with asthma requiring medication or experiencing recurrent attacks of asthma may be assessed as fit if the asthma is considered stable with satisfactory pulmonary function tests and medication is compatible with the safe execution of the privileges of the applicable licence. Use of low dose systemic steroids may be acceptable.

(d) Inflammatory disease

1) For applicants with active inflammatory disease of the respiratory system a fit assessment may be considered when the condition has resolved without sequelae and no medication is required.

2) Applicants with chronic inflammatory diseases may be assessed as fit following specialist evaluation showing mild disease with acceptable pulmonary function test and medication compatible with the safe execution of the privileges of the applicable licence.

(e) Sarcoidosis

1) Applicants with active sarcoidosis should be assessed as unfit. Specialist evaluation should be undertaken with respect to the possibility of systemic, particularly cardiac, involvement. A fit assessment may be considered if no medication is required, and the disease is limited to hilar lymphadenopathy and inactive. Use of low dose systemic steroids may be acceptable.

2) Applicants with cardiac or neurological sarcoid should be assessed as unfit.

(f) Pneumothorax

Applicants with a spontaneous pneumothorax should be assessed as unfit. A fit assessment may be considered:

1) 6 weeks after the event provided full recovery from a single event has been confirmed in a full respiratory evaluation including a CT scan or equivalent;

2) following surgical intervention in the case of a recurrent pneumothorax provided there is satisfactory recovery.

(g) Thoracic surgery

1) Applicants requiring thoracic surgery should be assessed as unfit until such time as the effects of the operation are no longer likely to interfere with the safe exercise of the privileges of the applicable licence.

2) A fit assessment may be considered after satisfactory recovery and full respiratory evaluation including a CT scan or equivalent. The underlying pathology which necessitated the surgery should be considered in the assessment process.

(h) Sleep apnoea syndrome/sleep disorder

1) Applicants with unsatisfactorily treated sleep apnoea syndrome and suffering from excessive daytime sleepiness should be assessed as unfit.

2) A fit assessment may be considered subject to the extent of symptoms, including vigilance, and satisfactory treatment. ATCO education and work place considerations are essential components of the assessment.

GM1 MED.E.015 Respiratory system

Asthma

a) Aeromedical disposition

(1) Initial Class 3 applicants or Class 3 holders with a new diagnosis of asthma require review by a GCAA approved pulmonologist

(2) If the applicant for Class 3 is diagnosed to have mild asthma,

i. Well controlled

ii. Normal chest examination

iii. No adverse history

iv. Satisfactory spirometry

v. Has a fall in FEV1 of less than or equal to 10% on Bronchial Reactivity Test

vi. Requires inhaled corticosteroids less than 800µg /day

Then he may be assessed as fit.

b) If the applicant is diagnosed to have

1) Moderately controlled asthma,

2) Has no adverse history,

3) Has satisfactory spirometry,

4) Has a fall in FEV1 of 11-16% on Bronchial reactivity test,

5) or inhaled corticosteroids equal to or greater than 800 µg day,

Then he may be assessed as fit with or without applicable restriction on the medical certificate

c) If the applicant for Class 3 is diagnosed with sub-optimally controlled asthma: with no adverse history, satisfactory spirometry, fall in FEV1 of 16-20% on Bronchial Reactivity Test, he will not be considered fit until the required criteria's are met.

d) Applicant for Class 3 with uncontrolled asthma: Fall in FEV1 of greater than 20% on Bronchial Reactivity Test AND/OR adverse history will not be medically certified till his medical condition is stable

e) For renewal of Class 3, if symptoms are, mild, infrequent, symptoms well controlled on medication, no symptoms while on duty, no wheeze on examination, the AME can issue the medical certificate based on his clinical examination.

f) The AME should not renew the medical certificate, if he detects;

i. The symptoms worsen/or wheeze on chest examination

ii. Increase in frequency of emergency room, hospital, or outpatient visits.

iii. The FEVI is < 70% predicted value.

iv. The applicant requires 3 or more medications for stabilisation.

v. The applicant is using steroid in dosage equivalent to more than 20 mg of prednisone (or equivalent dose of other corticosteroids dose) per day

g) Disqualifying features of asthma:

1. Severe asthma likely to reduce operational efficiency
2. Brittle asthmatics
3. Repeated courses of oral steroids
4. Poor control on inhaled cortical-steroids
5. Hospital/A&E attendance (A history of asthma attacks requiring acute medical intervention/ admission within past 5 years)
6. Frequent exacerbations
7. Those requiring UNACCEPTABLE medication on daily basis e.g.: Oral steroids
8. Those who are on oral theophylline
9. Steroid-sparing agents e.g. methotrexate, cyclosporins, azathioprine

h) Required Investigations:

1. Standard Spirometry (Lung Function Tests)
2. Bronchial Reactivity Test: either 6 minute free running test (see separate Bronchial Reactivity Test Form) or a chemical challenge with histamine/metacholine/mannitol

i) Acceptable Treatment:

In accordance with British Thoracic Society (BTS) guidelines - The following medication is ACCEPTABLE for certification:

1. Inhaled β2 agonists
2. Inhaled cortico-steroids
3. Long acting β2 agonists
4. Leukotriene receptor antagonists
5. Inhaled cromoglycate

Note: Occasionally ATCO who symptoms are controlled on stable maintenance dose of Steroids may be certified with applicable restriction, this will be evaluated on case by case basis.

GM2 MED.E.015 Respiratory system

Pulmonary Tuberculosis

a) Certification protocol:

1. Initial applicants for or holders of a Class 3 certificates with a history of previous pulmonary tuberculosis may be assessed as fit provided that:
   i. A recognised course of medication has been completed.
   ii. Chest radiography shows no significant lung damage.
   iii. Normal pulmonary function testing is demonstrated.
2. Applicants for Class 3 with active disease or undergoing any treatment should be assessed as 'temporarily unfit' for at least the early part of their therapy because of the symptoms, side effects associated with treatment, and the need for close follow up.
   i. Following the initial part of the therapy, if the applicant for Class 3 shows a satisfactory report from his treating physician that he doesn't have any significant side effects of the medication and he doesn't carry any risk of transmission of the disease, he can return to duties with restricted certificate till he completes the course of treatment with close AME monitoring.
   ii. Following the initial part of the therapy, if the applicant for Class 3 showed satisfactory report from his treating physician that he doesn't have any significant side effects of the medication and he doesn't carry any risk of transmission of the

disease, he can be granted unrestricted licence with close follow up with his AME and /treating physician.

iii. Following completion of therapy, assessment of fitness should be performed.

iv. Applicants with substantial lung damage may have bronchiectasis, be susceptible to recurrent episodes of chest infection and therefore require careful evaluation. Applicants with persistent cavities also require careful evaluation. Large cavities are likely to be associated with considerable degree of lung damage and applicants will be unlikely to be assessed as fit.

v. If the applicant is taking prophylaxis treatment with Isonizid because of contact with an infected person, or because of recent TB skin test conversion, he may continue controlling duties without compromising flight safety as long as no side effects are apparent. In these cases, the AME/or treating physician should follow all patients on prophylaxis clinically, ordering appropriate laboratory studies when indicated.

GM3 MED.E.015 Respiratory system

Sarcoidosis

a) Requirement for initial certification of applicant with a history of Sarcoidosis confined to hilar lymphadenopathy

1. The disease should be inactive clinically or until disease progression/stability has been demonstrated for a minimum of 3 months. (Activity is defined as worsening within a system, or new system involvement.)
2. Serial CXR (hilar lymphadenopathy should be re-examined and shown to be non-progressive and no evidence of pulmonary shadowing)
3. Gas transfer factor should be stable& Pulmonary function tests should be normal (<10%/yr fall in FVC or <15%/yr fall in gas transfer factor (no lower than 70% of predicted)).
4. Cardiology review to include:
   i. Resting and exercise ECG to Bruce protocols (symptom limited)
   ii. 24-hour ambulatory ECG monitoring- without significant rhythm or conduction disturbances
   iii. Echocardiogram
   iv. Myocardial scintigraphy or perfusion scanning (MRI) may be needed if any cardiac abnormality detected.

b) Aeromedical Disposition

1. If all the above tests are satisfactory including no cardiac Sarcoidosis; no evidence of other

organ involvement and no medication are prescribed a Class 3 with applicable restriction may be granted

2. Cardiac Sarcoidosis is disqualifying
3. Applicants with a diagnosis of active Sarcoidosis should be assessed as unfit.
4. Initial applicants with a history of multi-system Sarcoidosis should be assessed as unfit.
5. Previous history of systemic involvement (skin, bone, eye, central nervous system and lung parenchyma), the applicant will be given permanent restricted licence.
6. The need for treatment is normally disqualifying. However, up to 10mg prednisolone may, in individual cases, be acceptable following AMS case assessment and subject to stability and confirmation of absence of side-effects.

c) Subsequent review every six months for Class 3 for the first two years

1. Routine aviation medical examination
2. Approved cardiologist's assessment
3. 24 hour ECG.
4. Exercise ECG to Bruce protocols

d) Subsequent review every twelve months for Class 3

If satisfactory follow up for two years with no previous history of systemic involvement, the applicant for Class 3 can be given unrestricted licence and continue to have annual follow up.

GM4 MED.E.015 Respiratory system

SPONTANEOUS OR IDIOPATHIC PNEUMOTHORAX

a) The assessment of applicants with a recent history of spontaneous pneumothorax should take into account not only clinical recovery after treatment (conservative and/or surgical), but primarily the risk of recurrence. There are significant first, second and third recurrence rates with conservative treatment of 10%-60%, 17%-80% and 80%-100% of cases, respectively. After chemical pleurodesis, the recurrence rate is 25-30%; after mechanical pleurodesis or pleurectomy, the rate is 1-5%.

b) In the case of an initial applicant, a history of spontaneous pneumothorax need not be disqualifying provided that the applicant has had only one attack with complete clinical recovery, and that the medical investigation has revealed no evidence of predisposing disease such as bullous emphysema and demonstrated satisfactory pulmonology report.

c) A history of two or more attacks should be considered as constituting a more serious risk. In such cases an applicant should be assessed as unfit until at least three months after surgery (i.e. wedge resection or pleurectomy).

d) Certificate holders who develop a spontaneous pneumothorax should be assessed as temporarily unfit until full resolution has occurred. They may be assessed as fit for certification provided that;

1. Full re-expansion of the lung has taken place.
2. Recertification can be undertaken six weeks after a VATS pleurectomy. For other procedures, recertification may require a longer grounding period.
3. Unrestricted initial Class 3 medical certification can be considered 6 weeks after full recovery from surgical treatment with a normal post-operative chest radiograph.
4. If surgical treatment is not undertaken, for a primary spontaneous pneumothorax, certification is possible 6 weeks from full recovery with applicable restriction for at least one year following recovery due to the possible risk of recurrence.
5. Respiratory evaluation is normal.
6. No bullae are discovered on chest radiography, CT scan, or other medical imaging technique.
7. All modifiable risk factors including smoking have been addressed
8. Notes :
   i. A final decision should be made by the AMS and based on a thorough investigation and evaluation in accordance with best medical practice.
   ii. An applicant with a recurrent spontaneous pneumothorax that has not been surgically treated will be assessed as unfit.

e) **Acceptable surgical treatment**

Acceptable surgical treatment includes thoracotomy, oversewing of apical blebs, parietal pleurectomy and Video Assisted Thoracic Surgery (VATS) pleurectomy but not chemical pleurodesis.

GM5 MED.E.015 Respiratory system

Obstructive Sleep Apnea Screening Guidelines

a) OSA Screening is usually indicated in:

1. History of Excessive Daytime Sleepiness
2. History of Snoring
3. Witnessed apnoea
4. Resistant /uncontrolled Hypertension,
5. Uncontrolled Diabetes,

6. Metabolic Syndrome
7. Obesity ,BMI> 35
8. Significant weight gain(10% increase in total body weight)
9. A high neck circumference >40 cm
10. Complaints of frequent nocturnal awakenings
11. Complaints of difficulty concentrating
12. Complaints of problems with memory
13. Complaints of daytime sleepiness
14. Complaints of fatigue
15. Complaints of low mood
16. Complaints of erectile dysfunction
17. Stop Bang questionnaire score of ≥3
18. Epworth sleep score ≥10

b) Method of Objective screening:

1. Physical examination including, vital signs (blood pressure, pulse, respiration); height, weight, and body mass index (BMI), neck circumference, ear, nose, and throat examination thyroid assessment; cardiovascular; pulmonary assessment, and psychological assessment for presence of mood disorder; if clinically indicated.
2. The commonly used Epworth Sleepiness scale (ESS) is a simple validated measure of daytime sleepiness and has been shown to be both a reliable and consistent method of distinguishing those with potential sleep disorders from the normal population. Ideally it should be given to sleeping partners who can more accurately assess snoring and apnoea. ESC of ≥10, considered indicative of pathological sleepiness and specialist referral is required. Refer to Appendix-1.
3. The use of STOP – BANG questionnaire which is more sensitive in moderate to severe OSA. Stop Bang questionnaire score of≥3 is an indicative of sleep apnoea which requires further assessment by specialist. Refer to Appendix-1.
4. The gold standard diagnostic test is; nocturnal full polysomnographic attended by technologist diagnostic testing (type 1 Sleep Study).
5. When the diagnosis is suspected, the AME should refer the applicant for sleep study to confirm/or exclude the diagnosis of OSA. The initial decision on grounding the applicant prior to the specialist referral solely depends on the AME assessment of the case.

6. The GCAA accepts the use of CPAP (Continuous Positive Airway Pressure) as an appropriate treatment for Obstructive Sleep Apnoea. The machine should have the ability for data capture ensure compliance. Other methods of treatment including positional therapy and dental splinting may be acceptable on reports showing adequate control of OSA on sleep study analysis and correct fitting and usage of the splints. Presence of any associated risk factors of Obesity, Hypertension, Thyroid disease, Diabetes Mellitus should be addressed and treated as per GCAA protocols in addition.
7. The applicant should have documentary advice to lose at least 5% of the current weight over the following year.
8. The minimum grounding period of 2 weeks after starting CPAP treatment will be required before returning the applicant to aviation related safety duties. The pilot will be required to use the CPAP machine at least four hours during sleep, for more than 70% of the time. For dental splints, he will be required to use the splint for each and every sleep period. He may be returned to duty once the compliance with the treatment is established by Specialist review with no subjective symptoms and ESS < 10. The AME should refer the case to GCAA for Aeromedical section for reinstatement of the applicant.
9. The GCAA will issue the medical certificate with applicable restriction.
10. Follow up recommendations, will include 6 monthly Specialist (Sleep Specialist) review and 3 monthly AME review to check for compliance, weight loss and other medical conditions which may require periodic review. For those managed with dental splinting, in addition to the specialist review, they would require a Dental assessment every six months to check on compliance and fitting.
11. Once granted the restricted medical certificate the applicant will be instructed not to perform aviation safety sensitive job if they experience any problems with the treatment or he suspects his sleepiness/ snoring symptoms returning, or at any time obtains a self-reported ESS of >= 10.
12. The GCAA will not consider removal of the restriction, until the time when the applicant's medical condition satisfactory controlled, and all associated risk factors are eliminated or controlled.
13. The applicant will be required to be revaluated by the Specialist in case of documented change in his body weight of 10% value increase or decrease.

