Medical Examiners' – Medical Manual

Part 5 - Annexes

Table of Contents

5.1 Introduction

This part contains appendices that may be useful to Medical Examiners such as:

- Investigations Guidelines, for the undertaking of cardiac and other investigations;
- Medical information sheets for applicants;
- Commonly used medical certificate endorsements;
- Other useful documents.

5.2 Investigations Guidelines

These guidelines are intended for applicants, required to undergo further investigations, to pass on to the relevant Medical Practitioners or their support staff, when attending for these investigations.

The Guidelines advise on protocols to be followed for the test(s) to be performed and for their reporting, in order to ensure acceptability to CAA.

5.2.1 CAA requirements for Echocardiography (also called 2D echo, or cardiac ultrasound)

Please carry this sheet to your doctor (preferably at the time of booking) so that an appropriate test, one that meets CAA requirements, may be carried out. In case of questions, the Aviation Medicine Team may be contacted at 04 560 9466.

Note: If the tests are not carried out as per these guidelines, (and the necessary reports, images, tracings etc. are not provided), the test may need to be repeated, causing inconvenience, delays, and expense.

Conduct of the test

It is useful to provide the health practitioner undertaking the investigation a copy of the last echocardiogram done (if any available), to allow a comparison with that last result.

Images

Some facilities provide images on a graph or on a CD. If possible a copy should be sent to the requesting party, the ME of CAA.

Report

The Echocardiogram report should, at the minimum, comment on the ventricular ejection fraction, walls thickness and movements, sizes and conditions of the valves, and flow velocities as relevant. The report and images should be sent to the requesting party, the ME or CAA.

Please be advised that any costs for this investigation will need to be borne by you.

5.2.2 CAA requirements for Exercise Electrocardiography (also called Stress ECG, or ETT)

Please carry this sheet to your doctor (preferably at the time of booking) so that an appropriate test, one that meets CAA requirements, may be carried out. In case of questions, the Aviation Medicine Team may be contacted at 04 560 9466.

Note: If the tests are not carried out as per these guidelines, (and the necessary reports, images, tracings etc. are not provided), the test may need to be repeated, causing inconvenience, delays, and expense.

Conduct of the test

Exercise testing protocols can be chosen by the supervising physician or laboratory staff. The standard Bruce protocol is preferred. The protocol used should be clearly mentioned. Testing should be symptoms limited if possible rather than limited to 100% of the predicted maximum heart rate (MHR).

The workload in METS, and the duration of exercise should be mentioned. A 12-lead ECG, heart rate, blood pressure and patient symptoms should be recorded at rest, during exercise, and after stopping exercise, (during recovery).

The reason for terminating the test should be documented. Recovery data should be provided until heart rate, blood pressure, and ECG have returned to near-baseline levels, (**at least for 6 minutes**) after stopping exercise.

Tracings

The complete original ECG tracings of the test, from resting ECG, through exercise, and recovery should be provided along with the report provided by the physician (Comparing tracings serially has been repeatedly shown to be invaluable when dealing with pilots and ATCs).

Original ECG tracings will be retained by the CAA, so if these are needed for any other purpose, a second original printout (available with most modern machines) may be requested.

Note: Printouts showing only signal averaged single complexes of ECGs over the complete test duration are not sufficient.

Report

A report on the stress electrocardiogram should in particular comment on any reversible ischaemia. Stress ECG tracing (as above) should be included with the report.

The report and full tracings should be sent to the requesting party, the ME or CAA.

Please be advised that any costs for this investigation will need to be borne by you.

5.2.3 CAA requirements for Stress Echocardiography (also called Stress Echography or Exercise Echography)

Please carry this sheet to your doctor (preferably at the time of booking) so that an appropriate test, one that meets CAA requirements, may be carried out. In case of questions, the Aviation Medicine Team may be contacted at 04 560 9466.

Note: If the tests are not carried out as per these guidelines, (and the necessary reports, images, tracings etc. are not provided), the test may need to be repeated, causing inconvenience, delays, and expense.

