



Guidance material for CAA-NO aeromedical examiners

1178/2011 Part-MED &

2015/340 Part-ATCO.MED

VERSION 4

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Introduction

The medical requirements for holding a class 1 medical certificate, class 2 medical certificate, LAPL medical certificate, medical report for cabin crew members or class 3 medical certificate are provided by EU Regulation 1178/2011 Annex IV (Part-MED) (see CAA Norway's website for updated edition) and EU Regulation 2015/340 Annex IV (Part-ATCO.MED), as well as associated acceptable means of compliance (AMC) and guidance material (GM).

This guidance material (GM) document has been prepared for aeromedical examiners appointed by the Norwegian Civil Aviation Authorities, as a supplement to Part-MED and Part-ATCO.MED. The guidelines present a more detailed description of procedures that apply for Norwegian AMEs to ensure compliance with EU regulations, as well as which paragraph the respective procedures complement. Each section starts with a reference to the regulations, followed by relevant procedural descriptions. CAA Norway emphasize that the overview is not exhaustive, so the regulations will normally cover more conditions than is stated in the respective sections of these guidelines.

The guidelines are dynamic and will be updated continuously to ensure the best possible flight safety and effective case management. Medical guidelines should be in accordance with the latest developments in medicine, and the procedures must be adapted to the technological framework set by the electronic certification system EMPIC. The latest version of these guidelines will always be available on the CAA Norway's website, and CAA Norway expect all AMEs to be familiar with this document and comply with the applicable procedures.

Best regards,
Terje Saehle
Chief Medical Officer

When contacting aeromedical personnel in CAA Norway, please use the following contact information to ensure formal registration and effective distribution of the inquiry to available personnel:

Postal address:

Civil Aviation Authorities – Norway
PO Box 243
N-8001 BODØ
NORWAY

E-mail:

postmottak@caa.no

Guidance to Part-MED/ Part-ATCO.MED Subpart A

General requirements

MED.A.025 / ATCO.MED.A.025 – Obligations of the aeromedical examiner

MED.A.025(a)/ATCO.MED.A.025(a) Obligations of AeMC, AME, GMP and OHMP

When conducting aero-medical examinations and aero-medical assessments, AeMC, AME, GMP and OHMP shall:

- (1) ensure that communication with the person can be established without language barriers;
- (2) make the applicant aware of the consequences of providing incomplete, inaccurate or false statements on their medical history.
- (3) notify the licensing authority, or, in the case of cabin crew attestation holders, notify the competent authority, if the applicant provides incomplete, inaccurate or false statements on their medical history.
- (4) notify the licensing authority if an applicant withdraws the application for a medical certificate at any stage of the process.

If an aeromedical examiner cannot ensure that the communication with an applicant of a medical certificate takes place without a language barrier, it shall be refrained from the issuance of a medical certificate. In any application for a medical certificate, the aeromedical examiner shall also make the applicant aware of the consequences of providing incomplete, inaccurate, or incorrect information about their medical history. Even if the applicant has informed the aeromedical examiner about their medical conditions in previous applications, this shall also be disclosed during all later aeromedical examinations when applying for revalidation or renewal of the medical certificate. The aeromedical examiner shall also notify the responsible licensing authority if the applicant provides incomplete, imprecise, or false information in their application for a medical certificate or if the applicant withdraws their application.

Consequences of not providing necessary information

Withholding relevant medical information is regarded as a serious matter, and an aeromedical examiner must ensure that the applicant is aware of this. If an aeromedical examiner finds that an applicant has not provided the necessary information or that a holder of a medical certificate has not reported matters that have arisen during the period of validity, the licensing authority should be informed. If CAA Norway is the licensing authority, the event of a breach of this duty may result in revocation of the medical certificate. In severe cases, such a breach can be punishable by fines or imprisonment up to 6 months according to Norwegian law (Luftfartsloven/Act relating to Aviation).

MED.A.025(b) Obligations of AeMC, AME, GMP and OHMP

After completion of the aero-medical examinations and/or assessment, the AeMC, AME, GMP and OHMP shall:

- (1) inform the applicant whether he or she is fit, unfit or referred to the medical assessor of the licensing authority, AeMC or AME, as applicable;
- (2) inform the applicant of any limitation that may restrict flight training or the privileges of his or her licence or cabin crew attestation, as applicable;
- (3) if the applicant has been assessed as unfit, inform him or her of his or her right to have the decision reviewed in accordance with the procedures of the competent authority;
- (4) in the case of applicants for a medical certificate, submit without delay to the medical assessor of the licensing authority a signed, or electronically authenticated, report containing the detailed results of the aero- medical examinations and assessments as required for the class of medical certificate and a copy of the application form, the examination form, and the medical certificate;
- (5) inform the applicant of his or her responsibilities in the case of decrease in medical fitness, as specified in point MED.A.020.

ATCO.MED.A.025(b) Obligations of AeMC and AME

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

- (1) advise the applicant whether fit, unfit or referred to the licensing authority;
- (2) inform the applicant of any limitation placed on the medical certificate; and
- (3) if the applicant has been assessed as unfit, inform him/her of his/her right of a review of the decision; and
- (4) submit without delay to the licensing authority a signed, or electronically authenticated, report containing the detailed results of the aero-medical examination and assessment for the medical certificate and a copy of the application form, the examination form and the medical certificate; and
- (5) inform the applicant of their responsibility in the case of decrease in medical fitness as specified in ATCO.MED.A.020.

Below follows a description of information the aeromedical examiner must provide to the applicant after an aeromedical assessment, as well as the requirements regarding the completion and release of the application.

The aeromedical examiners duty to inform the applicant

Upon completion of the aeromedical examination and assessment, the aeromedical examiner shall inform the applicant of the following:

- the aeromedical examiners assessment of whether the applicant meets the relevant medical requirements
- when applicable, that the application has been consulted with/referred to the licensing authority
- the applicant's opportunity to request an assessment of their case by the licensing authority after a denial of the issuance of a medical certificate by an aeromedical examiner (for EMPIC users in Norway; this is also stated in the letter of denial).

When issuing a medical certificate, the aeromedical examiner must ensure that the holder is aware of the duties described below, even if these are already stated in the text on the back of the medical certificate:):

- the applicant's duty to refrain from exercising the privileges that follows the medical certificate if they become aware of any conditions affecting their health that may reduce flight safety
- the applicant's duty to seek aeromedical advice from an aeromedical examiner or aeromedical center without unnecessary delays after undergoing surgical treatment, starting a new medication, hospitalisation, admission to the outpatient clinic or significant injury or illness that may affect flight safety. The same duty applies in case of pregnancy.
- the detailed content of any limitation applied to the medical certificate

The aeromedical examiner may also consider printing the information including a more detailed description of the applicant's duty of disclosure (an information leaflet is included in the EMPIC software version used in Norway).

New aeromedical assessment

If the applicant disagrees with the aeromedical examiner's assessment, they may request the licensing authority to reassess their case. In such cases, it is important that the application contain all relevant information and documentation.

As a rule, the aeromedical examiner should forward the applicants request to the responsible authorities, and supplement with a written assessment of the applicant's comments and any updated information. Be aware that this procedure may differ, depending on the licensing authority.

Completion and release of the application

The submission of medical reports to CAA Norway should await the completeness of the report, including any supplementary documentation such as relevant hospital epicrisis, outpatient notes or results of additional examinations. The aeromedical examiner must ensure that all relevant documentation and comments are available before submitting it to CAA Norway.

AMEs based in Norway shall submit all documentation via the EMPIC software, including all EASA medical reports independent of the applicants licensing authority. This obligation only applies to aeromedical assessment of fitness for EASA medical certificates or national AFIS/HFIS medical certificates. If another EASA member state is the licensing authority, CAA Norway should only receive documentation that the obligations of the AME have been met. If CAA Norway is the applicant's licensing authority, the submitted medical report should be comprehensive and include all information necessary to allow the medical assessor to carry out an independent assessment of whether the medical requirements are met. AMEs based in another country and without access to EMPIC shall submit the documents per post (Luftfartstilsynet, Postboks 243, 8001 Bodø, Norway) or by digital encryption without unnecessary delays. This applies to both applications consulted with/referred to CAA Norway and applications where this is not required. However, it only applies to EASA medical reports. If CAA Norway is the applicants licensing authority, the medical report shall be comprehensive and submitted after completed examination without unnecessary delays. For EASA aeromedical examinations of class 1 or class 2 applicants with another licensing authority, the reports can be sent in bulks once a month.

In any cases of consultation or referral via EMPIC software, the aeromedical examiner shall also notify CAA Norway via email (postmottak@caa.no) while maintaining medical confidentiality. The e-

mail should include the first 2 letters of the first name and family name as well as the date of birth of the applicant, so that the medical report is searchable in the EMPIC software.

For applicants with certificates in another member state it shall be documented that all relevant documents and medical information is sent to the licensing authority in which the certificate was issued (see separate procedure later in these guidelines).

MED.A.025(d)/ATCO.MED.A.025(c) Obligations of AeMC, AME, GMP and OHMP

AeMCs, AMEs, GMPs and OHMPs shall maintain records with details of aero-medical examinations and assessments performed in accordance with this Annex (Part-MED) and their results for a minimum of 10 years, or for a longer period if so determined by national legislation..

In Norway, all aeromedical assessments based on Part-MED or Part.ATCO-MED shall be recorded in EMPIC. In addition, the aeromedical examiner shall keep the signed declaration form. If the AME practice is located in another country and without access to the Norwegian EMPIC database, CAA Norway shall receive a copy of the completed report and add this into the national EMPIC database on behalf of the AME.

Signed self-declaration form

The aeromedical examiner shall always ensure that the declaration form is signed by the applicant. The original declaration form with both the applicant's and aeromedical examiner's signature must be kept for at least 10 years, and a copy of the signed form shall be submitted to CAA Norway. This requirement may be important for legal protection of the AME if an aviation incident subsequently occurs and it is revealed that a holder of a medical certificate has not provided the necessary information.

MED.A.025(c)

Where consultation with the medical assessor of the licensing authority is required in accordance with this Annex (Part-MED), the AeMC and AME shall follow the procedure established by the competent authority.

MED.A.025(e)

AeMCs, AMEs, GMPs and OHMPs shall submit to the medical assessor of the competent authority, upon request, all aero-medical records and reports, and any other relevant information, when required for: (1) medical certification; (2) oversight functions.

ATCO.MED.A.025(d)

AeMCs and AMEs shall submit to the medical assessor of the competent authority, upon request, all aero-medical records and reports, and any other relevant information when required for: (1) medical certification; (2) oversight functions.

MED.A.050 (a)/ATCO.MED.A.050

If an applicant for a Class 1, Class 2 or Class 3 medical certificate is referred to the licensing authority in accordance with MED. B.001/ATCO MED.B.001, the AeMC or AME shall transfer the relevant medical documentation to the licensing authority.

MED.A.035(a) / ATCO.MED.A.035(a)

Applications for a medical certificate shall be made in a format established by the competent authority

The following describes the procedures for documentation, consultation, or referral of applications to CAA Norway as well as when examining applicants with certificates from another EASA member state.

Requirements for documentation

Any condition in the applicant's medical history and any abnormal findings in the clinical examination should be commented by the aeromedical examiner, even if this has been done in previous examinations. As a rule, the applicant shall present a copy of medical documents for all relevant consultations with the specialist healthcare system or primary healthcare provider, and the records shall be scanned/copied by the AME as part of the medical report. CAA Norway should be able to make an independent assessment of whether the applicant meets the medical requirements based on the updated medical documentation. This procedure applies both to applications of a medical certificate (initial issuance, revalidation or renewal) and when the holder of a medical certificate is obliged to consult with an aeromedical examiner according to MED.A.020 (registered as interim assessments or expert opinions in the EMPIC software).

If there is any doubt whether relevant medical documentation of older date has previously been forwarded to CAA Norway (and where this may affect the assessment or follow-up of the applicant today) it shall also be included in the submitted updated medical report. The aeromedical examiner shall not automatically assume that CAA Norway is familiar with all relevant medical documentation of an older date.

It shall be clear from the aeromedical report whether the aeromedical examiner considers the medical requirements met (with or without limitations), even if the application has been referred to CAA Norway. The AME should include references to both the applicable implementing rules (IR), AMC to IR and GM. If the AME's assessment is not in accordance with applicable GM, the aeromedical examiner should also include evidence-based references that supports the alternative approach. In the event of denial, it must always be documented that the applicant has been informed about the right to have the application reviewed by the licensing authority (for AMEs in Norway; a letter of denial shall have been issued in EMPIC), as well as which requirements in the regulation that are not met.

In cases where consultation with CAA Norway is required, the aeromedical examiner shall ensure to receive a *written* feedback from CAA Norway before the medical certificate can be issued. In the absence of such documentation the consultation is considered to have not taken place, regardless of the aeromedical examiner's own comments in the report and regardless of what may have been communicated verbally over the phone.

The AME shall also submit a copy of the signed application form, and when issuing a medical certificate, the signed medical certificate must be scanned and submitted as well. In other words, it is not sufficient to attach the un-signed version of the application form or medical certificate. Both the aeromedical examiner's signature and the applicant's signature shall be applied.