Note: All Respiratory report should follow the specification set in Appendix 1.

MED.E.020 Digestive system

(a) Applicants with any sequelae of disease or surgical intervention in any part of the digestive tract or its adnexa likely to cause incapacitation, in particular any obstruction due to stricture or compression, shall be assessed as unfit.

(b) Applicants shall be free from hernia that might give rise to incapacitating symptoms.

(c) Applicants with disorders of the gastrointestinal system including:

1) recurrent dyspeptic disorder requiring medication;

2) pancreatitis;

3) symptomatic gallstones;

4) an established diagnosis or history of chronic inflammatory bowel disease;

5) after surgical operation on the digestive tract or its adnexa, including surgery involving total or partial excision or a diversion of any of these organs

may be assessed as fit subject to a satisfactory gastroenterological evaluation after successful treatment or full recovery after surgery.

AMC1 MED.E.020 Digestive system

(a) Oesophageal varices

Applicants with oesophageal varices should be assessed as unfit.

(b) Pancreatitis

1) Applicants with pancreatitis should be assessed as unfit pending assessment. A fit assessment may be considered if the cause (e.g. gallstone, other obstruction, medication) is removed.

2) Alcohol may be a cause of dyspepsia and pancreatitis. If considered appropriate, a full evaluation of its use/abuse should be required. (cross reference to alcohol screening protocol in FCL).

(c) Gallstones

1) Applicants with a single large gallstone may be assessed as fit after evaluation.

2) Applicants with multiple gallstones may be assessed as fit while awaiting assessment or treatment provided the symptoms are unlikely to interfere with flight safety.

3) Applicant with Small multiple asymptomatic stones with functional gall-bladder may cause colic and potential incapacitation and are disqualifying until adequately treated.

(d) Inflammatory bowel disease

Applicants with an established diagnosis or history of chronic inflammatory bowel disease may be assessed as fit if the disease is in established stable remission, and only minimal, if any, medication is being taken. Regular follow-up should be required.

(e) Dyspepsia

Applicants with recurrent dyspepsia requiring medication should be investigated by internal examination including radiologic or endoscopic examination. Laboratory testing should include haemoglobin assessment and faecal examination. Any demonstrated ulceration or significant inflammation requires evidence of recovery before a fit assessment may be considered.

(f) Abdominal surgery

Applicants, who have undergone a surgical operation on the digestive tract or its adnexa, including a total or partial excision or a diversion of any of these organs, should be assessed as unfit. A fit assessment may be considered if recovery is complete, the applicant is asymptomatic, and the risk of secondary complication or recurrence is minimal.

MED.E.025 Metabolic and endocrine systems

(a) Applicants with metabolic, nutritional or endocrine dysfunction may be assessed as fit subject to demonstrated stability of the condition and satisfactory aero-medical evaluation.

(b) Diabetes mellitus

1)Applicants with diabetes mellitus requiring insulin shall be assessed as unfit.

2)Applicants with diabetes mellitus requiring medication other than insulin for blood sugar control shall be referred to the GCAA. A fit assessment may be considered if it can be demonstrated that blood sugar control has been achieved and is stable.

AMC1 MED.E.025 Metabolic and endocrine system

(a) Metabolic, nutritional or endocrine dysfunction

Applicants with metabolic, nutritional or endocrine dysfunction may be assessed as fit if the condition is asymptomatic, clinically compensated and stable with or without replacement therapy, and regularly reviewed by an appropriate specialist.

(b) Obesity

1) Applicants with a Body Mass Index 35 may be assessed as fit only if the excess weight is not likely to interfere with the safe exercise of the applicable licence(s) and a satisfactory cardiovascular risk review has been undertaken. The presence of sleep apnoea syndrome should be ruled out.

2) Functional testing in the working environment may be necessary before a fit assessment may be considered.

(c) Thyroid dysfunction

Applicants with hyperthyroidism or hypothyroidism should attain a stable euthyroid state before a fit assessment may be considered.

(d) Abnormal glucose metabolism

Glycosuria and abnormal blood glucose levels require investigation. A fit assessment may be considered if normal glucose tolerance is demonstrated (low renal threshold) or impaired glucose tolerance without diabetic pathology is fully controlled by diet and regularly reviewed.

(e) Diabetes mellitus

(1) The following medication, alone and in combination, may be acceptable for control of type 2 diabetes:

(i) alpha-glucosidase inhibitors;

(ii) medication that acts on the incretin pathway;

(iii) biguanides.

(2) A fit assessment may be considered after evaluation of the operational environment, including means of glucose monitoring/management whilst performing rated duties, and with demonstrated exemplary glycaemic control.

(3) Annual follow-up by a specialist should be required including demonstration of absence of complications, good glycaemic control demonstrated by 6-monthly Hb1c measurements, and a normal exercise tolerance test.(cross reference to FCL)

GM 1 MED.E.025 Metabolic and endocrine system

Obesity

(a) Defining the Nature of the Problem (Body Composition Tests)

(1) The body mass index (BMI)

Body mass index is defined as the individual's body weight divided by the square of their Height. The formulas universally used in medicine produce a unit of measure of kg/m2.

(2) Waist circumference and waist hip ratio

Waist circumference is the distance around the natural waist (just above the navel).

(The tape should be positioned mid-way between the top of the hip bone and the bottom of the rib cage).

The absolute waist circumference (>102 cm in men and >88 cm in women) or waist-hip ratio (>0.9 for men and >0.85 for women) are both used as measures of central obesity.

Waist hip ratio is calculated as follow, measure waist at narrowest part and measure the hip at widest part then divide waist /hip to get the ration.

(3) Body fat percentage

Body fat percentage is total body fat expressed as a percentage of total body weight. It is generally agreed that men with more than 25% body fat and women with more than 33% body fat are obese.

(4) Neck circumference measurements

Screening for and treating Obstructive Sleep Apnea Syndrome will potentially lead to improved quality of life, reduced cardiovascular mortality and reduced accident rates.

The neck circumference should be measured at a point just below the larynx (Adam's Apple) and perpendicular to the long axis of the neck. The applicant should look straight ahead during measurement, with shoulders down, and the tape will be as close to horizontal as anatomically feasible (the tape line in the front of the neck should be at the same height as the tape line in the back of the neck). Care should be taken so as not to involve the shoulder/neck muscles (trapezius) in the measurement.

Neck Circumference measured in centimetres should be adjusted for hypertension (+4cm), habitual snoring (+3cm), reported choking or gasping most nights (+3cm) to get prediction of Obstructive Sleep Apnoea. (Refer to protocol of OSA).

(b) Aeromedical Disposition

(1) For the GCAA medical certification purpose the definition of obesity include:

(i) A body mass index above 30, or

(ii) A waist circumference over 102 cm, female 88cm, or

(iii) A waist to hip ration of 0.9 male and 0.85 female, or

(iv) Body fat content above 25% male and 32% female

(2) Obese applicant with incapacitation risk of >1%, should be suspended and required full cariology assessment and enter a weight management program which should include dietary advice, an increased exercise regime and regular 3 monthly AME follow and should require an additional battery of tests to exclude the nutritional and metabolic disorders before issuing the medical certificate. The minimum tests required would be Lipid profile (total cholesterol, LDL, triglyceride level and HDL), random blood glucose estimation with HBA1c and calculation the overall risk of cardiovascular disease. A target weight reduction of at least 10 % their original weight over one year and all risk factors should be monitored and controlled. Obese applicant with incapacitation risk of less than 1% still needs advice on weight management.

(3) Obese applicants who are otherwise well and can exercise the privileges of a licence safely will be certificated without restriction.

(4) Obese Individual with OSA should be managed as per the protocol of OSA.

(5) The nature of operating environment in relation to the BMI should also be considered. A functional assessment may be required if the ATCO with BMI of 35 or more fails to lose weight over 6 months period, or even gain more weight, , the ATCO will need to undergo a workplace assessment with their supervisor to ensure that they can work without restriction and evacuate their workplace quickly in the event of an emergency . This is particularly important if the ATCO is based in a control tower or remote location.

(6) If the high BMI does not reflect obesity (e.g. muscular built), then other measurement to be used as guidelines with the BMI for more accurate assessment, such as body fat percentage.

(7) Failure to comply with any or all of these points may lead to permanent unfitness.

(c) Treatment that affect Medical certification

(1) Medication

Orlistat or other medications which reduce the absorption of dietary fat, when combined with a change in lifestyle, can be used to treat obesity in individuals with a BMI in excess of 30 or in excess of 28 if other risk factors such as hypertension, diabetes or high cholesterol are present. ATCO elected to use this medication should inform the AME about its use and should be grounded for at least two weeks to ensure absence of adverse effects from the medication. Side effects might include flatulence, oily or leaky stools and abdominal pain and bloating, headaches and anxiety

Note: Appetite suppressants are disqualifying for medical certification, and they are not recommended for the treatment of obesity.

(2) Surgery

Bariatric surgery promotes weight loss by altering the anatomy of digestive system and limiting the amount of food that can be eaten/digested e.g. gastric bypass, Sleeve Gastrectomyor gastric banding. It is a major procedure that is usually considered as an option if an individual's BMI is 40 or more, or between 35 and 40 if other risk factors that could be improved by a reduction in weight are present. Other criteria also need to be fulfilled and this option should be discussed with the Specialists. If it is deemed an acceptable for treatment for the ATCO, he/she should notify the AME to suspend him/her for a period of up to 3 months post-surgery which will be dependent upon the type of procedure performed and the recovery. Endoscopic procedures will significantly reduce this period. Detailed reports will be required to confirm that the ATCO made a full recovery from the procedure, are not experiencing any incapacitating side effects and a final assessment with the AME will be required before returning the ATCO to controlling duties again. Any other treatment or procedure that the ATCO might be considering must be discussed with the AME.

GM 2 MED.E.025 Metabolic and endocrine system

Thyroid

(a) General

(1) Initial applicants with an established diagnosis of thyroid dysfunction will have the issue of their medical certificate referred until acceptable reports have been received. On diagnosis of thyroid dysfunction a certificate holder shall be assessed as unfit.

(2) A report from an endocrinologist will be required to confirm details of history, investigations, diagnosis and treatment, optimised thyroid function, no side-effects from either the disorder or the treatment and plans for follow-up care.

(3) An annual report as detailed above will be submitted to the AME for review.

(4) All changes in management will be notified to an AME and the ATCO will be assessed as unfit until clinically euthyroid and a satisfactory report has been received.

(b) Hypothyroidism

Any changes in management, including medication changes, must be notified to the AME. If the certificate holder is asymptomatic then no suspension period will be required for minor (up to 25mcg) changes in dose of thyroxine. If any symptoms are present then the ATCO will be assessed as unfit until symptom free.

(c) Hyperthyroidism

(1) Anti-thyroid drugs in the absence of side-effects are not disqualifying.

(2) Class 3 holders will undergo review with an ophthalmic specialist to ensure satisfactory eye movements and no diplopia. If normal, a fit assessment can be made by the AME, otherwise review by the AMS will be required.

(d) Thyroidectomy

Following thyroid surgery (complete or partial) the ATCO will be assessed as unfit. A fit assessment can be made following full surgical recovery, and demonstrated stability of thyroid function.

A report from the specialist will be required confirming details of the surgery, recovery and ongoing treatment and confirmation of euthyroid state. Minimum follow up is annual blood test confirming euthyroid status.

(e) Radioactive Iodine Treatment

The ATCO will be assessed as unfit until all treatment is complete and a euthyroid state has been achieved. A report from the specialist will be required and should confirm details of treatment and follow-up care including confirmation of euthyroid state. Minimum follow up is for an annual blood test confirming euthyroid status.3. Diabetes Mellitus

GM 3 MED.E.025 Metabolic and endocrine system

(a) Diagnostic criteria Diabetes may be diagnosed based on plasma glucose criteria, either the fasting plasma glucose (FPG) value or the 2-h plasma glucose (2-h PG) value during a 75-g oral glucose tolerance test (OGTT), or HBA1c criteria

	Fasting Plasma Glucose (FPG)	**Oral Glucose Tolerance Test (OGTT)**	**HB A1c**
Normal	less than 100 mg/dl	less than 140 mg/dl	less than 5.7%
Pre-diabetes	100-125 mg/dL	140 to 199 mg/dl	5.7–6.4%
Diabetes Mellitus	≥126 mg/dL	≥200 mg/dL	≥6.5%

Note 1: Diagnosis, assessment and treatment of Diabetes Mellitus should be based on the **latest** American Diabetes Association guidelines

Note 2: Unless there is a clear clinical diagnosis (e.g., patient in a hyperglycemic crisis or with classic symptoms of hyperglycemia and a random plasma glucose ≥200 mg/dL [11.1 mmol/L]), diagnosis requires two abnormal test results from the same sample or in two separate test samples. If using two separate test samples, it is recommended that the second test, which may either be a repeat of the initial test or a different test, be performed without delay.

Note 3: if a patient has discordant results from two different tests, then the test result that is above the diagnostic cut point should be repeated, with consideration of the possibility of A1C assay interference. The diagnosis is made on the basis of the confirmed test

(b) Complications

(1) Macro-angiopathic vascular damage in the coronary, cerebral and peripheral arteries, which can constitute a major aeromedical risk and it increases with the duration of the condition.

(2) Microangiopathy is associated with progressive retinal and renal damage.

(3) Neuropathy which is probably related to the long term effects of the metabolic abnormality and can involve motor, sensory and autonomic functions.

(4) Cataracts are more common in older patients with diabetes.

(5) Colour vision changes.

Note: All complications tend to be found in long term diabetes, especially those which are poorly controlled, but can also appear early in the disease-retinopathy in particular can be an initial finding.

(c) Management of Diabetes Mellitus

In type 2 diabetes the first step in the management is a low calorie diet, weight reduction, exercise at least 150 minutes weekly and smoking cessation.

(d) Certification

(1) It should be based on individual case assessment whether the individual is on treatment or without treatment

(2) Impaired glucose tolerance often represents a pre-diabetic state that may convert to the full condition at a rate of around 4% per year. Cases may need dietary treatment and will require prolonged and detailed follow-up in order to preserve aeromedical fitness in the long run. The AME should inform the licence holders about all possible outcome of this condition and should emphasise the importance of the regular follow up and weight loss. A target weight loss of 10% over 1 year is appropriate in most cases.

(3) Type 2 diabetics fully controlled on diet alone may be fit for unrestricted medical certificates, subject to detailed follow-up at periodic medical examinations or at least annually with acceptable blood investigations.

(4) Insulin use is disqualifying for Class 1 & 3.