Conduct of the test

Exercise testing protocols can be chosen by the supervising physician or laboratory staff. The standard Bruce protocol is preferred. The protocol used should be clearly mentioned.. Testing should be symptoms limited if possible rather than limited to 100% of the predicted maximum heart rate (MHR). The workload in METS, and the duration of exercise should be mentioned. In addition to echocardiographic images, a 12-lead ECG, heart rate, and blood pressure and patient symptoms should be recorded at rest, during exercise, and after stopping exercise, (during recovery).

The reason for terminating the test should be documented. Recovery data should be provided until heart rate, blood pressure, and ECG have returned to near-baseline levels, **(at least for 6 minutes)** after stopping exercise.

Images and Tracings

Some facilities provide images as photographs or on a CD. If available, these should also be sent.

The complete original ECG tracings of the test, from resting ECG, through exercise, and recovery should be provided along with the report provided by the physician (Comparing tracings serially has been repeatedly shown to be invaluable when dealing with pilots and ATC).

Original ECG tracings will be retained by the CAA, so if these are needed for any other purpose, a second original printout (available with most modern machines) may be requested.

Note: Printouts showing signal averaged single complexes of ECGs over the complete test duration are not sufficient.

Report

A report on the stress echocardiogram should in particular comment on any reversible ischaemia. Ideally wall motions of different heart areas should be depicted diagrammatically. The stress ECG full tracing (as above), the cardiac measurements and images should be included with the report. The report, images or CD and tracings should be sent to the requesting party, the ME or CAA.

Please be advised that any costs for this investigation will need to be borne by you.

5.2.4 CAA requirements for Stress Myocardial Perfusion Scan (also called Perfusion Scan, or Sestamibi Scan)

Please carry this sheet to your doctor (preferably at the time of booking) so that an appropriate test, one that meets CAA requirements, may be carried out. In case of questions, the Aviation Medicine Team may be contacted at 04 560 9466.

Note: If the tests are not carried out as per these guidelines, (and the necessary reports, images, tracings etc. are not provided), the test may need to be repeated, causing inconvenience, delays, and expense.

Conduct of the test

Exercise testing protocols can be chosen by the supervising physician or laboratory staff. The Bruce protocol is preferred. The protocol used should be clearly mentioned. Testing should be symptoms limited if possible rather than limited to 100% of the predicted maximum heart rate (MHR). The workload in METS, and the duration of exercise should be mentioned, as should the infusion used.

In addition to gamma camera images, a 12-lead ECG, heart rate, and blood pressure and patient symptoms should be recorded at rest, during exercise, and after stopping exercise, (during recovery). The reason for terminating the test should be spelt out.

Recovery data should be provided for periods until heart rate, blood pressure, and ECG have returned to near-baseline levels, (**at least for 6 minutes**) after stopping exercise.

Images and Tracings

The images from the camera should be provided with the report, either in print, or on a CD.

The complete original ECG tracings of the test, from resting ECG, through exercise, and recovery should be provided along with the report provided by the physician (Comparing tracings serially has been repeatedly shown to be very valuable when dealing with pilots and ATCs).

Original ECG tracings will be retained by the CAA, so if these are needed for any other purpose, a second original printout (available with most modern machines) may be requested. The scan images will be returned after review, if needed.

Note: Printouts showing signal averaged single complexes over the complete test duration are not sufficient.

Report

A report on the stress myocardial perfusion scan should comment on reversible ischaemia. The images or CD and the stress ECG tracings (as above) should be included with the report and should be sent to the requesting party, the ME or CAA.

Please be advised that any costs for this investigation will need to be borne by you.

5.2.5 CAA requirements for Psychiatrist or Psychologist report

Please carry this sheet to your doctor (preferably at the time of booking) so that an appropriate test, one that meets CAA requirements, may be carried out. In case of questions, the Aviation Medicine Team may be contacted at 04 560 9466.