If the applicant is not known to the aeromedical examiner from earlier (and this is evidenced by previous reports), a copy of the applicant's valid ID (preferably passport) must be scanned and submitted as proof that the applicant's ID has been checked.

Consulting with or referral to CAA Norway

In accordance with the regulations, some conditions require the aeromedical examiner to *refer* the application to CAA Norway or *consult* with CAA Norway *before a medical certificate can be issued*. Requirement for referral apply primarily to some applications for class 1 or class 3 medical certificates, while requirement for consultation apply in some applications for class 2 medical certificates.

In the case of denial of an application of a Norwegian EASA medical certificate, it is not required to refer the application if the AME considers the applicant as *unfit* and the applicant does not want CAA Norway to review or overrule the aeromedical examiner's assessment. However, the aeromedical examiner must be able to document that the applicant has been informed of their possibility to request CAA Norway to review the assessment.

Consultations or referrals from AMEs in other countries and without access to EMPIC shall be submitted to CAA Norway via post or encrypted email. In any non-encrypted email correspondence to CAA Norway (postmottak@caa.no), the AME must ensure to avoid breaching confidentiality and therefore avoid using the applicant's full name or social security number in combination with medical sensitive information. However, the first two letters of the applicant's last name and date of birth must be provided for CAA personnel to identify the correct individual in the national EMPIC software.

The aeromedical examiner should ensure that the following are met to avoid unnecessary delays in proceedings:

1. The application shall be *adequately documented* prior to referral/consultation. This includes documentation of additional examinations conducted by other specialists when this is required to determine medical fitness.
2. It should be clearly stated if the inquiry is to be considered a "referral" or "consultation"
3. All documentation submitted to CAA Norway shall be written in Norwegian or English (original version or translated by an official certified translation service provider)
4. The aeromedical examiner shall clearly communicate the reason for consultation/referral, as well as refer to the relevant paragraphs in the regulations.
5. The aeromedical examiner shall state their professional recommendation and justify the recommendation.

Both referral, consultation and CAA Norway's handling of the case shall take place in writing to ensure adequate formal documentation. In addition, it is assumed that the aeromedical examiner has accounted for all relevant conditions and that all necessary documents on the matter has been submitted. The requirement for referral/consultation is therefore not considered to be fulfilled if the dialogue has taken place verbally over the phone.

Note! The medical certificate shall not be issued pending CAA Norway's decision.

Unchanged health conditions in cases originally assessed by CAA Norway

Certain medical conditions should be assessed by the applicant's licensing authority. In cases where applicants of Norwegian EASA medical certificates have previously been assessed by CAA Norway and there are no changes in the health status when applying for an extension, the aeromedical examiner can under the following conditions revalidate the medical certificate:

1. The aeromedical examiner shall specifically refer to the previous assessment and that there have been no changes in the health status or risk factors that require the matter to be reconsidered by CAA Norway.
2. If CAA Norway's previous assessment is conditioned upon supplementary investigations to be carried out, this must be done.

CAA Norway shall not have stated in previous decisions that the case must be consulted with or referred to the authorities prior to renewal or revalidation of the medical certificate.

Aeromedical examination of applicants from other member states

In the case of aeromedical examination of applicants with certificates from other EASA member states, the aeromedical examiner is responsible for submitting all medical information and documents to the applicable civil aviation authority of the relevant member state.

Contact information for the various aviation authorities can be found on the EASA website:

https://www.easa.europa.eu/sites/default/files/dfu/Medical_assessor_v6_2021.pdf

Remember to submit the following documentation:

1. Self-declaration form
2. Medical examination report

3. ECG, audiogram, and the records from relevant examinations
4. Copy of the issued medical certificate

MED.A.035 / ATCO.MED.A.035 – Application for a medical certificate

MED.A.035(b)/ATCO.MED.A.035(b) Application for a medical certificate

Applicants for a medical certificate shall provide the AeMC, AME or GMP 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 applied for a medical certificate/ have undergone an aero-medical 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.

The aeromedical examiner shall verify the identity of the applicant prior to any aeromedical examination or assessment. The aeromedical examiner shall also ensure that the applicant has signed the self-declaration form with all relevant medical history, whether they have previously undergone an aeromedical examination and whether the person in question has previously been assessed as fit or unfit for flying.

Verification of the applicant's identity

An applicant for a medical certificate must always present a valid ID to the aeromedical examiner if they do not already know the applicant. The aeromedical examiner is responsible for verifying the correct identity of the applicant. The AME shall document that a valid ID (e.g. passport) has been checked by scanning the ID and submitting a copy with the rest of the medical report.

Self-declaration form

The aeromedical examiner shall review the applicant's declaration together with the applicant to ensure that all medical information has been disclosed. All relevant medical history shall be commented on by the AME, and where applicable the aeromedical examiner shall ensure that relevant documentation is scanned and submitted to the licensing authorities as part of the medical report. If the applicant has previously been assessed as unfit for a medical certificate, the reason must also be presented in the application, and the aeromedical examiner must assess whether this affect flight safety today. It is not sufficient to comment that the information is "already known." CAA Norway only checks a random sample of aeromedical assessments and has not necessarily taken into consideration the information from previous applications.

Verification of information

The aeromedical examiner shall assess the need to check the information in the applicant self-declaration form against older documentation. Among other things, it may be appropriate to check previously decisions of denial or an aeromedical examiner's assessment if the applicant has previously been rejected or had their medical certificate revoked. The same applies to limitations such as SIC or SSL, where the scope of the limitation is described in the decision letter.

MED.A.035(c) Application for a medical certificate

When applying for a revalidation or renewal of the medical certificate, applicants shall present the most recent medical certificate to the AeMC, AME or GMP, as applicable, prior to the relevant aeromedical examinations.

ATCO.MED.A.035(c) Application for a medical certificate

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

Routines for checking previously issued medical certificate

In the event of revalidation or renewal of a medical certificate, the aeromedical examiner must always check the applicant's previous medical certificate and pay special attention to:

1. Imposed limitations:
 - The aeromedical examiner is responsible for knowing the scope of the limitations. If this is not explicitly stated in the medical certificate (e.g. SIC), the aeromedical examiner may ask the applicant to present the applicable decision letter or obtain the applicant's consent to receive a copy of the decision letter from CAA Norway.
 - The limitations shall be added to the revalidated or renewed medical certificate unless otherwise stated in the regulations or the decision letter.
2. Validity of the previous medical certificate:
 - If the issuance of a medical certificate is carried out within 45 days before the validity of the previous medical certificate expires, requirements for revalidation of the medical certificate apply.
 - If it has been more than 2 years since the medical certificate (class 1, 2 or 3) validity period expired, the aeromedical examiner must conduct a full aeromedical assessment before a medical certificate can be considered (cf. MED. A.045(c)(2)(i) and ATCO.MED.A.045(c)(2)(ii)). This means that the aeromedical examiner must ask the applicant for permission to access previous medical reports or receive all relevant documentation from the licensing authority.
 - If more than 5 years have passed since the medical certificate expired, the same procedural requirements as when issuing an initial medical certificate applies, but the medical requirements remains the same as when applying for a revalidation (cf. MED. A.045(c)(2)(ii) and ATCO.MED.A.045(c)(2)(iii)). This means that the application for renewal of class 1 or class 3 medical certificates must be carried out at an aeromedical center.
3. Certificate number:
 - The aeromedical examiner must ensure that the correct nationality and certificate number are continued (cf. ARA.MED.130(a)) and that all documents and medical information are sent to the appropriate aviation authority. The application and associated documents shall be submitted through the preferred means, and when the documents are sent to another country's authorities the records shall be kept.

MED.A.040 / ATCO.MED.A.040 – The issuance of medical certificates

MED.A.040(a)/ATCO.MED.A.040(a) Issuance, revalidation and renewal of medical certificates

A medical certificate shall only be issued, revalidated or renewed once the required aero-medical examinations and assessments, as applicable, have been completed and the applicant has been assessed as fit.

The application must be completed before a medical certificate is issued

The aeromedical examiner shall never issue a medical certificate until the necessary information and documentation has been obtained and scanned. In cases where a consultation or referral to CAA Norway is required, the aeromedical examiner shall also await the issuance of a medical certificate until there is written documentation that CAA Norway considers the applicant to be fit.

Guidance to Part-MED/ Part-ATCO.MED Subpart B

Guidelines for aeromedical issues

MED.B.005 / ATCO.MED.B.005 – General medical requirements

MED.B.005 General medical requirements

Applicants for a medical certificate shall be assessed in accordance with the detailed medical requirements set out in Sections 2 and 3.

They shall, in addition, be assessed as unfit where they have any of the following medical conditions which entails a degree of functional incapacity which is likely to interfere with the safe exercise of the privileges of the licence applied for or could render the applicant likely to become suddenly unable to exercise those privileges:

- (a) abnormality, either congenital or acquired;
- (b) active, latent, acute or chronic disease or disability;
- (c) wound, injury or sequelae from operation;
- (d) effect or side effect of any prescribed or non-prescribed therapeutic, diagnostic or preventive medication taken.

ATCO.MED.B.005(a) General medical requirements

Applicants shall be free from any of the following 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:

- (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.

MED.B.095(a) Medical examination and assessment of applicants for LAPL medical certificates

An applicant for an LAPL medical certificate shall be assessed based on aero-medical best practice.

The aeromedical requirements are not met if there is an impairment in functional capacity or a risk of in-flight pilot incapacitation. The latter can be defined as any reduction in medical fitness to a degree or nature that is likely to jeopardize flight safety. Be aware that minor impairments may go undetected by other crew members during normal flight operations but be operationally significant in abnormal conditions requiring more complex tasks under time constraints. Also note that mild incapacitation includes medical conditions resulting in reduced state of alertness, increased reaction time and impaired judgement.

Medical incapacitation may also occur in medically fit individuals. Thus, the medical requirements are linked to medical diagnoses, disabilities, injuries, or side-effects from medical treatment. However, the words “any”, “could” or “likely” in MED.B.005 and ATCO.MED.B.005 should be clarified as the risk may rarely be ruled out with 100% certainty. Furthermore, what is meant by “aero-medical best practice” in MED.B.095(a)?

Below is a more detailed description of the principles on which the aero-medical assessments are based, the acceptable levels of risk and how the aeromedical examiner should relate to various aeromedical sources to estimate the level of risk. Note that the principles of MED.B.005/ATCO.MED.B.005 apply both for medical conditions that are described in detail later in the regulations and for medical conditions that are not specifically mentioned in the regulations.

General assessment of medical fitness

The medical requirements in Part-MED are mainly described in subpart B. It is noted that this contains a general part (MED. B.005) in addition to a more concrete and organ specific section

(sections 2 and 3 of subpart B). It is stated in the regulation that the general MED.B.005 shall always be met in addition to the more specific requirements in sections 2 and 3.

It follows from MED.B.005/ATCO.MED.B.005 that an applicant for a medical certificate (class 1, class 2, LAPL or class 3) shall not have any active or latent medical conditions or side effects of medication that:

- a. entail a degree of functional incapacitation likely to interfere with flight safety *or*
- b. may result in a sudden onset of functional incapacitation that affects the safe exercise of the privileges that follow the medical certificate

In other words, the aeromedical examiner must consider both the current level of function and the risk of future incapacitations.

Assessment of level of function

This first point above (a) means that the aeromedical examiner must assess the applicant's level of physical and mental function and ensure that there are no impairments that may affect flight safety. In case of doubt, it may sometimes be appropriate to conduct a medical flight test in a representative simulator or aircraft. In other cases, a medical flight test will not lead to a better basis for the aeromedical assessment. For example, experienced pilots with cognitive impairment can sometimes conduct a normal flight without problems, but where the ability to deal with unanticipated challenges is reduced to such an extent that the requirements of MED. B.005 is not fulfilled. However, a stable and predictable functional impairment due to an injury to the musculoskeletal apparatus can often be evaluated with the help of a relevant flight test. The form and guidance for carrying out medical flight tests can be downloaded from CAA Norway's website.

Basic aeromedical competence may be required to conduct an appropriate assessment of the level of function in the relevant context. For example, the O₂ saturation in pilots with moderate COPD may be considerably lower in the hypobaric environment during flight as compared to the normobaric conditions in the AME office.

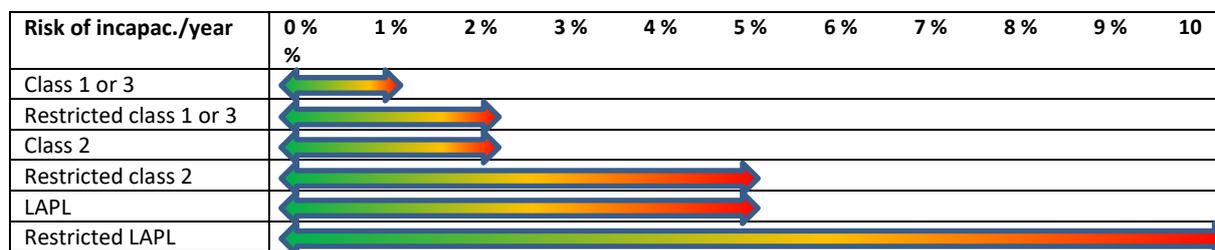
Assessment of the risk of future incapacitation

The second point above (b) means that the aeromedical examiner must consider the risk of future loss of function, including the extent to which this can suddenly affect flight safety. Examples include medical events such as disturbances of consciousness, intense pain, visual disturbances, or dizziness. Sometimes the onset of functional impairment can be subtle, such as pathological impulsivity or difficulty concentrating due to sleep disorders.