(5) The use of oral hypoglycemic drugs may be acceptable for Class 1 & 3 with certain limitation with its use as a single agent (e.g. Biguanides, Thiazolidinedione or Alpha-glucosidase inhibitors, DPP-4 Inhibitors, Glucagon-like peptide-1 (GLP-1) receptor agonists

(6) Combination of agents may be considered on a case by case basis, provided there is no evidence of hypoglycaemia.

(e) Anti-diabetic medications: refer to appendix 6

(f) Initial assessment

At the time of diagnosis of Type 2 Diabetes mellitus, the GCAA requires the following evaluations to be done:

(1) Careful examination to exclude common complications of diabetes including neuropathy

(2) HbA1c should be **<**7 %

(3) Blood Glucose should be reasonably controlled

(4) BMI level, and determine the desired goal (BMI of <25 is the target)

(5) Diabetes Mellitus should be treated as high risk for cardiovascular disease and all modifiable risk factors should be managed aggressively.

(6) Blood tests including HBA1c, renal function, liver function and lipids.

(7) A GCAA extended eye examination.

(8) ECG at the time of diagnosis

(9) An approved cardiologist consultation

(10) Urine microalbuminuria

(i) If single medication is required to control blood glucose level, The licence holder is grounded to ensure good glycaemic control, minimal side-effects & HBA1c < 7%

(ii) If single medication fails to adequately control blood glucose levels , and addition of other agent is required; then the licence holder is grounded for ground trial to ensure no hypoglycaemic episodes, no additional other side-effects, good glycaemic control, or HbA1c **<**7%

(iii) To provide a complete record of blood glucose monitoring to AME - random daily record for a minimum 30 days ideally via a data card.

Note1: Occasionally the GCAA may reinstate a pilot whom HBA1C is > 7% if a significant fall in the level of HBA1C is documented from the date of diagnosis; however his subsequent follow up HBA1C should remain under satisfactory control.

Note 2: There is no specific time period that the pilot should be grounded, the decision to return him/her to aviation duties based on case by case evaluation and the overall indices of good glycaemic control.

(g) Follow up for cases of Type 2 diabetes mellitus

(1) Periodic review with an AME and careful examination to exclude common complications of diabetes.

(2) Blood glucose and HBA1c less than 7.5% undertaken at three monthly to check the control of diabetes.

(3) Regular BMI and body fat monitoring and a comment on reduction progress.

(4) Periodic tests including renal function, blood lipids and urinary tests for detecting early renal damage (microalbuminuria)

(5) Annual GCAA approved ophthalmologist review. Those with previous documented colour deficiency require a CAD test prior to relicensing and then annually thereafter as part of the extended eye examination.

(6) CNS and foot examination for evidence of neuropathy; either by neurologist, family physician or AME.

(7) Approved Cardiology review.

Note 1: The GCAA may on individual cases permit the use of a medications not listed above for Diabetes treatment provided the risk assessment performed on the case is satisfactory and the decision in this case should be made in consultation with the AMS.

Note 2: All report for Diabetic applicant should be compiled through the specified form.

MED.E.030 Haematology

(a) Applicants shall not possess any haematological disease which is likely to interfere with the safe exercise of the privileges of the applicable licence(s).

(b) Full blood count shall be tested at initial issue of a medical certificate; and thereafter Full blood count test shall be determined by the AME or AeMC considering the medical history and following the physical examination.

(c) Applicants with a haematological condition, such as:

(1) coagulation, haemorragic or thrombotic disorder;
(2) chronic leukaemia;

(3) abnormal haemoglobin, including, but not limited to, anaemia related to abnormal haemoglobin, erythrocytosis or haemoglobinopathy;

(4) significant lymphatic enlargement;

(5) enlargement of the spleen shall be referred to the GCAA. A fit assessment may be considered subject to satisfactory aero-medical evaluation.

(d) Applicants suffering from acute leukaemia shall be assessed as unfit.

AMC1 MED.E.030 Haematology

(a) Anaemia

(1) Demonstrated by a reduced haemoglobin level should require investigation. A fit assessment may be considered in cases where the primary cause has been treated (e.g. iron or B12 deficiency) and the haemoglobin or haematocrit has stabilised at a satisfactory level. The recommended range of the haemoglobin level is 11–17 g/dl.

(2) Anaemia which is unamenable to treatment should be disqualifying.

(b) Haemoglobinopathy

Applicants with a haemoglobinopathy should be assessed as unfit. A fit assessment maybe considered where minor thalassaemia, sickle cell disease or other haemoglobinopathy is diagnosed without a history of crises and where full functional capability is demonstrated.

(c) Coagulation disorders

(1) Significant coagulation disorders require investigation. A fit assessment may be considered if there is no history of significant bleeding or clotting episodes and the haematological data indicate that it is safe to do so.

(2) If anticoagulant therapy is prescribed, AMC1 MED.E.010 (g) should be followed.

(d) Disorders of the lymphatic system

Lymphatic enlargement requires investigation. A fit assessment may be considered in cases of an acute infectious process which is fully recovered, or Hodgkin's lymphoma, or other lymphoid malignancy which has been treated and is in full remission, or that requires minimal or no treatment.

(e) Leukaemia

(1) Applicants with acute leukaemia should be assessed as unfit. Once in established remission, applicants may be assessed as fit.

(2) Applicants with chronic leukaemia should be assessed as unfit. A fit assessment may be considered after remission and a period of demonstrated stability.

(3) Applicants with a history of leukaemia should have no history of central nervous system involvement and no continuing side effects from treatment of flight safety importance. Haemoglobin and platelet levels should be satisfactory.

(4) Regular follow-up is required in all cases of leukaemia.

(f) Splenomegaly.

Splenomegaly requires investigation. A fit assessment may be considered if the enlargement is minimal, stable and no associated pathology is demonstrated, or if the enlargement is minimal and associated with another acceptable condition.

GM1 MED.E.030 Haematology

HODGKIN'S LYMPHOMA

Due to potential side effects of specific chemotherapeutic agents, the precise regime utilised should be considered.

GM2 MED.E.030 Haematology

CHRONIC LEUKAEMIA

A fit assessment may be considered if the chronic leukaemia has been diagnosed as:

(a) lymphatic at stages 0, I, and possibly II without anaemia and minimal treatment; or
(b) stable 'hairy cell' leukaemia with normal haemoglobin and platelets.

GM3 MED.E.030 Haematology

SPLENOMEGALY

(a) Splenomegaly should not preclude a fit assessment, but should be assessed on an individual basis.
(b) Associated pathology of splenomegaly is e.g. treated chronic malaria.
(c) An acceptable condition associated with splenomegaly is e.g. Hodgkin's lymphoma in remission.

MED.E.035 Genitourinary system

(a) Urinalysis shall form part of every aero-medical examination. The urine shall contain no abnormal element considered to be of pathological significance.
(b) Applicants with any sequelae of disease or surgical procedures on the genitourinary system or its adnexa likely to cause incapacitation, in particular any obstruction due to stricture or compression, shall be assessed as unfit.
(c) Applicants with a genitourinary disorder, such as:

1) renal disease;

2) one or more urinary calculi

may be assessed as fit subject to satisfactory renal/urological evaluation.

(d) Applicants who have undergone:

1) a major surgical operation in the genitourinary system or its adnexa involving a total or partial excision or a diversion of its organs; or

2) major urological surgery

shall be referred to the GCAA for an aero-medical assessment after full recovery before a fit assessment may be considered.

AMC1 MED.E.035 Genito-urinary system

(a) Abnormal urinalysis

Any abnormal finding on urinalysis requires investigation. This investigation should include proteinuria, haematuria and glycosuria.

(b) Renal disease

(1) Applicants presenting with any signs of renal disease should be assessed as unfit. A fit assessment may be considered if blood pressure is satisfactory and renal function is acceptable.

(2) Applicants requiring dialysis should be assessed as unfit.

(c) Urinary calculi

(1) Applicants with an asymptomatic calculus or a history of renal colic require investigation. A fit assessment may be considered after successful treatment for a calculus and with appropriate follow-up.

(2) Residual calculi should be disqualifying unless they are in a location where they are unlikely to move and give rise to symptoms.

(d) Renal and urological surgery

(1) Applicants who have undergone a major surgical operation on the genitourinary system or its adnexa involving a total or partial excision or a diversion of any of its organs should be assessed as unfit until recovery is complete, the applicant is asymptomatic and the risk of secondary complications is minimal.

(2) Applicants with compensated nephrectomy without hypertension or uraemia may be assessed as fit.

(3) Applicants who have undergone renal transplantation may be considered for a fit assessment if it is fully compensated and tolerated with only minimal immuno-suppressive therapy after at least 12 months.

(4) Applicants who have undergone total cystectomy may be considered for a fit assessment if there is satisfactory urinary function, no infection and no recurrence of primary pathology.

GM1 MED.E.035 Genito-urinary system

(a) Urinary Calculi

(1) Asymptomatic stone(s)

Incidental finding of renal tract stones, the ATCO may be considered for a fit assessment with annual urologist review (Radiological investigation, biochemistry, metabolic screen and any other relevant investigation).

(2) Residual stone(s)

A residual stone, or stones, may often be asymptomatic. If in the calyces or collecting system, they remain a hazard and should be cleared before the individual can be assessed as fit. If the stone is parenchymal, then the hazard is minimal and the ATCO may be considered fit with annual Urologist review.

(3) Recurrent renal colic

Recurrent renal colic when associated with calculi should be investigated. If a comprehensive urological examination indicates a condition susceptible to treatment and subsequent review over an extended period after treatment shows no stone in the calyces or collecting system, and no

recurrent of symptoms, the individual may be assessed as fit. Urological follow-up with adequate techniques should be required by the GCAA at year 2 and 7.

(4) Previous history of uretric colic more than 7 years

ATCO with history of documented renal colic more than 7 years ago can be assessed as fit if the urologist review with appropriate investigations reveals stone free and normal kidneys. If the investigation reveals residual stone the applicant will be assessed as fit and he should have a regular urologist review. If he underwent successful treatment and the ATCO remains asymptomatic he may be given unrestricted medical certificates.

MED.E.040 Infectious disease

(a) Applicants who are HIV positive shall be assessed as unfit.
(b) Applicants diagnosed with or presenting symptoms of infectious disease such as:
  (1) acute syphilis;
  (2) active tuberculosis;
  (3) infectious hepatitis;
  (4) tropical diseases

shall be referred to the GCAA for an aero-medical assessment. A fit assessment may be considered after full recovery and specialist evaluation provided the GCAA has sufficient evidence that the therapy does not compromise the safe exercise of the privileges of the licence.

AMC1 MED.E.040 Infectious disease

(a) Infectious disease — General

In cases of infectious disease, consideration should be given to a history of, or clinical signs indicating, underlying impairment of the immune system.

(b) Tuberculosis
  (1) Applicants with active tuberculosis should be assessed as unfit. A fit assessment may be considered following completion of therapy.
  (2) Applicants with quiescent or healed lesions may be assessed as fit. Specialist evaluation should consider the extent of the disease, the treatment required and possible side effects of medication.

(c) Syphilis

Applicants with acute syphilis should be assessed as unfit. A fit assessment may be considered in the case of those fully treated and recovered from the primary and secondary stages.

(d) HIV positivity

1) HIV positivite is disqualifying.

2) The occurrence of AIDS related complex is disqualifying

(e) Infectious hepatitis

Applicants with infectious hepatitis should be assessed as unfit. A fit assessment may be considered once the applicant has become asymptomatic after treatment and specialist evaluation. Regular review of the liver function should be carried out.

GM1 MED.E.040 Infectious disease

HIV INFECTION

(a) here is no requirement for routine testing of HIV status, but testing may be carried out on clinical indication.

GM2 MED.E.040 Infectious disease

(a) Infectious Hepatitis:

Jaundice, as a result of inflammation of the liver, may be caused by infections or toxic agents.

Active infectious hepatitis is incompatible with controlling duties. Fit assessment may be considered by the AME in conjunction with the GCAA after full clinical recovery and normal liver function tests.

Note: Any form of chronic hepatitis (as indicated by serologic markers and /or objective evidence of liver function impairment) will be disqualifying for certification.

(b) Hepatitis B:

(1) Acute hepatitis B is disqualifying. Certification may be considered upon full recovery (viral clearance).

(2) Chronic hepatitis B – Certification may be considered in ATCO in the 'immune tolerant' or 'inactive HBV carrier state'.

(3) ATCOs are required to submit a report from a liver specialist, to include:

- History of infection and Current symptoms;
- Stability of condition;
- Liver Function Tests;
- HBV serology;
- HBV DNA levels;
- Alphafoetoprotein (AFP);
- Report of ultrasound of the liver.

(4) Requirement for treatment is disqualifying.

(c) Hepatitis C:

(1) Applicant with HCV-antibody positive and HCV-PCR is considered unfit for certification, recertification may be considered for Class 3 with restricted medical certificate.

(2) ATCOs are required to submit a report from a liver specialist, to include:

- History of infection;
- Current symptoms including any CNS effects;
- Stability of Condition;
- Liver Function Tests;
- HCV Serology;
- HCV RNA and genotype;
- Report of ultrasound of the liver including biopsy results if available.

(3) Requirement for treatment is disqualifying.

MED.E.045 Obstetrics and gynaecology

(a) Applicants who have undergone a major gynaecological operation shall be assessed as unfit until full recovery.

(b) Pregnancy

In the case of pregnancy, if the AeMC or AME considers that the licence holder is fit to exercise her privileges, he/she shall limit the validity period of the medical certificate to the end of the 34th week of gestation. The licence holder shall undergo a revalidation examination and assessment after full recovery following the end of the pregnancy.

AMC1 MED.E.045 Obstetrics and gynaecology

(a) Gynaecological surgery

Applicants who have undergone a major gynaecological operation should be assessed as unfit until recovery is complete, the applicant is asymptomatic and the risk of secondary complications or recurrence is minimal.

(b) Pregnancy

(1) A pregnant licence holder may be assessed as fit during the first the 34 weeks of gestation provided obstetric evaluation continuously indicates a normal pregnancy.

(2) The AeMC or AME, or GCAA, should provide written advice to the applicant and the supervising physician regarding potentially significant complications of pregnancy which may negatively influence the safe exercise of the privileges of the licence.

MED.E.050 Musculoskeletal system

(a) Applicants shall have satisfactory functional use of the musculoskeletal system to enable them to safely exercise the privileges of the licence.

(b) Applicants with static or progressive musculoskeletal or rheumatologic conditions likely to interfere with the safe exercise of the licence privileges shall be referred to the GCAA. A fit assessment may be considered after satisfactory specialist evaluation.

AMC1 MED.E.050 Musculoskeletal system

(a) Applicants with any significant sequelae from disease, injury or congenital abnormality affecting the bones, joints, muscles or tendons with or without surgery require full evaluation prior to a fit assessment.

(b) Abnormal physique, including obesity, or muscular weakness may require medical assessment and particular attention should be paid to an assessment in the working environment.

(c) Locomotor dysfunction, amputations, malformations, loss of function and progressive osteoarthritic disorders should be assessed on an individual basis in conjunction with the appropriate operational expert with a knowledge of the complexity of the tasks of the applicant.