Note: If the tests are not carried out as per these guidelines, (and the necessary reports are not provided), the test may need to be repeated, causing inconvenience, delays, and expense.

Consultation

The consultation should only take place after all the necessary material has been sighted by the consultant psychiatrist. Once an appointment has been obtained, the Aviation Medicine Team of the CAA should be advised, so that the necessary material can be sent to the consultant in good time.

Collateral information

The consultant may require the attendance of a member of the family, or some other individual, to assist in the assessment. The consultant may also wish to seek collateral information from people you know. This can only occur with your consent.

Blood tests or questionnaires may also be required by the consultant.

Report

There may be a considerable interval of time between the consultation, and the completion of the report. During the consultation, it may be possible to obtain an indication of the possible time required for the report to be completed. The report should be sent directly to the requesting party, the ME or CAA.

The consultant's report will provide a multi-axial diagnosis, and an indication of prognosis. It may also offer a risk assessment opinion. An opinion regarding fitness to fly is not required. Once the report has been received, (and any necessary clarifications obtained), the doctors will be able to proceed to the next step in the process.

Please be advised that any costs for this investigation will need to be borne by you

5.2.6 CAA standards for spirometry

Please carry this sheet to your doctor (preferably at the time of booking) so that an appropriate test, one that meets CAA requirements, may be carried out. In case of questions, the Aviation Medicine Team may be contacted at 04 560 9466.

Note: If the tests are not carried out as per these guidelines, (and the tracings are not provided), the test may need to be repeated, causing inconvenience, delays, and expense.

Conduct of the test

The test is effort dependent. Three tests should be conducted. The test should also be repeated after a dose of a bronchodilator (i.e. Ventolin, by inhalation) if there is any lung function impairment, or a history of asthma or respiratory disease, or a suspicion of asthma or respiratory disease. In this case the post-bronchodilator spirometry must be done even if the initial spirometry results are within normal range.

No bronchodilator should be taken on the day and prior to the test unless necessary for clinical reason, in which case this must be indicated in the report.

Graphs and recordings

The spirometer should ideally record the complete respiratory cycle in the form of a flow volume loop and must be up to date with regard to calibration.

Data should be presented in absolute values and as a percentage of the predicted values. Post bronchodilator values changes should be presented as a percentage of the baseline values (positive or negative)

Report

A report on the Spirometry should comment on normality, or degree of obstruction/ restriction and reversibility. Printouts from the spirometer (as above) should be included with the report and should be sent to the requesting party, the ME or CAA.

Please be advised that any costs for this investigation will need to be borne by you.

5.2.7 CAA Medical Information Sheets

These information sheets are of a general nature.

They have been written to assist applicants in understanding the certification process and the implications of having certain medical conditions.

Medical Examiners may also find them useful. These can be found at the following link:

http://www.caa.govt.nz/medical/Med_Info_Sheets/Med_info_sheets.htm

5.2.8 Standard Endorsements

Note: Operational endorsements must be worded on the medical certificate. The code numbers are not compulsory. Other wording may be used. MEs are welcome to contact CAA for advice. This is to ensure consistent and operationally correct wording. Other non-standards restrictions and conditions may be imposed as part of the flexibility process. See also endorsements: 2.8.4