In case of doubt as to whether the applicant meets the medical requirements, the aeromedical examiner must, to the best of their ability and based on available documentation, make an estimation of the risk of acute incapacitation during a given period of time. In some cases, this can be demanding, whereas in other cases there are good guidelines (GM) or publications that the aeromedical examiner can use in their assessment. In all cases, the aeromedical examiner shall justify their assessment well and refer to the source.

The rationale for defining a certain threshold for acceptable risk is described in detailed in aeromedical literature and in ICAOs Manual of Civil Aviation Medicine. Despite the limitations and obvious challenges related to this principle, such %-rules apply to strive for objectivity, consistency, and transparency in assessments of aeromedical fitness.

The acceptable risk of acute incapacitation depends on the type of or consequences of incapacitation that may occur as well as on the type of medical certificate. Below is an overview of national guidelines for acceptable annual risk of acute incapacitation:



-  Acceptable level of risk for incapacitation due to acute pain attacks or similar medical incidents (grade 1 incapacitation)
-  Acceptable level of risk for incapacitation due to syncope or similar medical incidents (grade 2 incapacitation)
-  Acceptable level of risk for incapacitation due to epileptic seizures or similar medical incidents (grade 3 incapacitation)

- Medical certificate class 1 without limitations: maximum **0,5-1 %** annual risk
- Medical certificate class 1 with limitations: maximum **1-2 %** annual risk
- Medical certificate class 2 without limitations: maximum **1-2 %** annual risk
- Medical certificate class 2 with limitations: maximum **2-5 %** annual risk
- LAPL medical certificate without limitations: maximum **2-5 %** annual risk
- LAPL medical certificate with limitations: maximum **5-10 %** annual risk

The wide percentage range for acceptable risk for each class of medical certificate is due to different consequences in different forms of incapacitation. For example, acute incapacitation due to generalized epileptic seizures normally has greater consequences for flight safety as compared to a vasovagal syncope. Furthermore, syncope will normally have greater consequences for flight safety than partly incapacitations due to acute pain attacks.

The acceptable risk level also depends on whether the medical certificate is restricted with a limitation that reduces the impact on flight safety should the incapacitation occur. For example, an OML limitation may reduce the risk following a migraine attack as the other pilot may take control of the aircraft as soon as warning symptoms have appeared and been communicated to the other pilot. In such cases, a slightly higher risk of the event occurring is therefore acceptable. Some limitations aim to reduce the risk that an incapacitating event will occur, for example by conducting more frequent medical follow-ups or supplemental medical examinations (SIC). In such cases, it would normally not be relevant to accept a higher risk level or incidence as flight safety is still affected to the same extent should the event still occur.

Please note that these acceptable risk levels are applicable only if they are compatible with other regulatory requirements for the specific medical condition. For example, if the issuance of a Part-MED medical certificate is already excluded based on other requirements in Part-MED, the estimated risk level according to MED.B.005 will not affect the aeromedical decision.

Sometimes a specific medical condition will require both an OML limitation for class 1 and an OSL limitation for class 2, despite that the respective percentages in GM to MED.B.005 does not overlap. This may be due to the margins of uncertainty around the risk estimate and that this limitation in these cases has a crucial impact on how the incident directly or indirectly affects flight safety.

There will often be a need for an assessment and recommendation of a specialist in a relevant medical discipline before the risk of acute incapacitation can be assessed. The aeromedical examiner should be aware that the specialist may still lack the necessary competence or experience in aviation medicine, regulatory principles, or selection medicine. When referring to a specialist, the AME should therefore specify which requirements apply, and where applicable and possible request a quantified probability of the potential medical incident. If the specialist's recommendation differs significantly from the current aeromedical guidelines (GM), the assessment should be evidence-based and justified with references located at a higher level in the evidence hierarchy than the current and challenged GM.

Hierarchy of sources for "best aeromedical practice"

When issuing a medical certificate or denial of an application for a medical certificate, this must always be done in accordance with the relevant regulations in IR (Implementation Rules). For example, for EASA medical certificates class 1 and class 2, Regulation (EU) 1178/2011 Part-MED is the legal framework.

The aeromedical examiner will often experience that the regulations in Part-MED are not sufficiently specific or complementary to conclude whether the applicant is fit to hold a medical certificate. In such cases, it is referred to AMC (Acceptable Means of Compliance) to IR. These are non-binding requirements, but still describe a minimum standard level of medical requirements to achieve the necessary level of flight safety and compliance with IR. Therefore, the aeromedical examiner cannot assess the applicant based on a lower level of requirements than stated in the AMC document.

Aeromedical examiners cannot establish an alternative to AMC, but this can be done by CAA Norway. Such options are called "alternative means of compliance" (AltMoc). When establishing AltMoc, EASA shall also be notified and involved. AltMoc shall continue to comply with IR, and there must be evidence that the alternative medical requirements entail at least the same level of safety as the original AMC.

If the medical requirements of neither IR nor its AMC (or AltMoc) are sufficiently specific and complementary to decide on a conclusion, it is further referred to GM (Guidance Material). These are also referred to as applicable or current guidelines. All requirements in GM are linked to one or more specific regulatory requirements in IR, and in the same way as for AMC, the corresponding IR will still be the legal basis of the assessment. GM differs from AMC in that the aeromedical examiner can deviate GM if there is evidence that alternative guidelines entail at least the same level of flight safety. If the requirements used in the assessment deviates from GM, the AME must document that the alternative assessment is based on a higher level of evidence than current GM.

This document contains national GM and supplement the EASA AMC/GM-document. For other GM, it is referred to the internationally renowned UK CAA GM, which is published on the website of the UK aviation authorities: <http://www.caa.co.uk/Aeromedical-Examiners/Medical-standards/>. UK CAA GM contains useful flowcharts that provide a clear representation of a variety of requirements and guidelines, as well as templates that are descriptive of what information needs to be collected when documentation is required with specialist assessments. Please note that IR and AMC to IR still rank higher than GM, so you cannot use GM that is not compatible with IR and AMC. For example, the UK CAA GM includes medical requirements for insulin-dependent diabetics which are not in accordance with Part-MED and therefore cannot be applied in Norway.

The ICAO Manual of Civil Aviation Medicine (2012) also contains useful guidelines (GM), especially for assessing medical fitness for class 1 medical certificates. You can find a link to this manual on CAA Norway's website.

The reason why the medical requirements in IR and AMC are often unspecific is partly that the field of medicine is dynamic, where the knowledge changes faster than the regulations can be updated. A detailed regulatory framework would mean that many medical requirements are not up to date with the newest knowledge of medical care and prognoses. Less specific medical requirements, on the other hand, allow for greater flexibility and effective updates of current GM, but also facilitate the possibility of the applicant or aeromedical examiner to challenge GM with alternative assessments based on relevant, objective, and scientific evidence.

Sometimes the relevant medical condition is not mentioned in neither IR, AMC nor GM. In such cases, MED.B.005 still applies, so the aeromedical examiner must still assess both the functional level and the risk of future incapacitation. In these cases, the AME may sometimes find useful guidance in up-to-date aeromedical literature (for example, Ernsting's Aviation Medicine Rainford and Gradwell).

UpToDate and BMJ Best Practice are other examples of sources that may be useful. Most medical doctors in Norway have free access to these via www.helsebiblioteket.no. These often include evidence-based information about the prognosis and risk of complications that are of particular relevance in the aeromedical assessment, and UpToDate usually include references to the original publications. In borderline cases or complicated assessments, it may be necessary to review the original publication as well, in order to evaluate the external validity or the relevance of the sources in an aeromedical context.

If no relevant, validated and research-based sources are identified, expert opinions (lowest level in the evidence hierarchy) may be the only source of reference. However, the aeromedical examiner should ensure that the assessment is objective, reasonable and as justified as possible.

The flowchart shown on the next aims to provide a systematic overview of various documents describing medical requirements and weighting of sources in an assessment of whether a pilot meets the medical requirements for a medical certificate.

LEVEL 1 IR / 2 AMC	A	B	C	 <p>If the requirements in Part-MED and AMC to Part-MED is not sufficiently specific or detailed to conclude the assessment, it is necessary to use supplementary and current aeromedical guidance material (GM). See next row. For example, Part-MED and AMC may require further evaluation by a specialist, while GM may specify which examinations are required or which reference values that are acceptable for issuance of a medical certificate.</p>
	Part-MED, MED.B.010-MED.B.095	Part-MED, MED.B.005	Part-MED, MED.B.001	
	<p>Are the relevant medical conditions described in Part-MED or AMC to Part-MED?</p> <p>The requirements in Part-MED shall always be fulfilled, but they are rarely sufficiently specific to be used alone. The requirements in AMC to Part-MED shall also always be met unless there is a valid AltMoc (alternative means of compliance) for the relevant medical condition.</p>	<p>1: Is there a condition present which entails a degree of functional incapacity which is likely to affect the safe exercise of the privileges of the licence applied for?</p> <p>2: Is there a condition present which could render the applicant likely to become suddenly unable to exercise those privileges?</p> <p>In case of the above, the requirements in MED.B.005 is not fulfilled. These requirements are independent of and complement MED.B.010-MED.B.095.</p>	<p>If the requirements for unrestricted certification is not fulfilled: Does it appear from Part-MED or AMC to Part-MED that the safe exercise of the privileges is not affected if one or more limitations are imposed on the medical certificate?</p> <p>If it does not appear from Part-MED or AMC to Part-MED whether this is appropriate it can still be evaluated in accordance with aeromedical guidelines (see next row in this flowchart).</p>	

LEVEL 3 GM	D	E	 <p>If the requirements in Part-MED, AMC to Part-MED and current aeromedical guidelines are not sufficiently specific or detailed to conclude the assessment, it may be necessary to search in general medical literature. See next row.</p>
	<p>Are the relevant medical conditions described in current aeromedical guidelines?</p> <p>Current aeromedical guidelines are used in the following order:</p> <ol style="list-style-type: none"> National guidelines UK CAA guidelines ICAO guidelines Other <p>The guidelines supplement Part-MED and AMC to Part-MED where these are in accordance with the regulations.</p>	<p>Current aeromedical guidelines are not absolute (contrary to Part-MED). However, if the AME chooses an alternative approach the AME is also required to enclose evidence-based documentation (with an evidence level higher than "expert opinion" and relevant aeromedical GM) that the medical requirements for the issuance of a medical certificate (unrestricted or restricted) is fulfilled.</p> <ol style="list-style-type: none"> The medical condition does not entail a degree of functional incapacity which is likely to interfere with the safe exercise of the privileges The medical condition does not carry an unacceptable risk of acute incapacitation during exercise of the privileges. The reasoning must be well documented, and an expert opinion without reference to any scientific or evidence-based resources is not sufficient. The acceptable level of incapacitation risk depends on the medical certificate: Medical certificate class 1: maximum 1-2% annually Medical certificate class 2: maximum 2-5% annually 	

LEVEL 4	F
	<p>If the relevant medical conditions are not sufficiently described in Part-MED, AMC to Part-MED or current aeromedical guidelines it may be necessary to search general medical literature to assess the level of function and estimate the risk of acute incapacitation.</p> <p>If no relevant guidelines or evidence-based documentation may be identified, it may be acceptable to conclude the assessment based on a justified specialist opinion.</p> <p>When the AME refers to scientific publications it is expected that the AME also comment on the external and appropriate validity (i.e. to what degree may the conclusions of a particular study be applied in the context of this particular aeromedical assessment). For example, does the age group or comorbidities of patients in a cohort differ significantly from the applicant?</p> <p>In some cases, a medical flight test may be necessary to determine whether the level of function is satisfactory (see B(1)/E(1)). However, the AME should also be aware of the limitations of a flight test. For example, the test may fail to reveal moderate degree of cognitive dysfunction or impaired ability to handle unpredictable events that may occur during flight.</p>

Assessment of medical fitness for class 3 medical certificate

The assessment of the medical fitness for class 3 medical certificates must be in accordance with IR (Part-ATCO.MED) and AMC/AltMoc to Part-ATCO.MED. If, based on these, it cannot be fully concluded whether specific medical requirements have been met, it is referred to GM or guidelines for class 3.