(d) Applicants with inflammatory, infiltrative, or degenerative disease of the musculoskeletal system may be assessed as fit provided the condition is in remission and the medication is acceptable.

MED.E.055 Psychiatry

(a) Applicants shall have no established medical history or clinical diagnosis of any psychiatric disease or disability, condition or disorder, acute or chronic, congenital or acquired, which is likely to interfere with the safe exercise of the privileges of the applicable licence(s).

(b) Applicants with a mental or behavioural disorder due to alcohol or other use or abuse of psychoactive substances shall be assessed as unfit pending recovery and freedom from substance use and subject to satisfactory evaluation as per GCAA protocol and after successful treatment. Applicants shall be referred to the GCAA.

(c) Applicants with a psychiatric condition such as:

(1) mood disorder;

(2) neurotic disorder;

(3) personality disorder;

(4) mental or behavioural disorder

shall undergo satisfactory psychiatric evaluation before a fit assessment may be considered. Applicants shall be referred to the GCAA for the assessment of their medical fitness.

(d) Applicants with a history of a single or repeated acts of deliberate self-harm shall be assessed as unfit. Applicants shall be referred to the GCAA and shall undergo satisfactory psychiatric evaluation before a fit assessment may be considered.

(e) Applicants with an established history or clinical diagnosis of schizophrenia, schizotypal, delusional disorder or mania shall be assessed as unfit.

AMC1 MED.E.055 Psychiatry

(a) Disorders due to alcohol or other substance use

(1) A fit assessment may be considered after successful treatment, a period of documented sobriety or freedom from substance use, and review by a psychiatric specialist. The GCAA, with the advice of the psychiatric specialist, should determine the duration of the period to be observed before a medical certificate can be issued (cross reference to alcohol rehabilitation program)

(2) Depending on the individual case, treatment may include in-patient treatment of some weeks.

(3) Continuous follow-up, including blood testing and peer reports may be required indefinitely.

(b) Mood disorder

Applicants with an established mood disorder should be assessed as unfit. After full recovery and after full consideration of an individual case a fit assessment may be considered, depending on the characteristics and gravity of the mood disorder. If stability on maintenance psychotropic medication is confirmed, a fit assessment with an appropriate limitation may be considered. If the dosage of the medication is changed, a further period of unfit assessment should be required. Regular specialist supervision should be required. ATCO with Bipolar Disorder is disqualifying.

(c) Psychotic disorder

Applicants with a history, or the occurrence, of a functional psychotic disorder is disqualifying unless it can be confirmed that the original diagnosis was inappropriate or inaccurate, or was a result of a single toxic episode.

(d) Deliberate self-harm

A single self-destructive action or repeated overt acts are disqualifying. A fit assessment may be considered after full consideration of an individual case and should require psychiatric or psychological review.

GM1 MED.E.055 Psychiatry

1 ALCOHOL SCREENING TESTS

Indications

(i) Screening as part of over 60 medical certifications

(ii) As part of the medical evaluation determined by the AME during the regulatory medical examination

(iii) New cases of cardiac arrhythmias especially Atrial Fibrillation, Insomnia, Mood disorders, Liver function derangement, Isolated Hypertriglyceridaemia, Newly diagnosed Hypertension, Newly diagnosed Diabetes, Suspicious Musculoskeletal injuries e.g. Rib fractures or Metacarpal fractures or Road Traffic Accidents, New onset of Gout

(iv) Any elevated MCV, isolated elevated GGT, elevated ferritin and elevated CDT detected on routine testing not related with clinical findings and investigated appropriately.

(v) Referral following an aviation incident or work related issues.

(vi) 3rd party notifications for suspected Drug or Alcohol misuse.

(vii) Drink/Drug drive arrests whether local or international

2 Screening Tools:

2.1 A detailed interview and system review should be conducted with emphasis on the following:

- Alcohol intake – amount /type/how often
- Smoking history

- Family history of substance misuse
- Physical dependence – withdrawal symptoms
- Sickness absence record-pattern of frequent, short term, last minute leave is often seen with substance-use disorder.

Neurological issues

- Cardiac – arrhythmias/hypertension
- Gastroenterology – Gastritis/GORD
- Injuries- recurrent or unexplained
- Legal and social problems
- Marital disharmony
- Psychological problems

2.2. Examination

- Physical dependence – signs of withdrawal (e.g. irritability, restlessness, apprehension …)
- General appearance- complexion, smell of alcohol
- Liver damage – spider naevi, hepatomegaly
- Hypertension
- Pancreatitis
- Cardiomegaly, arrhythmias
- Mood issues- anger/ agitation, irritability, apprehension
- Neurological disturbance
- Cognitive disturbance

2.3. Questionnaire

AUDIT (Alcohol Use Disorders Identification test) – score of 8 or more suggests increased risks for hazardous/ harmful drinking alcohol.

It should be correlated with history, clinical examination and further investigations.

2.2.4. Laboratory Testing

- GGT (gamma-glutamyl trasferase): Is raised in about 80% of heavy drinkers, but is not a completely specific marker for harmful use of alcohol.

- MCV (mean corpuscular volume): The MCV is raised above normal values in about 60% of alcohol dependent people and, like GGT, is not a completely specific marker. The value takes 1-3 months to return to normal following abstinence.
- CDT (carbohydrate deficient transferring): CDT has similar properties to GGT in so far its use as a screening test is concerned. It is more specific to heavy drinking than GGT, but perhaps less sensitive to intermittent "binge" drinking. In persons who consume significant quantities of alcohol (> 4 or 5 standard drinks per day for two weeks or more), CDT will increase and is an important marker for alcohol –use disorder. CDT usually increases within one week of the onset of heavy drinking and recovers 1 to 3 weeks after cessation of drinking. Any elevation of CDT requires immediate suspension, a liver ultrasound to assess for biliary disease and a full report from a substance abuse specialist to the GCAA regarding alcohol intake.

Note: CDT may not be measurable due to genetic variations. Other tests should be used in these cases e.g. PeTH blood testing or Hair testing for Alcohol.

3 Protocol for Rehabilitation/Treatment/Reinstatement and Follow Up

(i) If there is evidence in the history, examination, laboratory findings, AUDIT scores or psychological assessments suggestive of a possible substance use disorder, the licence holder shall be suspended until all the investigations are complete.

(ii) The AME should refer the licence holder to Substance Abuse Specialist familiar with aviation environment to determine the diagnosis to FAA standards.

(iii) If the substance abuse specialist assessment confirmed the diagnosis of alcohol use disorder to FAA standards, then it will be required for the ATCO to undertake a minimum 28-day in-patient rehabilitation stay under the Minnesota model at a recognized treatment centre.

(iv) Aftercare and long-term follow-up. Even intensive in-patient care, is unlikely to result in long term recovery unless it is followed by on-going assistance. In the workplace, this must include:

(v) Monitoring, preferably by a named employee assistance professional or named designated peer.

(vi) Periodic re-evaluation by a substance abuse specialist, it will be determined on an individual basis by the treatment facility and the treating SAME.

(vii) Involvement in a group such as Alcoholics Anonymous (AA) can provide affected individuals with a continuing source of support during their ongoing rehabilitation process. Three support group meetings per week and a log of all meetings attended should be kept for review with SAME.

(viii) Monthly Senior AME contact

(ix) Monthly Blood tests

(x) Urine, breath and or other tests as deemed appropriate by the SAME or specialists

(xi) A minimum of fifteen unannounced breath alcohol testing per year, this may include the non-work related testing.

(xii) Reinstatement after successful treatment and rehabilitation

- The SAME should send all initial reports, investigation result, and substance abuse specialist report along with all documentation of successful follow up program to the GCAA.
- This can only be a minimum of three months after the treatment has been completed.
- The GCAA shall convene an aeromedical board consisting of one approved GCAA Psychiatrists, an approved Psychologist and two SAME.
- Simulator assessment should be part of the board evaluation for cognitive functions.
- The AMS will evaluate all the reports and if in the documentation of appropriate treatment and abstinence is acceptable, the AMS will permit the ATCO to return to controlling duties with restricted licence.
- The follow up will be indefinitely.
- The initial licence will be six monthly for the first 3 years of post-rehabilitation licensing.
- Each licence application shall have a letter from the applicant's management/ HR manager detailing sick days and any issues related to employment.
- If relapse occurs at any time during the follow up program, the ATCO will be removed permanently from controlling duties.

Failure to meet any of the mitigation strategies enforced with the reinstatement will lead to suspension and further investigation by the GCAA. The SAME shall immediately suspend the licence holder and inform the GCAA about this failure.

4. Major Depression

4.1 Protocol for licensing ATCOs with Major Depression

(a) Initial diagnosis of a Depressive episode (according to ICD 10/or DSM V criteria) and treatment must be initiated by a GCAA approved Psychiatrist.

(b) Baseline Clinical Psychologist assessment must be done by GCAA approved Psychologist at diagnosis as a baseline analysis. The Psychometric testing to include Hamilton Score if

depressed or Becks Anxiety Inventory for Anxiety. Additional tests at the discretion of the Approved GCAA Psychologist.

(c) Baseline blood tests to exclude co-morbid Drug and Alcohol misuse including a urine drug screen, full blood count, liver function tests, thyroid function tests and carbohydrate deficient transferrin.

(d) The treatment options include Cognitive Behavioural Therapy (CBT), and or Selective Serotonin Re-uptake Inhibitors (SSRI's). The SSRI's allowed to be used are Citalopram, Escitalopram, Sertraline and Fluoxetine. Other treatment options must be assessed on individual basis.

(e) Initial grounding should be for at least four weeks post commencement of treatment. This period to:

- Check for potential side effects
- Improvement in the condition
- Stability

(f) The ATCO will be reviewed monthly by the treating Psychiatrist and AME with a Hamilton rating score or Becks anxiety inventory.

(g) Once stable and there is absence of any side effects confirmed by the treating Psychiatrist, the AME will arrange a psychological assessment if deemed necessary and a functional simulator assessment.

(h) On completion of all the tests to a satisfactory level, a second Psychiatrist evaluation will be arranged.

(i) The AME will send the following reports to the GCAA:

i) Initial psychiatrist reports with all details of the case as per GCAA form.

ii) Initial psychologist assessment including the result of psychometric test.

iii) Monthly follow up of the case from the first Psychiatrist and the AME.

iv) Second psychometric test result after stability of the condition.

v) The second psychiatrist evaluation of the condition after stabilisation of the condition.

vi) simulator test result.

(j) The GCAA will evaluate the reports and determine the fitness of the applicant. Class 3 may be granted medical certificate with SIC limitation and other appropriate limitation.

(k) After returning to controlling duties the ATCO must ground himself if he feels a worsening of his condition or cognitive functioning.

(l) After returning to controlling duties and being treated, the ATCO must be evaluated every month by GCAA Approved Psychiatrist, Psychologist or Senior AME. The review must include Hamilton score if depressed, if the score is above 8, the ATCO should be suspended for further assessment and treatment.

(m) The AME must also review the Applicant who returns to controlling duties on treatment every month to confirm the stability of his medical condition. Any change in his condition must immediately be evaluated by Psychiatrist.

(n) Any decline in cognitive function detected on routine duties (by Colleague or Supervisor) or during Simulator check must necessitate immediate suspension and Psychiatric re-evaluation.

(o) Any suicidal ideation during the course of stability will necessitate suspension and further Psychiatric re-evaluation.

(p) Evidence of non-compliance with treatment or ignorance of Psychiatric or AME reviews, necessitates immediate suspension.

(q) Once CBT treatment has finished, ATCO should be reviewed on monthly basis by AME and 3 monthly by the Psychiatrist, and if after at least six months there are no further areas of concern, the GCAA will convene a second Aeromedical evaluation board, at the request of the AME, to reassess the ATCO's condition to remove the limitation.

(r) Follow up should continue as directed by the Psychiatrist and AME which may be indefinitely.

(s) For ATCO completing SSRIs treatment, a four week ground trial is required to assess any withdrawal symptoms from cessation of treatment. The psychiatrist should liaise with the AME regarding the timing of this.

(t) Once successful withdrawal has occurred, a report to be sent to the GCAA recommending return to controlling duties with appropriate limitation off medication. The ATCO will be subjected to monthly AME or Psychiatric review.

(u) After minimum of 6 month controlling duties with satisfactory Psychiatric and AME reviews, a full report recommending removal of limitation to be forwarded to the GCAA for their consideration. Second Psychiatrist evaluation may be required by the GCAA.

(v) Follow up should continue as directed by the Psychiatrist and AME which may be indefinitely.

4.2 Specification for Psychiatric report

(a) Applicant details

(b) History of presenting complaint

(c) Current neurovegetative signs and symptoms

(d) Past psychiatric history

(e) Substance abuse history

(f) Family psychiatric history

(e) Medical History

(g) Social history

(h) Career history

(i) Forensic history

(j) Mental status examination

(k) Diagnosis

(l) Treatment plan

(m) Follow up requirements

(n) Prognosis

(o) Fitness assessment requirement

4.3 Psychiatric report specification

Refer to LIC-MED- 034 forms.

MED.E.060 Psychology

(a) Applicants who present with stress-related symptoms that are likely to interfere with their ability to exercise the privileges of the licence safely shall be referred to the GCAA. A fit assessment may only be considered after a psychological and/or psychiatric evaluation has demonstrated that the applicant has recovered from stress-related symptoms.

(b) A psychological evaluation may be required as part of, or complementary to, a specialist psychiatric or neurological examination.

(c) A psychological evaluation by an approved Psychologist may be required as part of initial GCAA examination for Class 3 licence applicant.

(d) A psychological evaluation by an approved Psychologist shall be done for all initial over 60 applicants.

AMC1 MED.E.060 Psychology

(a) If a psychological evaluation is indicated, it should be carried out by a psychologist taking into account the ATC environment and the associated risks.

(b) Where there is established evidence that an applicant may have a psychological disorder, the applicant should be referred for psychological opinion and advice.

(c) Established evidence should be verifiable information from an identifiable source which related to the mental fitness or personality of a particular individual. Sources for this

information can be accidents or incidents, problems in training or competency assessments, behaviour or knowledge relevant to the safe exercise of the privileges of the licence.

(d) The psychological evaluation may include a collection of biographical data, the administration of aptitude as well as personality tests and psychological interview.

(e) The psychologist should submit a written report to the AME, AeMC or GCAA as appropriate, detailing his/her opinion and recommendation.

GM1 MED.B.060 Psychology

1. Any company wishes to mandate initial Psychometric for their Class 3 applicant should use the service of an approved GCAA Psychologist whenever applicable and use an international acceptable tools for this purpose Details of assessment can be found in Appendix 5.

MED.E.065 Neurology

(a) Applicants with an established history or clinical diagnosis of:

(1) epilepsy except in cases in (b)(1) and (2) below;

(2) recurring episodes of disturbance of consciousness of uncertain cause;

(3) conditions with a high propensity for cerebral dysfunction;

shall be assessed as unfit.