Code	Common Endorsements Wording	Applicable Classes	Use
001	Spectacles *(distance vision) must be worn.*	1,2,3	When distance spectacles are used to meet the distance visual acuity standards.
002	Bifocal spectacles must be worn.	1,2,3	When bifocal spectacles are used to meet the distance and near visual acuity standards.
003	Trifocal spectacles must be worn.	1,2,3	When trifocal spectacles are used to meet the distance and near visual acuity standards.
004	Half spectacles must be readily available.	1,2,3	When ½ spectacles are used to meet the near visual acuity standards.
005	Correcting lenses must be worn for distance vision (contact lenses permitted, provided spectacles readily available).	1,2,3	When distance contact lenses are used to meet the distance visual acuity standards.
006	Contact lenses must be worn.	1,2,3	When distance contact lenses must be used to meet the distance visual acuity standards, for example because of severe refractive error or keratonus.
007	Spare spectacles must be readily available.	1,2,3	When the uncorrected vision does not reach 6/12 in each eye or when contact lenses are used.
008	Spare bifocal spectacles must be readily available.	1,2,3	When bifocals are used to meet the visual acuity standards, but only near vision correction is required (the top part may have mild refractive power or be plano).
009	A single contact lens must be worn, in one eye.	1,2,3	When a single contact lens is used to meet the distance vision standards, for instance due to isometropia.
010	Trifocal spectacles must be worn (progressive focus lens permitted).	1,2,3	When progressive lenses are used to meet the distance, intermediate and near visual acuity standards.
019	Half spectacles must be readily available (full lenses permitted in radar room).	3	When ½ spectacles are used to meet the visual acuity standards but the participant works in the radar room.
020	Restricted in accordance with medical directions in letter dated -	1,2,3	When mostly non-operational restrictions are imposed on the certificate. The details must be incorporated in a letter referred to on the certificate.
030	Valid only for flying as or with a co-pilot.	1,2 See note below	As a risk mitigating measure when a participant has an elevated risk of in-flight impairment and operates a multicrew aircraft. Usually imposed following an AMC.

Code	Common Endorsements Wording	Applicable Classes	Use
034	Restricted to flying with a safety pilot, in an aircraft with dual controls.	1,2	As a risk mitigating measure when a participant has an elevated risk of in-flight impairment and operates a single pilot aircraft. Usually imposed following an AMC.
040	Not valid for IFR flights.	1, 2	When an applicant Class 2 has not undergone the required audiometry; or When an applicant Class 1 or 2 has a colour vision deficiency and has not passed the appropriate Lantern test or the CAD test (Refer to GD on colour vision); or For other risks mitigation.
059	Subject to medical surveillance as specified in Examiner's letter dated.	1,2,3	When medical surveillance is imposed during the validity period of the certificate. The details must be incorporated in a letter referred to on the certificate.
071	Not valid for flight as pilot in command by day and night until a satisfactory flight test has been completed with a flight examiner in each case.	1,2	When an applicant has substandard vision but can only be tested in operations after some training. This restriction should normally follow an application handled via the AMC process.
072	Not valid for flight as pilot in command by night until a satisfactory flight test has been completed with a flight examiner.	1,2	When an applicant has substandard vision but can only be tested in operations after some training. This restriction should normally follow an application handled via the AMC process.
073	Protective spectacles must be worn (and if flying open cockpit aircraft, protective goggles not restricting visual field must be worn).	1,2	When a participant is monocular or functionally monocular. This restriction should normally follow an application handled via the AMC process
074	Any accompanying pilot must be made aware of the holder's monocular vision.	1,2	When a participant is monocular or functionally monocular. This restriction should normally follow an application handled via the AMC process.
075	Any accompanying pilot must be made aware of the holder's substandard vision in one eye.	1,2	When a participant has substandard vision in one eye. This restriction should normally follow an application handled via the AMC process
081	Not valid for (i) flight in the vicinity of a controlled aerodrome (unless the aircraft is in radio contact aerodrome control); (ii) Not valid for the carriage of passengers.	1	When an applicant Class 1 has a colour vision deficiency and has not passed the appropriate Lantern test or the CAD test. Refer to GD on colour vision. 040 and 085 are usually also imposed.
082	Not valid for flight in the vicinity of a controlled aerodrome (unless the aircraft is in radio contact with aerodrome control).	2	When an applicant Class 2 has a colour vision deficiency and has not passed the appropriate Lantern test or the CAD test. 040 and 085 are usually also imposed.
085	Not valid for night flying	1, 2	When an applicant Class 2 has a colour vision deficiency and has not passed the appropriate Lantern test or the CAD test. **Refer to GD** on colour vision, or when an applicant is taking Isotretinoin.