In some cases, there is insufficient description of relevant class 3 medical requirements in both IR, AMC/AltMoc and GM for class 3 medical certificates, and it is then referred to the applicable class 1 guidelines. The acceptable level of risk of acute incapacitation is basically equal for class 1 and class 3 medical certificates, and in most cases the medical requirements will be identical. However, there are some factors that distinguish the assessments of medical requirements between these classes, and these must be considered before it is concluded whether the applicant is fit for working as an air traffic controller:

- a) Assess whether the relevant operational environmental factors affect the medical condition's risk of causing acute incapacitation differently for the air traffic controller than for a pilot. For example, hypobaric hypoxia will normally result in a greater risk of incapacitation in a pilot with mild obstructive pulmonary disease as compared to an air traffic controller. Also, an air traffic controller is not exposed to G-forces in their work and therefore usually less affected by conditions that predispose to orthostatic intolerance.
- b) Assess whether the operational requirements and working conditions of the applicant affect how the medical condition may impair flight safety or the level of performance of the air traffic controller differently than that of a pilot. For example, particularly high demands are placed on the air traffic controller's vigilance and communication ability.
- c) If the applicable GM for class 1 medical certificates would result in the issuance of a medical certificate with limitation, the same limitation would normally also be applied to a class 3 medical certificate. Nevertheless, the AME must consider whether the limitation has the same relevance for safeguarding flight safety in the working environment and operational requirements for the air traffic controller. This applies when considering SSL limitation in cases where the class 1 guidelines involve OML limitation. If the condition involves a high risk (1-2% per year) of acute and total incapacitation (grades 2 and 3), SSL limitation should normally be considered. The SSL will in such cases imply that another air traffic controller shall be able to take over the function without unnecessary delay (seconds or minutes, depending on the place of work and type of incapacitation). If the risk in question relates to partial incapacitation (grade 1), it may be considered that an SSL limitation is not necessary for the air traffic controller if the relevant work situation, emergency response and type of incapacitation indicate that other air traffic controllers may take over the tasks before flight safety is affected. The applicant should be invited to a dialogue about whether alternative limitations or measures can be applied to ensure flight safety to the same extent, and after the consent of the applicant it may in some cases be appropriate to include the employer in the dialogue.

History of systemic allergic reaction

Systemic allergic reaction is one of several examples of medical conditions that can lead to acute incapacitation. In cases where there is a risk of anaphylactic or systemic allergic reaction during

exercise of privileges, the medical requirements will not normally be fulfilled. However, if the allergen is known and can be avoided before and during the exercise of the privileges, the AME may consider issuing a medical certificate. A specialist opinion must be obtained with a description of which allergens the applicant reacts to and type of allergic reaction that can be expected. In such an assessment, it should be considered whether allergic reaction may occur when ingesting, touching and/or are exposed to the allergen in aerosol form. Depending on this information, an assessment of the risk of the transfer of allergen from passing passengers or the previous flight crew must also be taken.

Depending on the estimated risk and documentation, it may be appropriate to add OML limitation and/or SSL with the requirement to have an EpiPen (epinephrine autoinjector) easily accessible when exercising the privileges.

If the risk of acute incapacitation is less than 1% per year, the issuance of an unlimited medical certificate may be considered.

Furthermore, the aeromedical examiner must consider side-effects of any allergy medication, as some of these may result in fatigue or reduced psychomotor performance.

Use of medication in pilots

It can sometimes be challenging to get an overview of which medications are accepted when flying. In general, the aeromedical examiner should assess all known adverse reactions of the medication, including how frequently these occur and whether these may affect flight safety. The AME should consider the potential for tolerance after an adequate observation period with a stable dosage. The aeromedical examiner should also be aware of the mechanism of action of the medication and whether it can be affected by relevant environmental stressors such as hypobaric pressure or G-forces. Below is an overview of aeromedical guidelines for common groups of drugs:

- **Antibiotics:** Normally an indication that the pilot has an infection, which implies medical unfitness.
- **Antimalarials:** Chloroquin and doxycycline are normally compatible with flying, while the use of mefloquine results in an assessment of unfitness for flying.
- **Antihistamines:** May cause fatigue and is therefore usually not compatible with flying. In some cases, the use of non-sedative antihistamines may be accepted.
- **Nasal decongestants:** The nasal drops will not normally affect flight safety, but the aeromedical examiner must assess the underlying condition. Edema of the mucous membranes can cause difficulties with pressure equalization of ears and sinuses.
- **Codeine-containing preparations:** Not compatible with flying due to risk of impaired human performance.
- **Antihypertensives:** The most common antihypertensives are approved for flying after satisfactory adaptation period and stable dosage without relevant side effects. This includes non-loop diuretics, ACE inhibitors, angiotensin II blockers, calcium channel blockers and some beta blockers. However, loop-diuretics (e.g. Furix), centrally acting medication and vasodilators such as alpha blockers (e.g. Carduran and Doxazosin) are considered among the medication *not* accepted for flying. Combined

alpha and beta blockers (e.g. Trandate or Carvedilol) also act vasodilating and may cause the same side effects as alpha blockers. These will therefore normally result in an unfit assessment.

- **Antidepressants:** These will normally not be compatible with flying. Exceptions are some SSRI preparations under given conditions (see guidelines for maintenance treatment after depression).
- **Anesthetics:** As a rule, flights should be awaited at least 12 hours after local anesthesia and at least 48 hours after general, spinal or epidural anesthesia.
- **Anticoagulants:** Initiation of anticoagulation therapy results in an assessment of medical unfitness. If anticoagulants are used as a *treatment* for a thromboembolic condition (at least 6 months in case of pulmonary embolism and at least 3 months in DVT) one should refrain from flying. If the anticoagulant is used as a prophylaxis, issuance of a medical certificates may be considered after a satisfactory period of stable dosage. When using warfarin, INR should be stable for at least 6 months (at least 4 of 5 documented INR values over this period shall be within the therapeutic window) before the medical fitness for flying can be assessed, and further INR control shall be carried out at least every 2 months. When using NOAC/DOAC, there should have been a stable dosage without adverse reactions for at least 3 months prior to assessment of medical fitness for flying. OML shall always be applied to class 1 medical certificates if the applicant is on anticoagulation prophylaxis. Correspondingly, class 2 medical certificates shall normally be subject to ORL or OSL restriction, but if NOAC/DOAC is used (without the need for INR monitoring), issuance of class 2 medical certificate without ORL/OSL may be considered if the bleeding risk is satisfactorily low. Various calculators are available for individual assessment of the bleeding risk, for example HAS-BLED calculator for assessing annual risk of major bleeding when anticoagulation is used in patients with atrial fibrillation. See specific sections in AMC1/AMC2 MED.B.010 (valve surgery, thromboembolic disease and arrhythmia).

Below is also a brief overview of a selection of specific medications and associated aeromedical assessment:

- **Lithium:** not compatible with flying
- **Sildenafil (Viagra):** at least 6 hours waiting period
- **Tadalafil (Cialis):** at least 36 hours waiting period
- **Methylphenidat (Ritalin) / Atomoxetine (Strattera):** not compatible with flying
- **Levothyroxin Natrium:** may be accepted provided stable dosage and documented normal thyroid status by ongoing treatment and after satisfactory waiting period
- **Carbimazol:** not compatible with flying
- **Insulin:** not compatible with flying
- **Metformin:** entails OML limitation for class 1 medical certificates
- **Levodopa:** used in advanced parkinsonism and is normally incompatible with flying
- **Isotretinoin:** normally not compatible with flying. May be considered exceptionally for class 2 or LAPL medical certificates, but then without privileges for night flights as the use of this medication is associated with, among other things, reduced night vision.

MED.B.010 / ATCO.MED.B.010 – Cardiovascular

MED.B.010(a)(2)/ATCO.MED.B.010(a)(2)(iii)

An extended cardiovascular assessment shall be required when clinically indicated

The aeromedical examiner shall ensure that extended cardiovascular examination is carried out in the event of an accumulation of risk factors for cardiovascular disease, even if the applicant do not have known disease. Below describes the method of cardiovascular risk assessment, as well as what requirements apply when performing exercise-ECG or echo.

Cardiovascular risk factors

The aeromedical examiner shall provide cardiovascular examination if there is an accumulation of several risk factors, such as smoking, family history, hypertension, predisposing lipid profile, etc. The total risk of acute incapacitation shall be within the acceptable limits of the medical certificate in question.

There are several tools for estimating the risk of cardiovascular event over the next few years. Some of these focuses solely on the risk of cardiovascular death (e.g. NORRISK1), and some focus only on the risk of heart attack (e.g. Framingham calculator). The most suitable calculators for aeromedical assessments include any cardiovascular or cerebrovascular event that is likely to result in acute incapacitation (for example, the Qrisk3 calculator on <http://qrisk.org/>). If the 10-year risk exceeds 10% no class 1 or 3 medical certificate shall be issued, unless supplemental investigation ensures that the cardiovascular risk level is within the acceptable risk level for the medical certificate. However, it is important to be aware that the Qrisk calculator has not been validated for patients with, among other things, history of coronary artery disease, known renal failure or familial hypercholesterolemia. The AME may choose to use other algorithms or calculators for these cases (e.g. SMART Risk Score for applicants with a history of coronary heart disease). It is also worth noting that satisfactory findings on supplementary cardiovascular evaluation may result in a lower risk than evidenced by the Qrisk calculator.

Exercise-ECG

In some cases, exercise-ECG is required. It is generally accepted that this examination has a sensitivity and specificity for coronary artery disease of approximately 70% and 80%, respectively, depending on the load level. The test itself is not sufficient to exclude ischemic heart disease, but at adequate load and low pre-test probability, the negative predictive value of a normal test is usually good.

The aeromedical examiner must ensure that the examination is carried out in accordance with AMC1 MED.B.010, which implies that a full load in an asymptomatic applicant should correspond to stage IV in Bruce protocol. Less than **10 METS** will normally not be accepted as an adequate load when applying for class 1, 2 or 3 medical certificates. For LAPL, the load is sufficient if it is as expected based on age (achieved over 85% of the expected maximum heart rate). The load should be further carried out over **at least 6 minutes (at least 9 minutes in Bruce protocol)**.

ECG should be registered with **12 leads**, both during the exercise **and for 10 minutes after the test** as ECG changes may occur after the stress load (recovery phase). Significant ST depression seen only in

the recovery phase is as predictive as changes detected under the exercise, and in a significant proportion of positive exercise-ECGs, ischemia appears only during the recovery phase.

If METS is not listed in the attached record the aeromedical examiner may use the following formula to *estimate* METS based on the load on the treadmill or ergometer bike:

Treadmill

$$((1.67 \times F) + (0.3 \times F \times P)) / 3.5$$

where F is speed in km/h and P is angle of inclination in percentage

Ergometer bike

$$((12 \times \text{Watt load}) + 300) / (\text{Weight(kg)} \times 3.5)$$

The exercise-ECG load requirement is described in both AMC, UK CAA guidelines and the ICAO manual of civil aviation medicine. If the applicant is unable to achieve sufficient load (for example due to orthopedic problems) this shall be justified, and in certain cases it may be accepted to replace the exercise-ECG with other tests with documented equal or better negative predictive values. If the applicant is unable to achieve the load due to reduced *physical capacity*, the aeromedical examiner must be aware that this is associated with an increased risk of ischemic heart disease. In a prospective study from 2009 (Bourque et al. *Achieving an Exercise Workload of ≥ 10 METS Predicts a Very Low Risk of Inducible Ischemia: Does Myocardial Perfusion Imaging Have a Role?* J Am Coll Cardiol. 2009;54(6):538-545) it was concluded that the lack of working capacity to achieve load above 10 METS at exercise-ECG was associated with 10x increased risk of significant myocardial ischemia in myocard scintigraphy under load, and lack of capacity to achieve 7 METS was associated with 18x increased risk.

Echocardiography

The examination should demonstrate satisfactory pump function, including the left ventricular ejection fraction of at least 50%.

If any disease of the cardiac valves are found, reference is made to specific guidelines for these.

In heart disease that causes hypertrophy or dilated atriums/ventricles, the inner diameter of the left atrium should normally be less than 4.5 cm (or volume below 65 mL). The end-diastolic and end-systolic diameter of the left ventricle should be less than 6.5 cm and 4.4 cm, and the septum thickness should be less than 2.5 cm. At values approaching the limit, satisfactory cardiology assessment shall be obtained and OML/OSL limitation should be considered.

MED.B.010(b)(2)(viii) / MED.B.010(b)(3)

Applicants for a class 1 medical certificate with a history of vasovagal syncope of uncertain cause shall be referred to the licensing authority. Applicants for a Class 2 medical certificate shall be evaluated by a cardiologist before a fit assessment can be considered in consultation with the licensing authority.

ATCO.MED.B.010(b)(2)(viii)

Applicants for a class 3 medical certificate with an established history or diagnosis of recurrent vasovagal syncope shall be referred to the licensing authority.

MED.B.065(a)(2) og (b)(7)/ATCO.MED.B.065(a)(2) og(b)(5)*

Applicants with clinical diagnosis or a documented medical history of recurring episodes of disturbance of consciousness of uncertain cause shall be assessed as unfit.

Applicants with clinical diagnosis or a documented medical history of a single episode of disturbance of consciousness of uncertain cause shall undergo further evaluation before they may be assessed as fit.