(b) Applicants with an established history or clinical diagnosis of:

(1) epilepsy without recurrence after the age of 5;

(2) epilepsy without recurrence and off all treatment for more than 10 years;

(3) epileptiform EEG abnormalities and focal slow waves;

(4) progressive or non-progressive disease of the nervous system;

(5) a single episode of disturbances or loss of consciousness;

(6) brain injury;

(7) spinal or peripheral nerve injury;

(8) disorders of the nervous system due to vascular deficiencies including haemorrhagic and ischaemic events shall be referred to the licensing authority and undergo further evaluation before a fit assessment may be considered.

AMC1 MED.E.065 Neurology

(a) Electroencephalography

(1) EEG should be carried out when indicated by the applicant's history or on clinical Grounds.

(2) Epileptiform paroxysmal EEG abnormalities and focal slow waves should be disqualifying. A fit assessment may be considered after further evaluation.

(b) Epilepsy

(1) Applicants who have experienced one or more convulsive episodes after the age of 5 should be assessed as unfit.

(2) A fit assessment may be considered if:

(i) the applicant is seizure free and off medication for a period of at least 10 years;

(ii) full neurological evaluation shows that a seizure was caused by a specific non-recurrent cause, such as trauma or toxin.

(3) Applicants who have experienced an episode of benign Rolandic seizure may be assessed as fit provided the seizure has been clearly diagnosed including a properly documented history and typical EEG result and the applicant has been free of symptoms and off treatment for at least 10 years.

(c) Neurological disease

Applicants with any stationary or progressive disease of the nervous system which has caused or is likely to cause a significant disability should be assessed as unfit. A fit assessment may be considered in cases of minor functional losses associated with stationary disease after full neurological evaluation.

(d) Disturbance of consciousness

Applicants with a history of one or more episodes of disturbed consciousness may be assessed as fit if the condition can be satisfactorily explained by a non-recurrent cause. A full neurological evaluation is required.

(e) Head injury

Applicants with a head injury which was severe enough to cause loss of consciousness or is associated with penetrating brain injury should be evaluated by a consultant neurologist. A fit assessment may be considered if there has been a full recovery and the risk of epilepsy is sufficiently low. Behavioural and cognitive aspects should be taken into account.

GM1 MED.E.065 Neurology

TRAUMATIC BRAIN INJURY

Classification of head injury and aeromedical implications

1. Mild Head Injury

This is characterized by:

-Transient loss or alteration of consciousness without any focal neurological deficit and with rapid return to alertness and orientation Post-traumatic amnesia (PTA) occurs when a person is conscious but ongoing events are not recorded in the memory. This can sometimes be very

difficult to evaluate as there may be no witnesses or may be poor recall or record keeping. The assumption must always therefore err on the side of caution with regard to defining periods of amnesia or loss of consciousness. For a minor head injury the duration of this lapse must be a clearly documented period of amnesia being less than one hour; and there must be no Post-traumatic syndrome (PTS). PTS comprises a symptom complex including:-Dizziness/ Vertigo; Emotional impairment; Headaches; Neurological signs and or Intellectual/ Cognitive impairments.

- Normal CT scan and MRI i.e. no skull fractures or cerebral bleeding

-Normal neuropsychological testing

1.1 Aero medical disposition

With the above criteria all satisfied, the main determinant factor for certification decision will be the PTA duration.

-A clear documented history of PTA lasting 1 hour or less and no LOC, the applicants are generally considered to be fit for duty after four weeks.

- A clear documented history of PTA/LOC lasting 1-12 hours, the applicants may be granted restricted medical certification by one year.

-A clear documented history of PTA/LOC more than 12 hours a restricted certification can be considered at two years.

In all cases, formal confirmation of neurological fitness should precede a return to controlling duties and referral to the GCAA for a final decision is required.

2. Significant head injury

Presence of any of the following:

- PTA/LOC >12 hrs, and

- Focal neurological deficits

- Basal Skull fracture or Depressed fracture (Linear Fracture with intact dura not included)

-Surgical or traumatic penetration of the dura

-Neurological/intellectual impairment

-Any intracranial bleeding (Subdural Hematoma, Epidural Hematoma, Intracranial Hemorrhage, Intraventricular Hemorrhage, Subarachnoid Hemorrhage)

- Abnormal EEG

2.1 Aero medical disposition

In the presence of any of the above findings, the licence holder must be assessed unfit.

However, reconsideration of certification decision may be done by the GCAA a 2 years after the index event. In this case a senior Aeromedical Board will be conducted.

The main determinant factor for certification decision will be the:

-Extent and nature of any neurological deficit.

-Risk of post traumatic epilepsy

2.1.1 Certification Requirements:

i. Two Neurology consultations by Neurologists acceptable to the GCAA supporting recertification

ii. Comprehensive Neuro-psychological evaluations

iii. Brain imaging (CT or MRI) at index and no sooner than 2 years afterwards

iv. Normal Sleep deprivation / Photo stimulation EEG.

v. Simulator assessment

vi. Senior AME medical board

Final aeromedical disposition of medical certification and return to duties will be considered individually. Those applicants with a full clinical recovery may be considered for a fit assessment after 2 years following the above detailed rigorous assessment.

Presence of Epilepsy; Penetrating skull injuries; Debilitating neurological deficits; Reduced Cognitive functioning and or Brain abscess will be permanently disqualifying from all types of medical certification.

GM2 MED.E.065 Neurology - Migraine

(d) Aeromedical disposition should be based on individual risk assessment and the evaluation will be based on the following criteria:

(1) Detailed history of headaches and satisfactory Neurologist report

(2) presence or absence of significant neurological symptoms (e.g Hemiparesthesia, Hemiplegia, Retinal /occipital phenomena, Autonomic symptoms of nausea, vomiting etc.

(3) Treatment used to treat the attack or prevent the attack

(4) Frequency of the attacks

(5) Presence of specific precipitant factors

(e) Generally, If no underlying disease is found and the individual remains free of further attacks for a period of 3 to 6 months, a return to aviation duties may be approved with restricted licence

(f) If the migraine attacks are infrequent and due to a specific precipitant, and avoidance of this precipitants results in no further migraines an unrestricted licence may be granted if a period of more than 2 years since the last episode has elapsed.

(g) Frequent migraine attacks are incompatible with ATCO duty.

(h) Aeromedical board for revocation should be considered if the migraine remains frequent and uncontrolled for 2 years or more.

(i) Accredited Medical conclusion for Migraine cases usually is accepted for aeromedical disposition, however GCAA may request for aeromedical board if required.

MED.E.070 Visual system

(a) Examination

(1) A comprehensive eye examination shall form part of the initial examination and be undertaken periodically depending on the refraction and the functional performance of the eye.

(2) A routine eye examination shall form part of all revalidation and renewal examinations.

(3) Applicants shall undergo tonometry at the first revalidation examination after the age of 40, on clinical indication and if indicated considering the family history.

(4) Applicants shall supply the AeMC or AME with an ophthalmic examination report in cases where:

(i) the functional performance shows significant changes;

(ii) the distant visual standards can only be reached with corrective lenses;

(5) Applicants with a high refractive error shall be referred to the GCAA.

(b) Distant visual acuity, with or without optimal correction, shall be 6/9 (0,7) or better in each eye separately, and visual acuity with both eyes shall be 6/6 (1,0) or better.

(c) Initial applicants having monocular or functional monocular vision, including eye muscle balance problems, shall be assessed as unfit. At revalidation or renewal examinations the applicant may be assessed as fit provided that both an ophthalmological examination and the functional assessment are satisfactory. The applicant shall be referred to the GCAA.

(d) Initial applicants with acquired substandard vision in one eye shall be assessed as unfit. At revalidation or renewal examinations the applicant shall be referred to the GCAA and may be assessed as fit provided that both an ophthalmological examination and functional test are satisfactory.

(e) Applicants shall be able to read an N5 chart or equivalent at 30–50 cm and an N14 chart or equivalent at 60–100 cm distance, if necessary with the aid of correction.

(f) Applicants shall have normal fields of vision and normal binocular function.

(g) Applicants who have undergone eye surgery shall be assessed as unfit until full recovery of the visual function. A fit assessment may be considered by the GCAA subject to satisfactory ophthalmic evaluation.

(h) Applicants with a clinical diagnosis of keratoconus shall be referred to the GCAA and may be assessed as fit subject to a satisfactory examination by an ophthalmologist.

(i) Applicants with diplopia shall be assessed as unfit.

(j) Spectacles and contact lenses

(1) If satisfactory visual function for the rated duties is achieved only with the use of correction, the spectacles or contact lenses must provide optimal visual function, be well tolerated, and suitable for air traffic control purposes.

(2) No more than one pair of spectacles, when worn during the exercise of licenced privileges, shall be used to meet the visual requirements at all distances.

(3) A spare set of similarly correcting spectacles shall be readily available when exercising the privileges of the licence(s).

(4) Contact lenses, when are worn during the exercise of licenced privileges, shall be mono-focal, non-tinted and not orthokeratological. Monovision contact lenses shall not be used.

(5) Applicants with a large refractive error shall use contact lenses of high index spectacle lenses.

AMC1 MED.E.070 Visual system

(a) Eye examination

(1) At each aero-medical revalidation examination, an assessment of the visual fitness should be undertaken and the eyes should be examined with regard to possible pathology.

(2) All abnormal and doubtful cases should be referred to an ophthalmologist.

Conditions which indicate ophthalmological examination include, but are not limited to, a substantial decrease in the uncorrected visual acuity, any decrease in best corrected visual acuity and/or the occurrence of eye disease, eye injury, or eye surgery.

(3) Where ophthalmological examinations are required for any significant reason, this should be imposed as a limitation on the medical certificate.

(4) The effect of multiple eye conditions should be evaluated by an ophthalmologist with regard to possible cumulative effects. Functional testing in the working environment may be necessary to consider a fit assessment.

(5) Visual acuity should be tested using Snellen charts, or equivalent, under appropriate illumination. Where clinical evidence suggests that Snellen may not be appropriate, Landolt 'C' may be used.

(b) Comprehensive eye examination

A comprehensive eye examination by an eye specialist is required at the initial examination. All abnormal and doubtful cases should be referred to an ophthalmologist. The examination should include:

(1) history;

(2) visual acuities — near, intermediate and distant vision; uncorrected and with best optical correction if needed;

(3) objective refraction — hyperopic initial applicants with a hyperopia of more than +2 dioptres and under the age of 25 in cycloplegia;

(4) ocular motility and binocular vision;

(5) colour vision;

(6) visual fields;

(7) tonometry;

(8) examination of the external eye, anatomy, media (slit lamp) and fundoscopy;

(9) assessment of contrast and glare sensitivity.

(c) Routine eye examination

At each revalidation or renewal examination an assessment of the visual fitness of the applicant should be performed and the eyes should be examined with regard to possible pathology. All abnormal and doubtful cases should be referred to a GCAA approved ophthalmologist. This routine eye examination should include:

(1) history;

(2) visual acuities — near, intermediate and distant vision; uncorrected and with best optical correction if needed;

(3) morphology by ophthalmoscopy;

(4) further examination on clinical indication.

(d) Refractive error

(1) Applicants with a refractive error exceeding +5.0 dioptres should be assessed as unfit.

(2) Applicants with a refractive error between +5.0/-6.0 dioptres may be assessed as fit provided optimal correction has been considered and no significant pathology is demonstrated. If the refractive error exceeds +3.0/-3.0 dioptres, a 4-yearly follow up by an eye specialist should be required.

(3) Applicants with:

(i) a refractive error exceeding -6 dioptres;

(ii) an astigmatic component exceeding 3 dioptres; or

(iii) anisometropia exceeding 3 dioptres;

may be considered for a fit assessment if:

(A) no significant pathology can be demonstrated;

(B) optimal correction has been considered;

(C) visual acuity is at least 6/6 (1.0) in each eye separately with normal visual fields while wearing the optimal spectacle correction;

(D) 2-yearly follow-up is undertaken by an eye specialist.

(4) Applicants who need a myopic correction exceeding –6 dioptres should wear contact lenses or spectacles with high-index lenses in order to minimise peripheral field distortion.

(e) Convergence

Applicants with convergence outside the normal range may be assessed as fit provided it does not interfere with near vision (30-50 cm) or intermediate vision (100 cm) with or without correction.

(f) Substandard vision

(1) Applicants with reduced central vision in one eye may be assessed as fit for a revalidation or renewal of a medical certificate if the binocular visual field is normal and the underlying pathology is acceptable according to ophthalmological evaluation. Testing should include functional testing in the appropriate working environment.

(2) Applicants with acquired substandard vision in one eye (monocularity, functional monocular vision including eye muscle imbalance) may be assessed as fit for revalidation or renewal if the ophthalmological examination confirms that:

(i) the better eye achieves distant visual acuity of 1.0 (6/6), corrected or uncorrected;

(ii) the better eye achieves intermediate and near visual acuity of 0.7 (6/9), corrected or uncorrected;

(iii) there is no significant ocular pathology; and

(iv) a functional test in the working environment is satisfactory;

(v) in the case of acute loss of vision in one eye, a period of adaptation time has passed from the known point of visual loss, during which the applicant is assessed as unfit.

(3) An applicant with a monocular visual field defect may be assessed as fit if the binocular visual fields are normal and the he passed successfully the functional assessment.

(g) Keratoconus

Applicants with keratoconus may be considered for a fit assessment if the visual requirements are met with the use of corrective lenses and periodic review is undertaken by an ophthalmologist.

(h) Heterophoria

Applicants with heterophoria (imbalance of the ocular muscles) exceeding when measured with optimal correction, if prescribed:

(1) at 6 metres:

2.0 prism dioptres in hyperphoria,

10.0 prism dioptres in esophoria,

8.0 prism dioptres in exophoria and

(2) at 33 centimetres:

1.0 prism dioptre in hyperphoria,

8.0 prism dioptres in esophoria,

12.0 prism dioptres in exophoria

may be assessed as fit provided that orthoptic evaluation demonstrates that the fusional reserves are sufficient to prevent asthenopia and diplopia. TNO testing or equivalent should be carried out to demonstrate fusion.

(i) Eye surgery

(1) After refractive surgery or surgery of the cornea including cross linking, a fit assessment may be considered, provided:

(i) pre-operative refraction was less than +5 dioptres;

(ii) satisfactory stability of refraction has been achieved (less than 0.75 dioptres variation diurnally);

(iii) examination of the eye shows no post-operative complications;

(iv) glare sensitivity is normal;

(v) mesopic contrast sensitivity is not impaired;

(vi) Evaluation is undertaken by an ophthalmologist.

(2) Cataract surgery

Applicants who underwent cataract surgery may be assessed as fit after 2 months provided the visual requirements are met either with contact lenses or with intraocular lenses (monofocal, non-tinted).

(3) Retinal surgery/retinal laser therapy

(i) After retinal surgery applicants may be assessed fit around 6 months after successful surgery. Annual ophthalmological follow-up may be necessary. Longer periods may be acceptable after 2 years on recommendation of the ophthalmologist. A fit assessment may be considered earlier if recovery is complete.

(ii) After successful retinal laser therapy applicants may be assessed as fit provided an ophthalmological evaluation shows stability.

(4) Glaucoma surgery

After glaucoma surgery applicants may be assessed as fit around 6 months after successful surgery. 6-monthly ophthalmological examinations to follow-up secondary complications caused by the glaucoma may be necessary. A fit assessment may be considered earlier if recovery is complete.

(5) Extra ocular muscle surgery

A fit assessment may be considered not less than 6 months after surgery and after a satisfactory ophthalmological evaluation.

(j) Visual correction

Spectacles should permit the licence holder to meet the visual requirements at all distances.

Note: Bifocal contact lenses and contact lenses correcting for near vision only are not acceptable.

MED.E.075 Colour vision

Applicants shall be normal trichromates.

AMC1 MED.E.075 Colour vision

(a) Pseudoisochromatic plate testing alone is not sufficient.

(b) Colour vision should be assessed using means able to demonstrate normal trichromacy.

GM1 MED.E.075 Colour vision

(a) Class 3 applicant is considered Normal/colour safe if all the 24 plates, presented in a random order, are identified without uncertainty or hesitation (less than 3 seconds per plate) and without error, or had passed successfully CAD test.

(b) Initial Applicants for Class 3 who fail the Ishihara's test, shall undertake advanced colour vision testing (CAD)

(c) Renewal Applicants who previously passed screening test and failed the current screening testing, shall undertake advanced colour vision testing (CAD)

(d) Current holder of GCAA Medical Class 1 who had previously granted a waiver based on foreign waiver/or advance colour vision tests not approved by GCAA, shall undertake advanced colour vision testing (CAD).

(e) Initial ATC applicant who fails the CAD test will not be granted GCAA Class 3 medical certificate.

(f) Renewal ATC who fails the CAD test will not be granted GCAA Class 3 medical certificates without functional colour vision assessment at work place.

Note: Current GCAA Licence Holders who had previously passed Anomaloscopy or Lantern testing acceptable to GCAA (Holmes Wright, Beynes, or Spectrolux) are not required to take CAD test.

MED.E.080 Otorhinolaryngology

(a) Examination

(1) A routine otorhinolaryngological examination shall form part of all initial, revalidation and renewal examinations.

(2) Hearing shall be tested at all examinations. The applicant shall understand correctly conversational speech when tested with each ear at a distance of 2 metres from and with his/her back turned towards the AME.

(3) Hearing shall be tested with pure tone audiometry at the initial examination and at subsequent revalidation or renewal examinations every 4 years until the age of 40 and every 2 years thereafter.

(4) Pure-tone audiometry:

(i) Applicants for a Class 3 medical certificate shall not have a hearing loss of more than 35 dB at any of the frequencies 500, 1 000 or 2 000 Hz, or more than 50 dB at 3 000 Hz, in either ear separately.

(ii) Applicants who do not meet the hearing criteria above shall be referred to the GCAA and undergo an approved GCAA specialist assessment before a fit assessment may be considered. Initial applicants shall undergo a speech discrimination test. Applicants for a revalidation or renewal of a Class 3 medical certificate shall undergo a functional hearing test in the operational environment.

(5) Hearing aids

(i) Initial examination: the need of hearing aids to comply with the hearing requirements entails unfitness.

(ii) Revalidation and renewal examinations: a fit assessment may be considered if the use of hearing aid(s) or of an appropriate prosthetic aid improves the hearing to achieve a normal standard as assessed by fully functional testing in the operational environment.

(iii) If a prosthetic aid is needed to achieve the normal hearing standard, a spare set of the equipment and accessories, such as batteries, shall be available when exercising the privileges of the licence.

(b) Applicants with:

(1) an active chronic pathological process of the internal or middle ear;

(2) unhealed perforation or dysfunction of the tympanic membrane(s);

(3) disturbance of vestibular function;

(4) significant malformation or significant chronic infection of the oral cavity or upper respiratory tract;

(5) significant disorder of speech or voice reducing intelligibility

shall be referred to the GCAA and undergo further ORL examination and assessment to establish that the condition does not interfere with the safe exercise of the privileges of the licence.

AMC1 MED.E.080 Otorhinolaryngology

(a) Examination

(1) An otorhinolaryngological examination includes:

(i) history;

(ii) clinical examination including otoscopy, rhinoscopy, and examination of the mouth and throat;

(iii) clinical assessment of the vestibular system.

(2) ENT specialists involved in the assessment of air traffic controllers should understand the functionality required by air traffic controllers in the exercise of their licences functions.

(3) Where a full assessment and functional check is needed, due regard should be paid to the operating environment in which the operational functions are undertaken.

(b) Hearing

(1) The follow-up of an applicant with hypoacusis should be decided by the GCAA. If at the next annual test there is no indication of further deterioration, the normal frequency of testing may be resumed.

(2) An appropriate prosthetic aid may be a special headset with individual earpiece volume controls. Full functional and environmental assessments should be carried out with the chosen prosthetic equipment in use.

(c) Ear conditions

An applicant with a single dry perforation of non-infectious origin and which does not interfere with the normal function of the ear may be considered for a fit assessment.

(d) Vestibular disturbance

The presence of vestibular disturbance and spontaneous or positional nystagmus requires complete vestibular evaluation by a specialist. Significant abnormal caloric or rotational vestibular responses are disqualifying. At revalidation and renewal examinations abnormal vestibular responses should be assessed in their clinical context.

(e) Speech disorder

Applicants with a speech disorder should be assessed with due regard to the operational environment in which the operational functions are undertaken. Applicants with significant disorder of speech or voice should be assessed as unfit.

GM1 MED.E.080 Otorhinolaryngology

HEARING

(a) Speech discrimination test: discriminating speech against other noise including other sources of verbal communication and ambient noise in the working environment, but not against engine noise.

(b) Functional hearing test: the objective of this test is to evaluate the controller's ability to hear the full range of communications that occur in an operational environment and not just through a headset or speaker.

(c) Prosthetic aid: the functional hearing test to be carried out with the prosthetic aid in use is to ensure that the individual is able to perform the functions of his/her licence and that the equipment is not adversely affected by interference from headsets or other factors.

(d) Pure-tone audiometry: testing at frequencies at or above 4000 Hz will aid the early diagnosis of acoustic neuroma, noise induced hearing loss (NIH), and other disorders of hearing. Particular attention should be paid in cases where there is a significant difference between thresholds of the left and right ear

MED.E.085 Dermatology

Applicants shall have no established dermatological condition likely to interfere with the safe exercise of the privileges of the licence held.

AMC1 MED.E.085 Dermatology

(a) Referral to the licensing authority should be made if doubt exists about the fitness of an applicant with eczema (exogenous and endogenous), severe psoriasis, chronic infections, drug induced, or bullous eruptions or urticaria.

(b) Systemic effects of radiation or pharmacological treatment for a dermatological condition should be evaluated before a fit assessment can be considered.

(c) An applicant with a skin condition that causes pain, discomfort, irritation or itching may only be assessed as fit if the condition can be controlled and does not interfere with the safe exercise of the of the privileges of the licence.

(d) In cases where a dermatological condition is associated with a systemic illness, full consideration should be given to the underlying illness before a fit assessment may be considered.

MED.E.090 Oncology

(a) After diagnosis of primary or secondary malignant disease, applicants shall be referred to the GCAA and shall undergo satisfactory oncological evaluation before a fit assessment may be considered.

(b) Applicants with an established history or clinical diagnosis of an intracerebral malignant tumour shall be assessed as unfit.

AMC1 MED.E.090 Oncology

(a) Applicants who have been diagnosed with malignant disease may be assessed as fit provided:

(1) after primary treatment there is no evidence of residual malignant disease likely to jeopardise flight safety;

(2) time appropriate to the type of tumour has elapsed since the end of primary treatment;

(3) the risk of incapacitation from a recurrence or metastasis is sufficiently low;

(4) there is no evidence of short or long-term sequelae from treatment. Special attention should be paid to applicants who have received anthracycline chemotherapy;

(5) satisfactory oncology follow-up reports are provided to the licensing authority.

MED.F.001 – GENERAL

LSA student Pilot or Pilot shall only perform the duties and responsibilities required by aviation safety rules if they comply with the applicable requirements of this section.

MED.F.005 – AERO-MEDICAL ASSESSMENTS

(a) LSA student Pilot or Pilot shall undergo aero-medical assessments to verify that they are free from any physical or mental illness which might lead to incapacitation or an inability to perform their assigned safety duties and responsibilities.
(b) Each LSA student Pilot or Pilot shall undergo an initial aero-medical assessment, and after that at intervals of maximum 60 months.
(c) Aero-medical assessments shall be conducted by an AME.
(d) If the LSA student Pilot or Pilot experience a decrease in his /her medical fitness, he/she must cease flying duties immediately and seek medical advice from the AME.

CHAPTER 2 – REQUIREMENTS FOR AERO-MEDICAL ASSESSMENT OF LSA STUDENT PILOT OR PILOT

MED.F.020 – GENERAL

LSA student Pilot or Pilot shall be free from any:

(a) Abnormality, congenital or acquired,
(b) Active, latent, acute or chronic disease or disability,
(c) Wound, injury or sequelae from operation, and;
(d) Effect or side effect of any prescribed or non-prescribed therapeutic, diagnostic or preventive medication taken that would entail a degree of functional incapacity which might lead to incapacitation or an inability to discharge their safety duties and responsibilities.

MED.F.025 – CONTENT OF AERO-MEDICAL ASSESSMENTS

(a) An initial aero-medical assessment shall include at least:
  (1) An assessment of the LSA student Pilot or Pilot medical history.
  (2) A clinical examination of the following:
    (i) Cardiovascular system
    (ii) Respiratory system
    (iii) Musculoskeletal system
    (iv) Otorhino-laryngology
    (v) visual system
    (vi) colour vision
    (vii) Drug test
(b) Each subsequent aero-medical re-assessment shall include:
  (1) An assessment of the LSA student Pilot or Pilot medical history; and
  (2) A clinical examination if deemed necessary by the AME.
(c) For the purpose of (a) and (b), in case of any doubt or if clinically indicated, an LSA student Pilot or Pilot aero-medical assessment shall also include any additional medical examination, test or investigation that are considered necessary by the AME .

AMC1 to MED.F.025 – CONTENT OF AERO-MEDICAL ASSESSMENTS

Aero-medical examinations and/or assessments of LSA student Pilot or Pilot should be conducted according to the specific medical requirements in AMC2 to MED.LSA.025.

(a) Initial aero-medical
  (1) an assessment of the LSA student Pilot or Pilot medical history which should be done by the SAME, AME or Aviation Nurse; and
  (2) Perform a clinical examination which should include the following:
    (i) Pulse, BP and Oxygen Saturations to check cardiovascular system abnormalities;
    (ii) PFT to exclude respiratory system abnormalities;
    (iii) GLAS screening examination test to exclude musculoskeletal system abnormalities;
    (iv) Audiogram;
    (v) Visual Acuity test to exclude visual system abnormalities; and
    (vi) Ishihara test for colour vision;
    (vii) Drug test
  (3) Renewal aeromedical assessment for LSA student pilot or pilot should be done by SAME, AME or aviation nurse who will take the medical history and perform the clinical examination if deemed necessary

AMC2 to MED.F.025 – Cardiovascular system

(a) Examination
  (1) A standard 12-lead resting electrocardiogram (ECG) and report should be completed on clinical indication, at the first examination after the age of 40 and then at least every five years after the age of 50. If cardiovascular risk factors such as smoking, abnormal cholesterol levels or obesity are present, the intervals of resting ECGs should be reduced to two years.
  (2) Extended cardiovascular assessment should be required when clinically indicated.
(b) Cardiovascular system - general
  (1) LSA student Pilot or Pilot with any of the following conditions:
    (i) aneurysm of the thoracic or supra-renal abdominal aorta, before surgery;
    (ii) significant functional abnormality of any of the heart valves; or
    (iii) heart or heart/lung transplantation

  should be assessed as unfit.
  (2) LSA student Pilot or Pilot with an established diagnosis of one of the following conditions:
    (i) peripheral arterial disease before or after surgery;
    (ii) aneurysm of the abdominal aorta, before or after surgery;
    (iii) minor cardiac valvular abnormalities;
    (iv) after cardiac valve surgery;
    (v) abnormality of the pericardium, myocardium or endocardium;
    (vi) congenital abnormality of the heart, before or after corrective surgery;
    (vii) a cardiovascular condition requiring systemic anticoagulant therapy;
    (viii) recurrent vasovagal syncope;
    (ix) arterial or venous thrombosis; or

(x) pulmonary embolism should be evaluated by a cardiologist before a fit assessment can be considered.

(c) Blood pressure

Blood pressure should be recorded at each examination.

(1) The blood pressure should be within normal limits.

(2) The initiation of medication for the control of blood pressure should require a period of temporary suspension of fitness to establish the absence of any significant side effects.

(d) Coronary artery disease

(1) LSA student Pilot or Pilot with:

(i) cardiac ischaemia;

(ii) symptomatic coronary artery disease; or

(iii) symptoms of coronary artery disease controlled by medication

should be assessed as unfit.

(2) LSA student Pilot or Pilot who are asymptomatic after myocardial infarction or surgery for coronary artery disease should have fully recovered before a fit assessment can be considered.

(e) Rhythm/conduction disturbances

(1) LSA student Pilot or Pilot with any significant disturbance of cardiac conduction or rhythm should undergo cardiological evaluation before a fit assessment can be considered.

(2) LSA student Pilot or Pilot with a history of:

(i) ablation therapy; or

(ii) pacemaker implantation should undergo satisfactory cardiovascular evaluation before a fit assessment can be made.

(3) LSA student Pilot or Pilot with:

(i) symptomatic sinoatrial disease;

(ii) complete atrioventricular block;

(iii) symptomatic QT prolongation;

(iv) an automatic implantable defibrillating system; or

(v) a ventricular anti-tachycardia pacemaker

should be assessed as unfit.

AMC3 to MED.F.025 – Respiratory system

(a) LSA student Pilot or Pilot with significant impairment of pulmonary function should be assessed as unfit. A fit assessment may be considered once pulmonary function has recovered and is satisfactory.

(b) LSA student Pilot or Pilot should be required to undergo pulmonary function tests on clinical indication.

(c) LSA student Pilot or Pilot with a history or established diagnosis of:

(1) asthma;

(2) active inflammatory disease of the respiratory system;

(3) active sarcoidosis;

(4) pneumothorax;

(5) sleep apnea syndrome/sleep disorder; or

(6) major thoracic surgery

should undergo respiratory evaluation with a satisfactory result before a fit assessment can be considered.

(d) LSA student Pilot or Pilot who have undergone a pneumonectomy should be assessed as unfit.

AMC4 to MED.F.025 – Digestive system

(a) LSA student Pilot or Pilot with any sequelae of disease or surgical intervention in any part of the digestive tract or its adnexa likely to cause incapacitation in flight, in particular any obstruction due to stricture or compression, should be assessed as unfit.