Applicants for a class 1 and 3 medical certificate shall be referred to the licensing authority. The fitness of Class 2 applicants shall be assessed in consultation with the licensing authority.

*Ved synkope av usikker årsak er også MED.B.065/ATCO.MED.B.065 en relevant hjemmel

Both above points are relevant in case of suspected syncope. The definition of syncope is short-lived, self-limiting loss of consciousness caused by circulatory impairment to the brain. This condition is an example of TLOC (Transient Loss of Consciousness). Examples of syncope include vasovagal reflex syncope, situational reflex syncope, syncope due to orthostatism as well as arrhythmic or cardiac syncope. Other conditions that may lead to loss of consciousness include shock, intoxication, hypoglycemia, cerebrovascular event, head injury, migraine, or epileptic seizure.

Syncope

In case of a medical history of syncope, the aeromedical examiner shall provide an adequate description of the incident. Unless the diagnosis is obvious, there should also be relevant evidence from cardiologist (incl. exercise-ECG, 24 hour ECG and echo) and possibly neurologist. A tilt-test should be considered if vasomotor instability is suspected, and the aeromedical examiner shall consider an OML/OSL limitation. If the loss of consciousness occurred acutely and without any warnings, the applicant is normally considered unfit. Keep in mind that conditions such as hypoxia and +Gz forces can predispose to vasovagal syncopes during flight and have a major impact on flight safety. Below are guidelines for the aeromedical assessment of applicants with a history of syncope:

<p>Warning:</p> <ul style="list-style-type: none"> ◦ No warning and acute loss of consciousness = +5 ◦ Minimal warning or gradual loss of consciousness = +1 ◦ Clear warning (slowly onset of disturbance of consciousness, nausea, jawning, diaphoresis, etc.) = 0 	<p>GENERAL</p> <p>- The risk of repeated episodes during flight shall be considered as very low before medical fitness is assessed</p>
<p>Position when the syncope occurred:</p> <ul style="list-style-type: none"> ◦ Lying/sitting = +2 ◦ Physical activity = +1 ◦ Standing = 0 ◦ Orthostatic (from lying to standing) = 0 	<p>TOTAL 0-1 points</p> <p>- As a minimum the aeromedical examiner shall take blood pressure, heart rate, an ECG and a neurological status. In cases of doubt, supplemented examinations from specialists is required (cardiologist and/or neurologist).</p>
<p>Duration until postictal orientation and normal function after the start of the episode:</p> <ul style="list-style-type: none"> ◦ Over 60 seconds = +2 	

<ul style="list-style-type: none"> ◦ 10-60 seconds = +1 ◦ Under 10 seconds = 0 	<p>- The need for a temporary OML/OSL limitation can be considered until supplemented diagnostics are available.</p> <p><u>TOTAL 2 points</u></p> <ul style="list-style-type: none"> - Neurological and cardiological investigation by a specialist unless the diagnosis is obvious - OML/OSL/OPL for 0-5 years, depending on the individual case. <p><u>TOTAL 3-4 points</u></p> <ul style="list-style-type: none"> - Neurological and cardiological investigation - OML/OSL/OPL is normally applied for a period of 5 years, but a shorter or longer period may be considered in some cases - consider up to 6 months of waiting period <p><u>TOTAL >4 points</u></p> <ul style="list-style-type: none"> -Unfit (the possibility of medical fitness later will be assessed individually).
<p>Prior risk factors for benign syncope:</p> <ul style="list-style-type: none"> ◦ None = +2 ◦ Moderate risk factors (stress, recent life events) = +1 ◦ Major risk factors (intake of substances immediately before the event, infection, orthostatism, warm and cramped surroundings, strong emotional stimulus, dehydration) = 0 	
<p>Prior risk factors for non-benign syncope:</p> <ul style="list-style-type: none"> ◦ Cardiovascular risk factor = +1 to +3 ◦ Neurological risk factor (recent head trauma, neurological diagnoses) = +1 to +3 ◦ Age above 60 years = +1 	
<p>Accompanying symptoms/findings:</p> <ul style="list-style-type: none"> ◦ Involuntary movements/convulsions during or after the syncope = +2 ◦ Tongue bite = +2 ◦ Stool incontinence = +2 ◦ Urine incontinence = +1 ◦ Palpitations = +1 ◦ Chest pain = +1 ◦ Heart murmur = +1 ◦ Significant physical damage due to the syncope = +1 	
<p>Previous history on syncope (sum up points for each episode)</p> <ul style="list-style-type: none"> ◦ Syncope during last 5 years = summarize points for each of the episodes ◦ With 3 or more points over last 5 years = +1 per episode ◦ With below 3 points over last 5 years = 0 	

MED.B.010(b)(2)(ix),(x) og (3)/ATCO.MED.B.010(b)(2)(ix) og (x)

Applicants for a class 1/3 medical certificate with a documented medical history or diagnosis of arterial or venous thrombosis / pulmonary embolism shall be referred to the licensing authority. Applicants for a Class 2 medical certificate shall be assessed by a cardiologist before a fit assessment can be considered in consultation with the licensing authority.

Medical requirements that apply in case of suspected arterial thrombus in coronary vessels or cerebral blood vessels are mainly described elsewhere. The following describes criteria applicable to deep vein thrombosis or pulmonary embolism.

DVT/PE

In the case of history of deep vein thrombosis or pulmonary embolism, the following applies:

1. Documentation on hematological investigation shall be submitted with the medical report.
2. After undergoing pulmonary embolism, the following shall also be available:
 - a. Cardiological investigation, including assessment of pressure conditions in the pulmonary circuit
 - b. Satisfactory oxygen saturation. In case of doubt, the saturation should be measured during HAST (High Altitude Simulation Test) or equivalent.
3. The probable cause of the thrombo-embolic episode shall be accounted for, and the AME or an appropriate specialist should assess the individual risk of relapse and whether the applicant can avoid the predisposing conditions in the future.
4. Arterial and venous thrombosis or embolism is disqualifying as long as the condition is treated with anticoagulation, normally the treatment period is at least 3 months in DVT/PE. After this, anticoagulation can be used as a prophylaxis, and in such cases an OML limitation should be applied to class 1 medical certificates. When using Marevan, a stable INR must be documented for at least 6 months before a limited medical certificate can be issued. This means that at least 4 out of 5 INR values are in the therapeutic range. When using anticoagulants without the need for INR monitoring (NOAC/DOAC), medical fitness with appropriate limitation may be considered after 3 months. ORL should be considered for class 2 medical certificates, depending on the individual bleeding risk or recurrence risk. In all cases, there should be no adverse reactions or unacceptably high bleeding risk.
5. There should be a sufficiently long observation period and limitations in the medical certificate, which depends on the number of thromboembolic episodes and the cause of the episodes, see the table below:

	History of 1 DVT	History of 2 DVTs or 1 PE	History of 3 DVTs or 2 PEs
Known cause that can be avoided, investigation has not revealed predisposing conditions for new thromboembolism			
Unknown cause (idiopathic DVT), investigation has not revealed predisposing conditions for new thromboembolism			
Predisposing conditions that increase the risk of new thromboembolism (e.g. homozygot Leiden mutation)			

<ul style="list-style-type: none"> ● At least 3 (DVT) or 6 (PE) months of observation before the aeromedical examiner can assess medical fitness ● OML limitation if anticoagulation is used as prophylaxis. ORL/OSI limitation should depend on the individual risk factors for bleeding or recurrence 	<ul style="list-style-type: none"> ● Individual assessment and depends on predisposing conditions ● At least 6-12 months observation period (depending on class and individual risk assessment) ● Permanent OML limitation. ORL/OSI limitation should depend on the individual risk factors for bleeding or recurrence 	<ul style="list-style-type: none"> ● Unfit
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MED.B.010(b)(2)(vi)/ MED.B.010(b)(3)/ATCO.MED.B.010(b)(2)(vi)

Applicants for a class 1/3 medical certificate with an established history or diagnosis of abnormality of the pericardium, myocardium or endocardium shall be referred to the licensing authority. Applicants for a Class 2 medical certificate shall be assessed by a cardiologist before a fit assessment can be considered in consultation with the licensing authority.

Some diseases of pericard, myocard or endocard are adequately described in UK CAA guidelines, including hypertrophic cardiomyopathy and pericarditis. Myocarditis is usually more severe than an isolated pericarditis, and below follows supplemental guidelines for this condition.

Myocarditis

An applicant with a history of myocarditis may be considered fit for class 1 with OML, Class 2 with OSL or Class 3 with APC/SSL provided the following:

- The applicant is asymptomatic
- It has been at least 6 months since the applicant has recovered completely without any evidence of myocarditis or any complications
- Cardiological assessment is satisfactory and should include exercise-ECG, 24-hour ECG and echo
- General cardiovascular risk profile is satisfactory
- There has been no history of systemic embolism
- SIC limitation with regular follow-up by cardiologist, including exercise-ECG and echo to exclude dilated cardiomyopathy (may develop months or years after myocarditis)

If the applicant has not been treated with anthracycline and the follow-up in general is satisfactory, OML/OSL/SSL limitation may be considered removed after a few years.

MED.B.010(c)

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

ATCO.MED.B.010(c)

- (1) Blood pressure shall be recorded at each examination.
- (2) The applicant's blood pressure shall be within normal limits.
- (3) Applicants shall be assessed as unfit when: (i) they have symptomatic hypotension; or (ii) when their blood pressure at examination consistently exceeds 160 mmHg systolic and/or 95 mmHg diastolic, with or without treatment.
- (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.

A normal blood pressure is less than 120 systolic pressure and below 80 mmHg diastolic pressure (cf. ACC/AHA). Hypertension is defined as systolic blood pressure of at least 140 mmHg or diastolic blood pressure of at least 90 mmHg, as measured at the doctor's office (cf. ESC/ESH). Blood pressure measured at home is usually 5-10 mmHg lower.

Hypertension

The highest blood pressure accepted when repeated measurement in the office demonstrate *consistent* value is 160/95 mmHg. See UK CAA guidelines for more detailed description of guidelines. In case of blood pressure values above 140/90 mmHg, the aeromedical examiner should document that a cardiovascular risk assessment has been made before a medical certificate can be issued.

If supplemented with 24-hour BP measurement, please note that the reference values for ambulatory blood pressure differ from office blood pressure. Therefore, 24-hour blood pressure measurement should show an average of 150/85mmHg or lower before the aeromedical examiner considers the issuance of class 1, 2 or 3 medical certificates.

If antihypertensives are needed, it will not normally be accepted to use loop diuretics, alpha-blockers and centrally acting medications due to neurological side effects or unpredictable blood pressure response in G-forces. At the onset of approved medication (e.g. ACE inhibitors, angiotensin II receptor antagonists, calcium channel blockers, thiazides or certain hydrophilic beta-blockers) or change in the dosage, the pilot should refrain from flying for the first two weeks so that side effects that may affect flight safety can be excluded. When using beta blockers or calcium channel blockers that cause reduced heart rate, the pilot should avoid more than +2.5 Gz during flight, and the aeromedical examiner must consider the need for multipilot limitation.

MED.B.015 / ATCO.MED.015 – Lungs and airways

MED.B.015(d)(2) and (8) and (e)

Applicants with a medical history or diagnosis of active inflammatory disease of the respiratory system/ chronic obstructive pulmonary disease shall be referred to the licensing authority and shall undergo respiratory evaluation with a satisfactory result before they may be assessed as fit.

ATCO.MED.B.015(d)(1) and (6)

Applicants with a history or established diagnosis of active inflammatory disease of the respiratory system/ chronic obstructive pulmonary disease shall be referred to the licensing authority and shall undergo respiratory evaluation with a satisfactory result before a fit assessment can be considered.

COPD

COPD will normally result in medical unfitness for both class 1, class 2 and class 3 medical certificates. If there is only a minimal impairment of lung function, medical fitness can be considered. For pilots, an oxygen saturation (sO_2) of over 88-90% should be documented when staying in the relevant cabin pressure (equivalent to 8000 feet). This can normally be obtained by HAST (High Altitude Simulation Test) or equivalent simulation test. This examination measures sO_2 and pO_2 while the applicant breathes oxygen-reduced gas to simulate oxygen pressure in normal cabin air. Registration of sO_2 and pO_2 in a low-pressure chamber is another option.

MED.B.015(d)(3) and (e)

Applicants with a medical history or diagnosis of active sarcoidosis shall be referred to the licencing authority and shall undergo respiratory and cardiological evaluation with a satisfactory result before a fit assessment can be considered.

ATCO.MED.B.015(d)(2)

Applicants with a history or established diagnosis of active sarcoidosis shall be referred to the licencing authority and shall undergo respiratory evaluation with a satisfactory result before a fit assessment can be considered.