(b) LSA student Pilot or Pilot should be free from hernia that might give rise to incapacitating symptoms.

(c) LSA student Pilot or Pilot with disorders of the gastro-intestinal system, including:

(1) recurrent dyspeptic disorder requiring medication;

(2) pancreatitis;

(3) symptomatic gallstones;

(4) an established diagnosis or history of chronic inflammatory bowel disease; or

(5) after surgical operation on the digestive tract or its adnexa, including surgery involving total or partial excision or a diversion of any of these organs may be assessed as fit subject to satisfactory evaluation after successful treatment and full recovery after surgery.

AMC5 to MED.F.025 – Metabolic and endocrine systems

(a) LSA student Pilot or Pilot should not possess any functional or structural metabolic, nutritional or endocrine disorder which is likely to interfere with the safe exercise of their duties and responsibilities.

(b) LSA student Pilot or Pilot with metabolic, nutritional or endocrine dysfunction may be assessed as fit, subject to demonstrated stability of the condition and satisfactory aero- medical evaluation.

(c) Diabetes mellitus

(1) LSA student Pilot or Pilot with diabetes mellitus requiring insulin may be assessed as fit if it can be demonstrated that adequate blood sugar control has been achieved and hypoglycaemia awareness is established and maintained. Limitations should be imposed as appropriate. A requirement to undergo specific regular medical examinations (SIC) should be placed as a minimum.

(2) LSA student Pilot or Pilot with diabetes mellitus not requiring insulin may be assessed as fit if it can be demonstrated that adequate blood sugar control has been achieved and hypoglycaemia awareness, if applicable considering the medication, is achieved.

AMC6 to MED.F.025 – Haematology

LSA student Pilot or Pilot with a haematological condition, such as:

(a) abnormal haemoglobin including, but not limited to, anaemia, polycythaemia or haemoglobinopathy;

(b) coagulation, haemorrhagic or thrombotic disorder;

(c) significant lymphatic enlargement;

(d) acute or chronic leukaemia; or

(e) enlargement of the spleen

may be assessed as fit subject to satisfactory aero-medical evaluation.

AMC7 to MED.F.025 – Genitourinary system

(a) Urine analysis should form part of every aero-medical examination and/or assessment. The urine should not contain any abnormal element(s) considered to be of pathological significance.

(b) LSA student Pilot or Pilot with any sequela of disease or surgical procedures on the kidneys or the urinary tract, in particular any obstruction due to stricture or compression likely to cause incapacitation should be assessed as unfit.

(c) LSA student Pilot or Pilot with a genitourinary disorder, such as:
   (1) renal disease; or
   (2) a history of renal colic due to one or more urinary calculi
   may be assessed as fit subject to satisfactory renal/urological evaluation.

(d) LSA student Pilot or Pilot who have undergone a major surgical operation in the urinary apparatus involving a total or partial excision or a diversion of its organs should be assessed as unfit and be re-assessed after full recovery before a fit assessment can be made.

AMC8 to MED.F.025 – Infectious disease

LSA student Pilot or Pilot who are HIV positive will be assessed as unfit.

AMC9 to MED.F.025 – Obstetrics and gynaecology

(a) LSA student Pilot or Pilot who have undergone a major gynaecological operation should be assessed as unfit until full recovery.

(b) Pregnancy
   (1) A pregnant LSA student Pilot or Pilot may be assessed as fit only during the first 16 weeks of gestation following review of the obstetric evaluation by the AME;
   (2) The AME should provide written advice to the LSA student Pilot or Pilot and supervising physician regarding potentially significant complications of pregnancy resulting from flying duties.

AMC10 to MED.F.025 – Musculoskeletal system

(a) A LSA student Pilot or Pilot should have sufficient standing height, arm and leg length and muscular strength for the safe exercise of their duties and responsibilities.

(b) A LSA student Pilot or Pilot should have satisfactory functional use of the musculoskeletal system.

AMC11 to MED.F.025 – Psychiatry

(a) LSA student Pilot or Pilot with a mental or behavioural disorder due to alcohol or other problematic substance use should be assessed as unfit pending recovery and freedom from problematic substance use and subject to satisfactory psychiatric evaluation.

(b) LSA student Pilot or Pilot with an established history or clinical diagnosis of schizophrenia, schizotypal or delusional disorder should be assessed as unfit.

(c) LSA student Pilot or Pilot with a psychiatric condition such as:
   (1) mood disorder;
   (2) neurotic disorder;
   (3) personality disorder; or

(4) mental or behavioural disorder

should undergo satisfactory psychiatric evaluation before a fit assessment can be considered.

(d) LSA student Pilot or Pilot with a history of a single or repeated acts of deliberate self-harm should be assessed as unfit.

AMC12 to MED.F.025 – Psychology

(a) Where there is established evidence that a LSA student Pilot or Pilot has a psychological disorder, he/she should be referred for psychological opinion and advice.

(1) The psychological evaluation may include a collection of biographical data, the review of aptitudes, and personality tests and psychological interview.

(2) The psychologist should submit a report to the AME, detailing the results and recommendation.

(b) The LSA student Pilot or Pilot may be assessed as fit to perform flying duties, with limitation if and as appropriate.

AMC13 to MED.F.025 – Neurology

(a) LSA student Pilot or Pilot with an established history or clinical diagnosis of:

(1) epilepsy; or

(2) recurring episodes of disturbance of consciousness of uncertain cause should be assessed as unfit.

(b) LSA student Pilot or Pilot with an established history or clinical diagnosis of:

(1) epilepsy without recurrence after five years of age and without treatment for more than ten years;

(2) epileptiform EEG abnormalities and focal slow waves;

(3) progressive or non-progressive disease of the nervous system;

(4) a single episode of disturbance of consciousness of uncertain cause;

(5) loss of consciousness after head injury;

(6) penetrating brain injury; or

(7) spinal or peripheral nerve injury should undergo further evaluation before a fit assessment can be considered.

AMC14 to MED.F.025 – Visual system

(a) Examination

(1) a routine eye examination should form part of the initial and all further assessments and/or examinations; and

(2) an extended eye examination should be undertaken when clinically indicated.

(b) Distant visual acuity, with or without correction, should be with both eyes 6/9 or better.

(c) A LSA student Pilot or Pilot should be able to read an N5 chart (or equivalent) at 30–50 cm, with correction if prescribed.

(d) LSA student Pilot or Pilot should be required to have normal fields of vision and normal binocular function.

(e) LSA student Pilot or Pilot who have undergone refractive surgery may be assessed as fit subject to satisfactory ophthalmic evaluation.

(f) LSA student Pilot or Pilot with diplopia should be assessed as unfit.

(g) Spectacles and contact lenses: If satisfactory visual function is achieved only with the use of correction:
  (1) in the case of myopia, spectacles or contact lenses should be worn whilst on duty;
  (2) in the case of hyperopia, spectacles or contact lenses should be readily available for immediate use;
  (3) the correction should provide optimal visual function and be well tolerated;
  (4) orthokeratologic lenses should not be used.

AMC15 to MED.F.025 – Colour vision

LSA student Pilot or Pilot should be able to correctly identify 9 of the first 15 plates of the 24-plate edition of Ishihara pseudoisochromatic plates.

AMC16 to MED.F.025 – Otorhino-laryngology

(a) Hearing should be satisfactory for the safe exercise of LSA student Pilot or Pilot duties and responsibilities. LSA student Pilot or Pilot with hypoacusis should demonstrate satisfactory functional hearing abilities.

(b) Examination
  (1) An ear, nose and throat (ENT) examination should form part of all examinations and/or assessments.
  (2) Hearing should be tested at all assessments and/or examinations:
    (i) the LSA student Pilot or Pilot should understand correctly conversational speech when tested with each ear at a distance of 2 meters from and with the LSA student Pilot or Pilot back turned towards the examiner;
    (ii) Notwithstanding (i) above, hearing should be tested with pure tone audiometry at the initial examination and when clinically indicated.
    (iii) at initial examination the LSA student Pilot or Pilot should not have a hearing loss of more than 35 dB at any of the frequencies 500 Hz, 1 000 Hz or 2 000 Hz, or more than 50 dB at 3 000 Hz, in either ear separately.

(c) LSA student Pilot or Pilot with:
  (1) an active pathological process, acute or chronic, of the internal or middle ear;
  (2) unhealed perforation or dysfunction of the tympanic membrane(s);
  (3) disturbance of vestibular function;
  (4) significant restriction of the nasal passages;
  (5) sinus dysfunction;
  (6) significant malformation or significant, acute or chronic infection of the oral cavity or upper respiratory tract;
  (7) significant disorder of speech or voice

should undergo further medical examination and assessment to establish that the condition does not interfere with the safe exercise of their duties and responsibilities.

AMC17 to MED.F.025 – Dermatology

In cases where a dermatological condition is associated with a systemic illness, full consideration should be given to the underlying illness before a fit assessment may be made.

AMC18 to MED.F.025 – Oncology

(a) After treatment for malignant disease, LSA student Pilot or Pilot should undergo satisfactory oncological and aero-medical evaluation before a fit assessment may be considered.
(b) LSA student Pilot or Pilot with an established history or clinical diagnosis of intracerebral malignant tumour should be assessed as unfit. Considering the histology of the tumour, a fit assessment may be considered after successful treatment and full recovery.

MED.F.030 – LSA STUDENT PILOT OR PILOT MEDICAL CERTIFICATE

The LSA student Pilot or Pilot medical report/or certificate to be provided in writing to the applicants after completion of each aero-medical assessment should be issued: in English; and according to the GCAA Medical certificate in the E- Medical system.

MED.F.035 – LIMITATIONS

(a) If LSA student Pilot or Pilot do not fully comply with the medical requirements specified in Sub-Section 2, the AME shall consider whether they may be able to perform flying duties safely if complying with one or more limitations.
(b) Any limitation(s) to the exercise of the privileges granted by the LSA student Pilot or Pilot shall be specified on the medical report and shall only be removed by the GCAA.

AMC1 to MED.F.035 – LIMITATIONS

When assessing whether the LSA student Pilot or Pilot may be able to perform flying duties safely if complying with one or more limitations, the following possible limitations should be considered:
(a) a requirement to undergo the next aero-medical examination and/or assessment at an earlier date than required by MED.C.005(b) (TML);
(b) a requirement to undergo specific regular medical examination(s) (SIC);
(c) a requirement for visual correction (VNL), (VDL), (VML), (CCL);
(d) a requirement to use hearing aids (HAL); and
(e) special restriction as specified (SSL).

GM 1 to MED.F.25 - CONTENT OF AERO-MEDICAL ASSESSMENTS

A. General

1. The fitness assessment for LSA student Pilot or Pilot should be based on GCAA medical standards set in this regulation

2. Fitness assessment for LSA medical class should contain four main tiers, whether it is for initial or renewal application:

Tier 1: Initial or Baseline Assessment

- Tier 1 is a questionnaire, which is used as a first check for applicant's applying for LSA medical class certification.

- Tier 1 is medical history consist of questionnaire about medical history, vital signs, BMI checks, urine analysis, visual acuity and drug test.

- The review of the questionnaire will be done by the designated AME.

- The replies to the questionnaire and result of the tests will indicate whether the applicant need to be referred to Tier 2 for AME fitness assessment. Any pulse abnormal, systolic BP>160 or diastolic BP >95, the applicant will be moved to Tier 2.

- It is required that individuals who suffer from any of the following medical conditions to be moved to Tier 2:

- Decreased visual acuity in either eye below 6/9 despite any correction.
- Visual field defect
- Need for hearing aids(s)
- Angina/coronary artery disease
- Cardiac valve replacement
- Recurrent fainting
- Implanted cardiac device
- Heart failure
- Chronic lung disease
- Pneumothorax
- Organ transplant
- Cerebral disorder
- Epilepsy
- Sedative medication
- Antidepressant medication
- Psychotic disorder
- Learning difficulties
- Malignant disease
- Diabetes requiring medication
- Endocrine disorder
- Sleep disorder
- Major surgery.

Note: At initial, if the applicant is > 40 years the AME shall move the Applicant directly to Tier 2.

Tier 2: Assessment by an AME

his tier involves a fitness assessment by a qualified doctor approved by the GCAA. If the assessment shows that the LSA student Pilot or Pilot has a medical condition incompatible for flying duties, the applicant will require a Tier 3 assessment to have fitness to fly.

Tier 3: Formal fitness assessment

- Formal assessment is made by the Aeromedical section (AMS) and 'fitness for fly' will be determined. The AMS will consider all the tests conducted and examination report performed by the AME when arriving at a conclusion.

- Additional tests may be required in Tier 4.

Tier 4: Aeromedical board

This tier is not 'required' as part of routine medical certification for LSA medical class. It is considered only if the applicant does not meet the standards and the AMS couldn't reach a conclusion based on the available documents.

Note 1: If the applicant have been assessed and examined by the AME to issue him /her LSA medical certificate because of a medical condition, the AME can't perform the renewal assessment at Tier 1 only even if the medical condition has remained unchanged since the issue of the last medical certificate.

Note 2: For renewal purposes, if the LSA student Pilot or Pilot is under 40 years of age, the AME will assess the medical record and will only move to Tier 2 if he/she consider it clinically indicated.

Note 3: Limitation: the AME can only add a visual limitation for corrective lenses on LSA Medical certificate, other limitation should be inserted by the GCAA.

No limitation is allowed to be lifted by the AME.

B. General Instruction for AME about Class LSA medical Fitness assessment and examination

1. You should check the licence before starting any examination; the license is checked to verify the identity of the applicant. If the applicant is an initial applicant, you should have him/her satisfactorily establish their identity by other means. (Government issued photo identification (e.g., driver license, or passport)

2. Always check the previous medical record of the applicant. If the Applicant is new to the AME, doesn't have record of the applicant's previous medical examination/certificate, he should contact the GCAA to get these information.

3. Check the previous medical certificate for limitations/special requirement.

4. You should then check the previous medical certificate to establish what tests are required for that medical, i.e. ECG.

5. Review with the Applicant the Medical history and the result from Tier 1 assessment elucidating further information as necessary to determine the significance of any entry and asking further questions when necessary to confirm certain information.

6. Perform the medical examination and complete the Medical Examination Report Form as per instructions. Review all tests required and confirm all performed.

7. Review all forms for correctness of answers and results. If you are satisfied that the applicant meets the GCAA Standards, issue a medical certificate of the appropriate class, using the GCAA medical

certificate form. When completing the certificate, verify that all the required information is entered and in particular that all limitations and conditions, are entered on specific box.

8. Dates of future examinations and tests should be completed by the AME.
9. If all the GCAA medical standards are not clearly met, or if a doubt exists about the fitness of the applicant for the class of medical certificate applied, either defer the decision to the GCAA or deny issuance of a certificate and forward all documentation to the GCAA.

10. The applicant must be informed of their right to review by the GCAA and it should be explained to them why a certificate is being denied.

C. INSTRUCTIONS PAGE FOR COMPLETION OF THE APPLICATION FORM

FOR AVIATION MEDICAL CERTIFICATE
The Application Form, all attached Report Forms and Reports are required to be submitted to the GCAA ED-Medical services. Medical Confidentiality shall be respected at all times.
1. The Applicant must personally complete in full all questions (boxes) on the E-Medical Application Form.

2. The Applicant must tick on his declaration and consent to release of his medical.

NOTICE: Failure to complete the E-medical application form in full or to write legibly will result in non-acceptance of the application form. The making of False or Misleading statements or the Withholding of relevant information in respect of this application may result in criminal prosecution, denial of this application and/or withdrawal of any medical certificate(s) granted.

APPENDICES

Appendix 1: Specification for Respiratory Report

The GCAA Guidance Material for fitness decision, acceptable treatments and required investigations (if specified) can be found in MED.B.015 Respiratory System
The following subheadings are for guidance purposes only and should not be taken as an exhaustive list.

1. Diagnoses
2. History
   - 2.1 Current/presenting symptoms
     - Shortness of breath, wheeze or bronchospasm, nocturnal symptoms
     - Circumstances surrounding onset, precipitating factors
     - Residual impairment or loss of function
   - 2.2 Confirmation of any systemic involvement
   - 2.3 Details of respiratory events within past 5 years (include l treatment and admissions)
   - 2.4 Childhood and other relevant medical history
   - 2.5 Family history
3. Examination and Investigation findings
   - Clinical findings.
   - Standard spirometry / exercise spirometry.
   - Bronchial reactivity/reversibility test (if indicated).
   - Radiology imaging reports (e.g. x-ray, serial imaging if indicated).
   - Other investigations (e.g. bronchoscopy/thoracoscopy if performed).
4. Treatment
   - Current and recent past medications (dose, start and finish dates) -Include frequency of bronchodilator use (as applicable).
   - Confirmation no side effects from medication.
   - Current and past history of systemic steroids.
   - Other treatments must be detailed.
   - For OSA CPAP report included with medical report.
   - Surgical reports (where performed).
5. Follow up and further investigations/referrals planned or recommended
   - Anticipated follow up/frequency of clinical reviews and investigations.
   - Prognosis and risk of recurrence.
   - Confirmation of full recovery or remission on maintenance dose of acceptable medication and well controlled at date of report.
6. Clinical Implications
   - Any concerns regarding disease progression, treatment compliance or risk of sudden incapacity.

Appendix 2: Substance Abuse Specialist specification report

The GCAA Guidance Material for fitness decision, acceptable treatments and required investigations (if specified) can be found in MED.B.055 Psychiatry (section 4).
The following subheadings are for guidance purposes only and should not be taken as an exhaustive list.

1. Licence holder details
   - Name
   - Date of Birth
   - Licence No. and class of Medical
   - Employer
2. Evaluation Date
3. Review Type
   - Initial review
   - Second opinion
4. Reason for referral
5. History of present complaint
6. Past Medical History
7. Past psychiatric history
8. Forensic history (DUI, Traffic violation), state date of offence
9. Substance use /or Abuse history
10. Current Work related issues (aggression /violent behaviour/incident)
11. Career History (List of x-employers, years of experiences with each, total flying hours)
12. Family History of Psychiatric disorder /& or Substance abuse disorder
13. Investigation (if applicable to the case)
14. Alcohol intake history (age consumption started, amount consumed, type of alcohol consumed and any attempt to stop in the past)
15. Mental status examination
16. Diagnosis as per DSM – V criteria
    Note1: SAP must specify if the applicant is
    - Dependent or abuse
    - Not dependant nor abuse

    Note2: If the applicant provided a valid prescription; SAP should confirm the drug consumption was as per the prescription.
17. Treatment Plan (Medication – Psychotropic – Detoxification / inpatient treatment)
18. Follow up (if applicable)
19. Recommendation

Appendix 3: Specification for Aeromedical board

The GCAA Guidance Material for fitness decision, acceptable treatments and required investigations (if specified) can be found in MED.A.040 Issue, revalidation and renewal of medical certificates.
The following subheadings are for guidance purposes only and should not be taken as an exhaustive list.

1. Licence holder profile
1. Name
2. D.O.B.
3. Licence No. and class of Medical
4. Employer
2. Reason for convening the board
3. Personal and work history
   - Past Medical history
   - Family History
   - Social History
   - Medication
4. History of the condition
   - Presenting symptoms & initial examination
   - Nature of condition, circumstances surrounding onset, precipitating factors
   - Other relevant medical history
   - Initial investigation
   - Initial consultant evaluation
5. Functional simulator assessment (if applicable to the case)
6. Physical examination general &relevant to the medical condition
7. Aeromedical considerations
   Reference from GCAA CAR-MED
   Reference from ICAO
   Reference from Literature review
8. Attachment:
   - Investigation relevant to the case
   - Consultation report relevant to the case
   - References
9. Summary
10. Recommended aeromedical Disposition
11. Signature of all board members

Appendix 4: Specification for Hypertension report

The GCAA Guidance Material for fitness decision, acceptable treatments and required investigations (if specified) can be found in MED.B.010 Cardiovascular system.

The following subheadings are for guidance purposes only and should not be taken as an exhaustive list.

1. **Diagnoses**
2. **History**
    - Presenting symptoms.
    - Nature of condition, circumstances surrounding onset, precipitating factors.
    - Other relevant medical history (e.g. diabetes).
3. **Examination and Investigation findings**
    - Blood Pressure stabilised within acceptable parameters (international recognized Hypertension Guidelines, (e.g. British /or NICE guidelines).
    - Three BP readings each taken more than 18 hrs apart or a 24 hr BP recording. Readings should be taken no sooner than two weeks after commencing anti-hypertensive medication.
4. **General Blood Tests**
    - Urea and Electrolyte.
    - Liver and Renal Function (eGFR).
    - Lipid Profile - serum total cholesterol and HDL cholesterol.
    - Plasma glucose.
5. **Confirmation of no end organ damage**

    5.1 Renal disease
    - Urinalysis (albumin, creatinine ratio and haematuria).

    5.2 Hypertensive retinopathy
    - Cardiovascular risk assessment.

    5.3 Ophthalmology evaluation
6. **Family history**
7. **Smoking**
8. **Alcohol history**
9. **Weight (BMI)**

10. **Resting ECG**
11. **Exercise Tolerance Test Report where indicated (e.g. Class 1 multiple risk factors)**
    - Protocol used
    - Walking time
    - Symptoms experienced
    - ECG changes
    - Summary & conclusions
12. **Echocardiogram where indicated**
    - Valve structure & function
    - Standard chamber dimensions
    - Ejection Fraction (indicate measurement technique)
    - Summary & conclusions

Note: Where investigations are abnormal or borderline the hard copy traces/images are likely to be required for review.

13. **Treatment**
    - Current and recent past medication (dose, frequency, start date.)
    - Confirmation no side effects from medication.
    - Lifestyle interventions.
14. **Follow up and further investigations/referrals planned or recommended**
    - Plan of management and anticipated follow up.
15. **Clinical Implications**

    Any concerns regarding disease progression, treatment compliance or risk of sudden incapacity.

Appendix 5: Aeromedical Psychology

Clinical and cognitive assessment standards

The psychological evaluation

The following assessment standards are to cover:

1. Suitability for medical certification for suspected or confirmed psychological issues including alcohol/substance abuse or dependence;
2. Assessment of neurocognitive status of aviators with neurological trauma or illness;
3. Evaluations on aviators with problems that arise in training, upgrading, transitioning aircraft, or in proficiency testing.

Specification for Approved GCAA psychologist's report

The Comprehensive Psychological Assessments and reports generated by the GCAA designated psychologist shall include the following:

a. Reason for referral;
b. Thorough review of records;
c. Thorough psychosocial History and clinical interview;
d. Report of collateral informants (if applicable);
e. Mental Status Exam and documentation of behavioral observations;
f. Administration of psychological testing- listed in the table below- followed by description of testing, results, interpretation, diagnosis and management plan;
g. Any treatment required (counselling or CBT);
h. Any referral to other specialty required (Psychiatrist) and the reason for the referral;
i. Clinical Implications, any concerns regarding symptom and diagnosis progression, treatment compliance or risk of incapacity.

For Neurocognitive assessment the GCAA designated psychologist should include the following tools results in the report:

a. CogScreen-Aeromedical Edition (CogScreen-AE);
b. The complete Wechsler Adult Intelligence Scales (Processing Speed and Working Memory Indexes must be scored);
c. Trail Making Test, Parts A and B (Reitan Trails A & B should be used since aviation norms are available for the original Reitan Trails A & B.
d. Executive function tests to include:

i. Category Test or Wisconsin Card Sorting Test, and;

ii. Stroop Color-Word Test;

iii. Paced Auditory Serial Addition Test (PASAT).

e. A continuous performance test (i.e., Test of Variables of Attention [TOVA], or Conners' Continuous Performance Test [CPT-II], or Integrated Visual and Auditory Continuous Performance Test [IVA+]);

f. Test of verbal memory (WMS-IV subtests, Rey Auditory Verbal Learning Test, or California Verbal Learning Test-II);

g. Test of visual memory (WMS-IV subtests, Brief Visuospatial Memory Test-Revised, or Rey Complex Figure Test);

h. Tests of Language including Boston Naming Test and Verbal Fluency (COWAT and a semantic fluency task);

i. Psychomotor testing including Finger Tapping and Grooved Pegboard or Purdue Pegboard;

j. Personality testing, to include the Minnesota Multiphasic Personality Inventory (MMPI-2).

NOTES: All tests administered must be the most current edition of the test unless specified otherwise and at the discretion of the examiner, additional tests may be clinically necessary to assure a complete assessment.

AEROMEDICAL PSYCHOLOGY: CLINICAL AND COGNITIVE ASSESSMENT STANDARDS

<table>
<tr><th>Referral Source</th><th>Baseline Assessment</th><th>Psychometrics</th><th>Integration</th><th>Recommendations</th></tr>
<tr><td>Self-referral. Client requesting help with problem</td><td rowspan="2">A full clinical interview and review of all available records (e.g., medical, psychiatry, line management, Fleet, Flight Training, Human Resources)

Clinical Decision regarding the form of psychometric or other assessment that is required (e.g., SIM)</td><td>Mandatory – required by type of referral.

All referrals – the minimum dataset: CogScreen-AE; MMPI-2, Trail Making Test (1) , AUDIT

Older pilot (55 yrs & 60 yrs)– minimum dataset, WMS-IV</td><td>Further clinical interview(s) – if required

Explanatory Formulation. Draws together all available information. Identified areas where information is lacking. Describes major problems and associated areas for intervention.</td><td rowspan="2">A summary sheet – outlining opinions and recommendations that might include one or more from:

• No further action
• Review in (X) weeks
• Psychological treatment/therapy (modality, frequency, duration etc)
• Coaching
• Workplace modifications (would include redeployment)
• Referral to clinical psychologist for second opinion
• Referral to other healthcare services (e.g., psychiatry, neurology)
• MDT meeting
• Medical Board</td></tr>
<tr><td>Mandatory. E.g. Referral triggered by GCAA and aviation policy (60 year old assessment, substance abuse, mood disorders, neurological); requirement of selection or assessment (intake, Command Upgrade); referral from Fleet/Flight Training; referral</td><td>To be considered – determined by nature of referral and clinical judgment.

MMSE, MoCA, NEO-PI-R, 16-PF WAIS-IV, MMPI-2, MCMI-III, BDI, BAI, WMS-IV, Rey Complex Figure Test, TMT, BADS, D-KEFS, Rorschach.

Substance Abuse – WAIS-IV, Rey Complex Figure Test</td><td>Psychological Report. A formal communication setting down a description of the referral, client presentation, interpretation of psychometrics and other assessments, outline formulation, discussion of results and detailed opinion to include <u>prognosis and fitness to work</u>. Should provide supportive</td></tr>
</table>

requested by other professional (AME, psychiatrist)		(This is not an exclusive list, other assessments may be needed depending on the individual's presentation)	evidence leading to each opinion and recommendation.	

Notes. GCAA clinical assessments to be completed by appropriately trained and licenced clinical psychologists only. Review personality tests completed at selection to avoid practice effects. Aviation test norms to be used where possible. Consider cultural and language issues when using psychometrics.

(1) For Trail Making Test, Parts A and B, Reitan Trails A & B should be used since aviation norms are available for the original Reitan Trails A & B.

Appendix 6: Anti-diabetic medications

Class of Antidiabetic medication	Generic Name	Class 1	Class 2	ATCO	Cabin crew class
Biguanides	Metformin	It is acceptable with applicable restriction.	It is acceptable with applicable restriction.	It is acceptable with applicable restriction.	It is acceptable with applicable restriction.
Alpha-glucosidase Inhibitors	Miglitol/ Acarbose	It is acceptable with applicable restriction.	It is acceptable with applicable restriction.	It is acceptable with applicable restriction.	It is acceptable with applicable restriction.
Sulphonylureas	Glimepiride/ Glyburide/ Chlorpropamide/ Gliclazide/ Tolbutamide	It is not accepted	It may be accepted for aviation duties; only with applicable restriction & case by case basis.	It is not accepted	It may be accepted for aviation duties; only with applicable restriction & case by case basis.
Thiazolidinediones	Pioglitazone/ Rosiglitazone	It is acceptable with applicable restriction.	It is acceptable with applicable restriction.	It is acceptable with applicable restriction.	It is acceptable with applicable restriction.
DPP-4 Inhibitors	Sitagliptin/Alogliptin/Saxagliptin/Linagliptin	It is acceptable with applicable restriction	It is acceptable with applicable restriction	It is acceptable with applicable restriction	It is acceptable with applicable restriction
Amylin analogs	Pramlintide acetate	It is not accepted	It is not accepted	It is not accepted	It is not accepted

Class of Antidiabetic medication	Generic Name	Class 1	Class 2	ATCO	Cabin crew class
Glucagon-like peptide-1 (GLP-1) receptor agonists	Exenatide/ Albiglutide/ Dulaglutide/ Liraglutide/ Lixisenatide/Semaglutide	It is acceptable with applicable restriction	It is acceptable with applicable restriction	It is acceptable with applicable restriction	It is acceptable with applicable restriction
Meglitinides	Repaglinide/Nateglinide	It is not accepted	It may be accepted for aviation duties; only with applicable restiction & case by case basis.	It is not accepted	It may be accepted for aviation duties; only with applicable restiction & case by case basis.
SGLT-2 inhibitors	Dapagliflozin/ Canagliflozin/ Empagliflozin/ Ertugliflozin	It may be accepted for aviation duties; only with applicable restriction & case by case basis	It may be accepted for aviation duties; only with applicable restiction & case by case basis.	It is not accepted	It may be accepted for aviation duties; only with applicable restiction & case by case basis.
Insulin	Intermidiate acting insulin / short acting insulin/ Rapid acting human insulin/ Long acting insulins	It is not accepted	It may be accepted for aviation duties; only with applicable restiction & case by case basis.	It is not accepted	It may be accepted for aviation duties; only with applicable restiction & case by case basis.