Sarcoidosis

In applicants with a history of sarcoidosis, the condition should be inactive and limited to hilar lymphadenopathy (grade 1). The pulmonary function should be satisfactory and there should be no evidence of systemic involvement. In particular, the aeromedical examiner must pay attention to the risk of affection of the eyes, heart, or brain. To meet these requirements, the following should be documented:

1. Lung function examination should show a satisfactory and stable pulmonary function (at least 70% of expected FVC and gas diffusion, nor should there be more than 10 and 15% fall in values per year respectively).
2. Possibly HAST (Hypoxia-Altitude Simulation Test) in case of doubts about pulmonary function. PaO₂ is measured in hypoxic air (e.g. 15.1%) to simulate the air in the aircraft cabin during long-sustained flights.
3. Echo, exercise-ECG, Holter registration and MRI (CMR) should be normal with no signs of cardiac sarcoidosis.
4. The applicant should be without need for medication for sarcoidosis (the condition should be inactive), or up to 10mg Prednisolone as a maintenance dose may be acceptable.
5. MRI caput with contrast should not show signs of involvement of the brain or meninges.
6. Ophthalmologist examination should not provide evidence of eye affection.
7. Possibly SIC limitation with follow-up every 6 months (class 1/3) or every year (class 2), including imaging examination of the lungs, lung function examination, resting ECG, and 24 hours ECG.
8. In cases of doubt, a specialist opinion with an individual risk assessment shall be present.

In case of systemic involvement or grade 2-3 pulmonary sarcoidosis, the issuance of a medical certificate with OML (Class 1) and, if applicable, OSL (Class 2) limitation for at least 5 years, may be considered, subject to the above requirements being met.

MED.B.015(d)(5)/ATCO.MED.B.015(c)(5) and (e)

Applicants with a history or established diagnosis of sleep apnoea syndrome shall be referred to the licensing authority and undergo respiratory and cardiological evaluation with a satisfactory result before a fit assessment can be considered.

ATCO.MED.B.015(d)(4)

Applicants with a history or established diagnosis of sleep apnoea syndrome shall be referred to the licensing authority and undergo respiratory evaluation with a satisfactory result before a fit assessment can be considered.

Sleep apnoea syndrome

Reference is made to the UK CAA flowchart for more detailed information on the AMS assessment of sleep apnoea syndrome. The aeromedical examiner should always make sure the Epworth scale is available, which should not be above 10 in pilots with a valid medical certificate. In addition, the aeromedical examiner should describe any use of CPAP, including how often it is used. It should be documented that the pilot uses the necessary CPAP treatment prior to the flight when such is indicated.

If there are doubts about the applicant's ability to stay awake, the conduction of a wakefulness test (MWAT: Maintenance of wakefulness test) should be considered, for example, at a sleep laboratory.

There should also be evidence of satisfactory assessment by a cardiologist before a medical certificate can be issued.

MED.B.020 / ATCO.MED.B.020 – Gastrointestinal

MED.B.020(b)/ATCO.MED.B.020(b)

Applicants who have herniae that might give rise to incapacitating symptoms shall be assessed as unfit.

Abdominal or inguinal herniae

The applicant shall not have hernias capable of incapacitating. If the herniae cannot be re-deposited or if there is a risk of strangulation, the medical requirements for a medical certificate are not met. In case of any doubt whether the hernia may cause incapacitating symptoms, there should be a specialist assessment available. The aeromedical assessment should also consider the risk that the hernia is affected by barometric pressure changes. After surgery for hernias, there should normally be at least 30 days waiting period and satisfactory documentation of postoperative control shall be available before the aeromedical examiner can reassess the medical fitness.

MED.B.025 / ATCO.MED.B.025 – Nutrition, metabolism and endocrinology

MED.B.025(a)/ATCO.MED.B.025(a)

Applicants with metabolic, nutritional or endocrine dysfunction may be assessed as fit subject to demonstrated stability of the medical condition and satisfactory aero-medical evaluation.

AMC1 MED.B.025(b)/ AMC2 MED.B.025(b)

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

AMC1 ATCO.MED.B.025(b)

(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 privileges of the licence and a satisfactory cardiovascular risk review and evaluation of the possibility of sleep apnoea syndrome has been undertaken.

(2) Functional testing in the working environment may be necessary before a fit assessment may be considered.

Obesity

In case of overweight and BMI of 32-35, the applicant should be informed about the health risks associated with excess weight, as well as what consequences it may have for the medical certificate. This should be documented. On UK CAA's website there is a useful informatory document about obesity.

In case of overweight and BMI of 35 or more, satisfactory functional level and satisfactory cardiovascular risk profile must be documented.

The aeromedical examiner shall consider how the level of function has been examined and justify the assessment. In pilots, this is normally done in the form of a medical flight test.

The cardiovascular risk assessment should include the following as a minimum:

- Medical history and lifestyle factors
- BMI
- Waist-hip ratio and neck circumference
- Blood sugar
- Urine-stix
- Blood pressure
- Epworth Sleepiness Scale
- Applicants or holders of class 1 or 3 medical certificates shall normally undergo exercise-ECG with sufficient load (at least 10-11 METS), depending on the cardiovascular risk. If the load is not achieved or the risk profile is in the borderline, cardiovascular investigation and risk assessment shall be carried out by a cardiologist

The aeromedical examiner may consider a time-limited medical certificate (TML) of 2 months pending the cardiovascular investigation and medical flight test.

If the investigation shows satisfactory function and low risk, the aeromedical examiner may issue a class 1 or 3 medical certificate. The aeromedical examiner shall consider a TML restriction to follow up the applicant's BMI. If BMI increases by more than 2.5, a renewed functional assessment should be performed, and if the risk of cardiovascular event within the next 10 years exceeds 20%, annual exercise-ECG shall be carried out.

MED.B.025(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 and is stable.

MED.B.025(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 medical assessor of the licensing authority.
- (2) The fitness of applicants for a class 2 medical certificate requiring medication other than insulin for blood sugar control shall be assessed in consultation with the medical assessor of the licensing authority.

ATCO.MED.B.025(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 licensing authority. A fit assessment may be considered if it can be demonstrated that blood sugar control has been achieved and is stable.

Diabetes mellitus

Insulin-treated diabetes mellitus results in medical unfitness for class 1, class 2 and class 3 medical certificates. When using approved antidiabetic drugs, OML must always be applied to class 1 medical certificates and OSL/OPL should be considered for class 2 medical certificates. In addition, the aeromedical examiner shall document:

1. Satisfactory stress-ECG
 - Repeated annually in holders of class 1 or 3 medical certificates
 - Repeated annually in class 2 medical certificate holder at >20% risk of cardiovascular or cerebrovascular events within the next 10 years
2. Satisfactory overall cardiovascular risk profile
3. Stable and satisfactory HbA1c (at least every 6 months in class 1/3 medical certificates and at least annually in class 2 medical certificates)
4. Absence of other diabetic complications that may affect flight safety (including ophthalmological and neurological status by the aeromedical examiner or specialist in case of doubt).
5. No history of hypoglycemic episodes on current medication.

MED.B.050 – Musculoskeletal system

MED.B.050

(a) 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.

(b) 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.

(c) In case of doubt arising in the context of the assessments referred to in points (a) and (b), applicants for a class 1 medical certificate shall be referred to the medical assessor of the licensing authority and applicants for a class 2 medical certificate shall be assessed in consultation with the medical assessor of the licensing authority.

Orthopedic or rheumatic disorders

An applicant with inflammatory, traumatic, or degenerative disease in the musculoskeletal system is considered unfit for flight until it is documented that the condition does not affect flight safety. The condition must be in remission or stable, the applicant shall not use any drugs that are incompatible with exercising the privileges of the certificate, and appropriate functional use of the musculoskeletal system shall be verified by an appropriate clinical examination or medical flight test. If, after the aeromedical examination, there are any uncertainty to whether the functional level is adequate, a medical flight test shall be carried out (in the relevant aircraft or representative simulator, depending on the medical issues).

The applicant shall demonstrate the safe implementation of all relevant operations, including the following:

1. Normal flight (e.g., pre-flight check, taxi, take-off, landing, all relevant maneuvers and operational procedures during flight, handling pedals/switches/levers)
2. Emergency procedures (e.g., in the event of engine failure)
3. Safe evacuation of the aircraft

If the applicant has privileges for several different aircrafts, separate assessments and reports may be required for each of these.

There shall be no risk of acute onset pain, loss of strength or restricted movement that may affect flight safety during flight, cf. MED.B.005. This assessment depends on the underlying diagnosis, previous course of the disease and duration of the remission.

MED.B.055 / ATCO.MED.B.055 – Mental health

MED.B.055

- (a) Comprehensive mental health assessment shall form part of the initial class 1 aero-medical examination.
- (b) Drugs and alcohol screening shall form part of the initial class 1 aero-medical examination.
- (c) Applicants with a mental or behavioural disorder due to use or misuse of alcohol or other psychoactive substances shall be assessed as unfit pending recovery and freedom from psychoactive substance use or misuse and subject to satisfactory psychiatric evaluation after successful treatment.
- (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 documented medical history of a single or repeated acts of deliberate self-harm or suicide attempt shall be assessed as unfit. However, they may be assessed as fit after satisfactory psychiatric evaluation.
- (f)(1) Applicants for a class 1 medical certificate with any of the conditions specified in point (c), (d) or (e) shall be referred to the medical assessor of the licensing authority.
- (f)(2) The fitness of applicants for a class 2 medical certificate with any of the conditions specified in point (c), (d) or (e) shall be assessed in consultation with the medical assessor of the licensing authority.
- (g) Applicants with a documented medical history or clinical diagnosis of schizophrenia, schizotypal or delusional disorder shall be assessed as unfit.

ATCO.MED.B.055

- (a) Applicants with a mental or behavioural disorder due to alcohol or other use or misuse of psychoactive substances, including recreational substances with or without dependency, shall be assessed as unfit until after a period of documented sobriety or freedom from psychoactive substance use or misuse and subject to satisfactory psychiatric evaluation after successful treatment. Applicants shall be referred to the licensing authority.
- (b) 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 licensing authority for the assessment of their medical fitness.
- (c) 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 licensing authority and shall undergo satisfactory psychiatric evaluation before a fit assessment may be considered.
- (d) Applicants with an established history or clinical diagnosis of schizophrenia, schizotypal, delusional disorder or mania shall be assessed as unfit.

Assessment of mental health

In any aeromedical examination for the issuance, revalidation or renewal of a medical certificate for flying, the aeromedical examiner shall assess the applicant's mental health.

In the case of an initial examination for class 1 medical certificates, a mental health report shall be prepared, in which the aeromedical examiner documents that a satisfactory and comprehensive assessment of all relevant points listed below (cf. AMC1/AMC2 MED.B.055, GM1 MED.B.055 and GM2 MED.B.055) has been prepared. This report should be scanned as an independent attachment of the examination. In all other examinations for class 1 or class 2 medical certificates, there must also be evident that the aeromedical examiner has assessed all relevant main points as satisfactory:

1. Assessment of the applicant's attitude and general risk factors:

- The applicant's attitude towards mental health and understanding of indicators of reduced mental health in themselves or others
- Coping strategies when mental health strains occur, including the willingness to seek advice from others
- Childhood behavioural difficulties
- Family history of psychiatric disorders

2. Social anamnesis:

- Interpersonal and relational problems
 - Are there any conflicts with relatives, friends or colleagues?
 - Have the applicant's working hours and possibly varying circadian rhythms or prolonged absence from home affected the relationship with their partner or family?
 - History of crime?
- Current work and life stressors
 - Are there any issues related to operational CRM or difficulties in cooperation with the manager/employer or colleagues?
 - How is the pilot affected by current work stressors (such as shift work, variable roster or disturbances in circadian rhythms or physical environmental conditions such as air quality, noise or limited space for movement)?
 - Past physical or psychological trauma?
 - Have there been any problems or challenges in carrying out training or skill checks?
 - Is there a history of accidents or incidents, for example when flying or driving?

3. Symptom anamnesis:

- Loss of interest/energy, asthenia
- Changes in appetite or weight
- Sleep problems
- Mood changes (if so; has there been any suicidal thoughts?)
- Tendency to agitation/anger or mania

4. The general observations by the aeromedical examiner during the anamnesis and examination:

- Applicant's appearance, attitude, behavior, mood, speech, level of co-operation and hygiene

- Applicant's thought process and content
- Applicant's insight and ability to assess
- 5. Assessment of whether there are indications of any psychiatric disorders and/or failures in psychological functions that may affect flight safety:**
 - Obvious personality disorders (in first-time applicants for medical certificates)
 - Method of mapping deviant personality traits should be documented. PID-5 is an example of a tool that can be used for mapping personality traits and assessing personality disorders against the DSM-5 criteria.
 - Use of alcohol or other psychoactive substances
 - It is recommended to use the AUDIT/DUDIT self-reporting form or equivalent
 - Results from drug testing should also be included in the report, and consideration must be given to limitations on the validity of the test (for example, urine and blood tests normally only demonstrate recent use of the relevant drugs)
 - Depersonalization or loss of control
 - Depersonalization and derealization can be seen in various disorders, including anxiety disorders
 - The aeromedical examiner should also address impulse control and assess whether there is evidence of ADHD (most relevant in first-time applicants). ARRS v.1.1 (Adult Self-Report Scale) is an example of a self-reporting form for screening for ADHD in adulthood and which is applicable if there is no previous history of diagnosis.
 - Perception and cognition
 - The method for mapping cognitive function levels and any perception should be documented. Cognitive functions include orientation, attention and alertness, concentration, problem solving, memory, visuospatial abilities, linguistic abilities and executive functions. A concise screening of orientation for time may consist of asking the applicant for the current day, date and time without aids. Vigilance can be assessed based on how the applicant responds to various questions during the conversation. Concentration can be tested, among other things, by spelling words backwards. Short-term memory can be assessed by asking the applicant to repeat number rows and orders with different time intervals, while long-term memory can be assessed when the applicant recalls memories of events back in time (episodic memory) or factual knowledge (semantic memory). Visuospatial function can be assessed by asking the applicant to draw an object or chart. CogScreen® is an example of a computer-based screening designed for broad screening of cognitive functions relevant to pilots.
 - If the screening survey provides evidence that cognitive impairment may be present, the applicant should be referred for more complete examination by a specialist.
 - Assessment of other psychiatric disorders
 - M.I.N.I. (Mini International Neuropsychiatric Interview) *is recommended* as a tool in the assessment of main psychiatric disorders. This is available for download on Helsebiblioteket.no and can be carried out by clinicians after short training. It is estimated that it can be carried out in about 15 minutes. M.I.N.I.

addresses depression, suicidality, mania, panic disorder, agoraphobia, social phobia, OCD, PTSD, alcohol abuse, other substance abuse, psychotic disorders, eating disorders, GAD, somatic disorder and antisocial personality disorder. It can also be supplemented with M.I.N.I. Plus, which addresses several diagnoses (including somatization disorder, behavioral disorder and ADHD).

The assessment shall consider the social, environmental and cultural context, and the aeromedical examiner shall aim to identify any disturbances or failures that may pose a risk to flight safety. In general, it is recommended that initial examinations take place in cooperation with specialists in psychiatry or clinical psychology, but an aeromedical examiner with relevant expertise can also conduct the assessment independently. However, the applicant shall be referred to the relevant specialist if there are any indications of mental illness or psychological deficits.

When using standardized questionnaires, the aeromedical examiner must be aware of the strengths and weaknesses of the relevant form. Short questionnaires with diagnosis-specific questions (e.g. PHQ-9 for depression) are more suitable for a clinical context than for aeromedical settings, while more extensive questionnaires with multiple scales (e.g. MMPI-2 for personality disorders) have several advantages in a selection medical context. The latter includes validity scales with a greater possibility of uncovering inaccurate or inconsistent reporting. More comprehensive forms are also suitable for mapping a wider range of emotional or mental problems. The downside of these is that interpretation of the result requires particular competence and experience of the aeromedical examiner or specialist who conducts it. The forms shall be filled in under the supervision of the person responsible for interpretation and follow-up.

In some cases, it will be appropriate to supplement the investigation with supplementary drug tests, brain imaging or a declaration from the applicant's GP, employer or close family.

In case of history of psychiatric disorder in commercial pilots, a class 1 medical certificate (cf. AMC1 MED.B.055(c)) shall normally be applied with SIC limitation with the requirement of a follow-up with a specialist until the specialist can conclude that the risk of relapse is almost absent or in the same range as for the normal population.

Referral to psychologist, psychiatrist, or specialist in addictive disorders

If a psychological investigation is required (e.g. reduced cognitive abilities), the applicant should be referred to a clinical psychologist/neuropsychologist. If the applicant is required to be assessed for a psychiatric condition (including mood disorder, neurotic disorder, personality disorder or behavioral disorder), the applicant should be referred to a specialist in psychiatry, and if there is a requirement for assessing substance abuse, the applicant should be referred to a specialist in psychiatry or substance abuse and addiction medicine. In individual cases, other specialists can be considered, but it should then be documented and justified why the alternative specialist is of greater relevance. An example might be a psychologist who has had an applicant for therapy for a long time.

It follows from AMC1 MED.B.055(f) and AMC2 MED.B.055(s) that a psychiatric assessment can only be made by a psychiatrist with adequate knowledge and experience in aviation medicine, and that a psychological assessment can only be made by a clinical psychologist who is qualified for the task and has expertise and experience in flight psychology. If the specialist does not have previous experience

in aviation medicine or flight psychology, CAA Norway considers that it is sufficient for the aeromedical examiner to provide the specialist with the guidance necessary to hold the necessary expertise to make an assessment in the relevant case. It shall be stated in the report that the specialist, in their recommendation, has taken into account the relevant stressors, environmental factors or other risk factors to which the applicant in question is exposed to in their work as a pilot or air traffic controller. It is desirable that the psychologist is accredited as a flight psychologist by the European Association for Aviation Psychology (EAAP), but it is not required.

The aeromedical examiner shall ensure that all the following is included in the psychiatrist or psychologist report (unless the point has no relevance in the case in question):

1. Confirmation that the applicant's credentials have been checked
2. The specialist's background, including
 - a. expertise and experience in the use of the tests or methods used in the relevant investigation
 - b. previous experience in the assessment of pilots/air traffic controllers or knowledge of the operational working environment and the requirements set out to ensure flight safety
3. Applicant's diagnosis/diagnoses and comorbidity
4. Relevant symptoms or findings, including the reason for referral to the specialist
5. Mapping of the applicant's upgrowing, social anamnesis and family relationships
6. The result of validated clinical questionnaires or neuropsychological tests
7. When investigating substance abuse, the specialist shall take into account the results of objective and biological drug tests
8. Completed treatment and further follow-up plan for known psychiatric disorder
9. Medication use, including current adverse reactions and whether there is a risk of future adverse reactions that may affect flight safety
10. Prognosis and probability of future recurrence of current mental disorders
11. The conclusion shall contain a concrete and reasoned assessment and recommendation regarding the applicant's mental health and fitness for flying or work as air traffic controller

Mood disorder

Reference is made to the CAA UK flowchart, where it is stated that any established mood disorder is disqualifying for flying. Before the aeromedical examiner can assess the applicant as fit, there should be evidence that the disorder is in full remission and with a very low probability of relapse. Such documentation should include medical records from a psychiatrist who also assesses the applicant's mental health against the role and responsibility of the pilot.

If persistent remission is conditional on medication treatment with SSRIs, this can be accepted provided the following:

- Only the use of the accepted medication (citalopram, sertraline or escitalopram)
- Stable dosing (no changes in the SSRI dose in the last month)
- At least 4 weeks of waiting period after discontinuation of the drug

If persistent remission is conditioned upon medications and/or cognitive behavioral therapy or psychotherapy this also assumes the following:

- Satisfactorily completed simulator test or medical flight test
- Documentation of regular and adequate follow-up by a psychiatrist
- OML limitation for class 1 medical certificates, as well as OSL/OPL for class 2 if continued medication is applicable

Alcohol abuse

Alcohol dependence or prolonged high and harmful consumption of alcohol result in loss of or denial of application for a medical certificate for flying. Prolonged high and harmful consumption involves the consumption of alcohol that may lead to disturbances in behavior, health impairment or dependence (F10.1 in ICD10). Based on recommendations from the World Health Organization (WHO), it is considered that alcohol consumption of more than 13 units of alcohol per week in men or more than 8 units of alcohol per week in women carries an increasing risk of health damage. More than 21 units per week in men or more than 14 units per week in women are associated with a high risk of developing health damage. However, lower consumption can also result in harmful effects on the health, depending on, among other things, the person's age and other health conditions. The aeromedical examiner must therefore make an individual assessment in each case. People with alcohol problems are not always honest about their consumption, and in case of doubt, the aeromedical examiner may consider obtaining comparative information from family/friends/general practitioner etc. and/or requesting biological samples.

In case of doubt as to whether there is a diagnosis of drug abuse, the aeromedical examiner shall provide an examination with the relevant specialist in psychiatry or substance abuse and addiction medicine. In the referral, it should be stated that the specialist should speak as an expert, and the assessment should also take into account objective and biological tests. If the criteria for alcohol dependence, harmful consumption (ICD-10) or abuse (DSM-IV) are met, the person is considered medically unfit for flying.

After history of alcohol abuse, it may be considered to issue unlimited medical certificates only after 2 years of documented abstinence. However, renewal of class 1 medical certificates with OML limitation or issuance of class 2 medical certificates with OPL/OSL limitation after at least 3 months of documented abstinence may be considered.

Before the issuance of a medical certificate, there must be evidence of:

1. Completed treatment/rehabilitation. Normally, this involves several weeks of stay in a substance abuse clinic, but in special cases it may be considered alternative treatment arrangements. The applicant is advised to involve their family in the treatment.
2. Satisfactory psychiatric assessment, including whether it is advisable with the issuance of a limited medical certificate.
3. At least 3 months (in case of limited medical certificate) or 2 years (unlimited medical certificate) with total abstinence. See below for guidelines on biological samples and documented abstinence.
4. Plan for further follow-up. For applicants of class 1 medical certificates with limitation, this normally involves a signed agreement. The plan/agreement specifies the frequency of checks by the aeromedical examiner, peer-reports, frequency of biological samples (urine, blood

and/or hair) and the minimum number of unannounced/random samples. In some cases, lifelong follow-up with frequent checkups may be required.

In the first month, at least 2 weekly urine tests (Eth/EtS) are conducted, as well as weekly PEth in blood and CDT% after four weeks. PEth should have decreasing values below 0.05 $\mu\text{mol/L}$ to confirm approximate withdrawal. The CDT% sample is taken to achieve a "zero value" at total abstinence, so it is important to ensure abstinence in advance of sampling. Alternatively, the applicant can take Antabus under supervision for 4 weeks before determining the zero value for CDT%.

After the first month, the applicant should be followed at least 1-2 times a month with the measurement of CDT%. A relative change of CDT% of over 30% from zero value indicates relapse. Alternatively, PEth can be measured in blood at least every 2 weeks, where values above 0.05 $\mu\text{mol/L}$ indicate relapse. Another and useful option is the detection of EtG in hair, as this is a measure of alcohol intake over a longer period of time and can be taken less often than the blood tests. If a medical certificate is issued (with limitations) before two years of documented abstinence, the pilot must also be followed up with unannounced tests *at least* 1-2 times a month.

In case of relapse, the applicant must undergo a new treatment and control period. Individual assessment must be carried out in each case before a decision can be taken on whether the medical certificate can be renewed. In the event of a history of more than one relapse, the medical certificate will not be renewed.

Drugtesting of initial applicants (class 1 medical certificate)

In case of first-time examination for the assessment of class 1 medical certificates, testing of drugs as described in AMC1 MED.B.055(d) shall be carried out. These should include alcohol in addition to the psychoactive substances opiates, cannabinoids, amphetamines, cocaine, hallucinogens and sedatives. Procedures for drug-testing in Norway is described by Helsedirektoratet: <https://helsedirektoratet.no/retningslinjer/prosedyrer-for-rusmiddeltesting>

ADHD

To assess an applicant with ADD/ADHD approved for a medical certificate as a pilot (all classes) or air traffic controller and medical certificate for cabin crew, extensive investigation is required. The applicant must undergo psychiatric assessment (in order to confirm the diagnosis according to current criteria (preferably DSM V) and to exclude other conditions) and neuropsychological examination. There should be a specialist assessment that concludes with the absence of persisting cognitive impairment, significant inattention, behavioral disorder and continuous use of stimulant drugs. Behavioral disorder includes dissocial or aggressive behavior, acting out, lack of impulse control or other disturbances that may affect flight safety. Stimulant drugs may be considered approved in microflyers, cabin crew and LAPL pilots with OPL/ORL/OSL limitation. As with other psychiatric diagnoses, in the case of history of ADHD, there must be a clear and reasoned recommendation from a relevant specialist before a medical certificate can be considered issued. The recommendation shall include justification for why the condition is not considered to involve risk of either attention disorder or impulsivity that may affect flight safety.

MED.B.065 / ATCO.MED.B.065 – Neurology

MED.B.065(a)

Applicants with clinical diagnosis or a documented medical history of any of the following medical conditions shall be assessed as unfit: (1) epilepsy, except in the cases referred to in points (1) and (2) of point (b); (2) recurring episodes of disturbance of consciousness of uncertain cause.

ATCO.MED.B.065(a)(1), (2) and (3)

(a) Applicants with an established history or clinical diagnosis of the following shall be assessed as unfit: (1) epilepsy except in cases in point (b)(1) and (2); (2) recurring episodes of disturbance of consciousness of uncertain cause; (3) conditions with a high propensity for cerebral dysfunction.

MED.B.065(b)(1,2,4,7,11) / ATCO.MED.B.065(b)(1,2,4,5,8)

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;

(4) progressive or non-progressive disease of the nervous system

(7)/(5) a single episode of disturbance of consciousness of uncertain cause;

(11)/(8) disorders of the nervous system due to vascular deficiencies including haemorrhagic and ischaemic events shall undergo further evaluation before a fit assessment may be considered.

Applicants for a Class 1 or Class 3 medical certificate shall be referred to the licensing authority.

Fitness of Class 2 applicants shall be assessed in consultation with the licensing authority.

There should be no neurological diseases that may result in reduced functional levels or the risk of acute incapacitation to such an extent that it affects flight safety. The following are guidelines for some neurological conditions that are not adequately described in Part-MED, Part-ATCO.MED or AMC material.

Cerebrovascular event

Undergoing cerebral hemorrhage or ischemic stroke/TIA due to atherosclerosis, embolism or unknown cause usually causes permanent medical unfitness for class 1 and 3 medical certificates.

Such a history would normally also exclude unlimited class 2 medical certificates. The reason for this is high risk of new cerebrovascular *or* cardiovascular event. This risk will normally exceed 10-15% in the first year and then 4% annually.

It may exceptionally be considered renewal of a class 1 or 3 medical certificate with OML or SSL limitation if it can be documented that the cerebrovascular event occurred because of a particular condition that is no longer present, the risk of a new event is lower than 1-2% per year and the functional level is documented as satisfactory. In practice, the same conditions as described further down for the issuance of class 2 medical certificates are made *in addition to* a specialist opinion with justification or references for sufficiently low risk. The application should be referred to AMS.

When applying for a class 2 or LAPL medical certificate revalidation or renewal, medical fitness can also only be assessed exceptionally, and OSL or OPL should always be set for class 2. The assessment shall be carried out in consultation with CAA Norway and in all cases will be conditioned upon that the requirements below are satisfactory met. In addition, applicants are assessed individually, including the localization and prevalence of infarction/bleeding.

Prerequisites for the issuance of class 2/LAPL medical certificate after ischemia/TIA due to atherosclerosis, embolism or unknown cause are evidence of satisfactory functional level and low risk of new cerebrovascular or cardiovascular event. This normally implies that the following are met:

- No proven outcomes that could affect flight safety. Neuropsychological examination should be done if cognitive or perceptual outcomes cannot be excluded
- At least 12 months waiting period for class 2/LAPL medical certificate with OPL/OSL limitation and at least 24 months for unlimited LAPL medical certificate
- Angiography sequences (possibly MRI angiography or CT angiography) of the neck and head have ruled out any anomaly of the vasculature or other untreated structural causes.
- MRI control of the brain after the waiting period has not detected new lesions
- Satisfactory findings after cardiological investigation with exercise-ECG, echo and 24 hours Holter monitoring
- Not detected carotid stenosis in ultrasonography of neck vessels
- Satisfactory lipid status
- No coagulation defects
- Well-controlled blood pressure
- Satisfactory ophthalmological status, including field of vision
- Non-smoker
- No atrial fibrillation
- No diabetes mellitus
- No use of anticoagulation such as Marevan or Pradaxa
- History of only one cerebrovascular event
- Age under 65 years for class 2 or unlimited LAPL, age under 70 years for LAPL with limitations. Age itself is an important risk factor for new cerebrovascular event, so these limits also apply to applicants who have already received exemptions under these guidelines at a younger age.
- Annual cardiological follow-up with exercise-ECG and review of risk factors, possibly 24-hour ECG.

Non-ruptured cerebral aneurysm

An applicant with randomly detected "cold" (non-ruptured) cerebral aneurysm may be assessed in consultation with AMS (class 2 and LAPL) or referred to AMS (class 1 and 3) before the issuance of a medical certificate. The guidelines for assessments are based primarily on six factors ("PHASES score", published in 2014), as shown in the table below:

PHASES aneurysm risk score	Points
(P) Population	
North American, European (other than Finnish)	0
Japanese	3
Finnish	5
(H) Hypertension	
No	0
Yes	1
(A) Age	
<70 years	0

70 years or more	1
(S) Size of aneurysm	
<7.0mm	0
7.0-9.9mm	3
10.0-19.9mm	6
20mm or more	10
(E) Earlier SAH from another aneurysm	
No	0
Yes	1
(S) Site of aneurysm	
ICA	0
MCA	2
ACA/Pcom/posterior	4

For most pilots and air traffic controllers in Norway both P, H, A and E will be 0, so it is the size and localization of the aneurysm that is crucial in most assessments. However, an individual assessment must also be considered that, for example, women have a slightly higher risk than men (RR approx.1,7) and that the risk is highest initially and then decreasing. The use of this policy also assumes the following:

- No growth/change of the aneurysm on controls every 6 months the first year, then annual controls (MRA or CTA), SIC shall be applied to the medical certificate for at least 5 years.
- Satisfactory control of other potential risk factors, including BP and smoking.
- Solitary aneurysm. In multiple aneurysms, applicants are assessed individually.
- Open aneurysm. In the event of a thrombotic aneurysm, the applicant may resume flying activity without limitations, provided annual image control of the aneurysm.
- The aneurysm is asymptomatic (symptoms increase the risk of rupture approximately 4-5x and should normally result in surgical or endovascular protection of the aneurysm)

If the above-mentioned criteria are present, PHASES scores and the following table are used in the assessment:

PHASES score	CLASS 1	CLASS 3	CLASS 2	LAPL
0-2	Unlimited	Unlimited	Unlimited	Unlimited
3	OML			
4				
5				
6	Waiting period first year, then OML	Waiting period first year, then unlimited certificate (eg.APC)	OSL first year, then unlimited	Limitation first year*
7				
8				
9	Unfit	Unfit	OSL	Limitation first year*
10				
11				

12 or more			Unfit	Unfit
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*Limitations will normally involve some form of multipilot limitation, but the fact that LAPL often includes more G-influence and hemodynamic fluctuations with uncertain effect on aneurysm, limitation on flying activity (e.g not acrobatics flying) are also suggested.

Treated non-ruptured aneurysm

After surgical or endovascular protection of a solitary non-ruptured cerebral aneurysm, the following waiting period and limitations (primarily because of the risk of epileptic seizures, thromboembolic complication or early bleeding) are set:

Treated cold aneurysm	Clipping (craniotomi)	Coiling (endovascular procedure)
A.cerebri media	Waiting period 3 y, OML/OSL 6 y	Waiting period 2 y, OML/OSL 5 y
A.cerebri anterior	Waiting period 2 y, OML/OSL 5 y	Waiting period 2 y, OML/OSL 4 y
A.communicans anterior	Waiting period 2 y, OML/OSL 3 y	Waiting period 1 y, OML/OSL 2 y
A.communicans posterior	Waiting period 2 y, OML/OSL 3 y	Waiting period 1 y, OML/OSL 2 y
A.cerebri posterior	Waiting period 1 y, OML/OSL 3 y	Waiting period 1 y, OML/OSL 2 y
A.carotis interna bifurkatur	Waiting period 1 y, OML/OSL 3 y	Waiting period 1 y, OML/OSL 2 y
Posterior vasculature	Waiting period 1 y, OML/OSL 3 y	Waiting period 1 y, OML/OSL 2 y

If the aneurysm ruptured before securing, the case is treated as securing after undergoing SAH.

There should also be satisfactory image control showing that the aneurysm is obliterated before reassessing a medical certificate. In case of subtotal occlusion of the aneurysm, individual risk assessment may be carried out. As a rule, treatment should have been satisfactory without neurological sequelae or other complications, with complete closed/secured aneurysm and further course without the occurrence of epileptic seizures or cerebrovascular events. The risk of epileptic seizures varies, among other things, by localization of the aneurysm (higher in MCA aneurysms) and treatment modality (higher in surgical clipping than coiling). Coiling has a lower risk of epileptic seizures, but a certain increased risk of early bleeding compared to clipped aneurysm (>2% during the first year versus <1% after clipping). Data have also been published on the increased risk of stroke in patients who have undergone securing of cerebral aneurysm.

For class 1, annual controls with MRI angiography should be carried out for the first 5 years, then every two years.

Perimesencephalic Non-Aneurysmal Subarachnoid Haemorrhage (PN-SAH)

In order to diagnose PN-SAH, there must be both characteristic findings on CT (quantity and localization of blood), follow-up with negative cerebral angiography and benign medical history (including absence of loss of consciousness).

Since one can overlook an aneurysm in the acute phase, someone chooses to follow up with new cerebral angiography after a couple of weeks. This is controversial as conventional angiography involves a 0.2-0.5% risk of neurological damage, but it will to an even greater extent ensure correct diagnosis. An intermediate solution will be repeated CT angio if there is any degree of doubt surrounding the diagnosis.

The risk of re-bleeding in undetected aneurysm is greatest in the first few months, and approximately 4% of PN-SAH patients experience rehaemorrhage in the first 6 months due to incorrect diagnosis. Then the risk of bleeding decreases rapidly, and after one year it is very low (< 0.5% per year). With this knowledge, the waiting period should be at least 6-9 months, but then a class 1 medical certificate with OML can be assessed on the condition that the radiological criteria for the diagnosis are met (or the imaging examination is repeated). OML may be considered removed at the earliest after one year.

The same principles apply to class 3 medical certificate, but the observation period should be one year or longer. An observation period of 6-9 months may only be accepted for working environments where other air traffic controllers can replace the applicant and take over the relevant functions and responsibility within seconds or minutes in case of incapacitation (and SSL shall be applied to the certificate). If this limitation is applied to the certificate, the operator/employer should be involved to ensure that this is a pragmatic possibility at the particular workplace.

History of epileptic seizures

Assessment of medical fitness depends, among other things, on whether there is a history of the diagnosis of epilepsy, there has only been one epileptic seizure of unknown cause or whether the seizure was acutely symptomatic (known triggering cause) and where there is evidence that the cause is controlled. See the table below for more detailed summary of the requirements

Medical certificate	History of the diagnosis of epilepsy	History of acute symptomatic seizures/known cause	History of epileptic seizures without known cause
Class 1	Unfit, with the exception of benign child epilepsy, where all of the following are met: <ol style="list-style-type: none"> 1. No history of convulsive seizures after the age of 5 2. No seizures of at least 10 years without antiepileptic therapy 3. Broad investigation does not reveal any conditions predisposed to epilepsy, and there is evidence and specialist opinion that the 	May be considered approved with OML if a specialist after broad neurological examination can document that the risk of recurrent seizure is lower than 1-2 % per year (depending on the type of seizure). If there are doubts about cause, follow the	Can be considered approved with OML if all of the following are met: <ol style="list-style-type: none"> 1. There has only been a history of one seizure 2. No seizures of at least 10 years without antiepileptic therapy 3. Broad investigation does not reveal any conditions predisposed to epilepsy, and there is a specialist opinion that the risk of relapse is less than 1% per year

	risk of relapse is less than 1% per year	criteria for seizures without known cause.	
Class 3	<p>Unfit, with the exception of rolandic epilepsy (benign child epilepsy with centrottemporal spikes), where the following are met:</p> <ol style="list-style-type: none"> 1. No history of convulsive seizures after the age of 5 2. No seizures of at least 10 years without antiepileptic therapy 3. Broad investigation does not reveal any conditions predisposed to epilepsy, and there is evidence and specialist opinion that the risk of relapse is less than 1% per year 	<p>Both of the following must be met:</p> <ol style="list-style-type: none"> 1. No seizures of at least 10 years without antiepileptic therapy 2. There is specialist assessment and evidence that the cause has been removed and that the risk of relapse is less than 1% per year. 	<p>Unfit as long as no definite cause of the seizure is uncovered.</p>
Class 2	<p>Can only be considered approved with OSL if the following are met:</p> <ol style="list-style-type: none"> 1. No seizures for at least 10 years without antiepileptic therapy. 2. Broad investigation does not reveal any conditions predisposed to epilepsy, and there is evidence and specialist opinion that the risk of new seizure is lower than 2 % per year (depending on the type of seizure). 	<p>Can be considered approved with OSL/OPL if a specialist after broad neurological examination can document that the risk of recurrent seizure is lower than 2-5 % per year (depending on the type of seizure). If there are doubts about cause, follow the criteria for seizures without known cause.</p>	<p>Can be considered approved with OSL/OPL if all of the following are met:</p> <ol style="list-style-type: none"> 1. There has only been a history of one seizure 2. There is no history of complex febrile convulsions 3. No seizures of at least 10 years without antiepileptic therapy 4. Broad investigation reveals no conditions predisposed to epilepsy 5. There is a specialist opinion that the risk of new seizures is lower than 2-5 % per year (depending on the type of seizure)
LAPL	<p>Can be considered approved with OSL if the following are met:</p> <ol style="list-style-type: none"> 1. No seizures of at least 5 years without antiepileptic therapy. 2. Broad investigation does not reveal any conditions predisposed to epilepsy, and there is evidence and specialist opinion that the risk of new seizure is lower than 5 % per year (depending on the type of seizure). 	<p>Can be considered approved with OSL/OPL if a specialist after broad neurological examination can prove that the risk of new seizure is lower than 5% per year (depending on the type of seizure). If there are doubts about cause, follow the criteria for seizures without known cause.</p>	<p>Can be considered approved with OSL/OPL if all of the following are met:</p> <ol style="list-style-type: none"> 1. There has only been a history of one seizure 2. There have been no complex febrile convulsions 3. No seizures of at least 5 years without antiepileptic therapy 4. Broad investigation reveals no conditions predisposed to epilepsy 5. There is a specialist opinion that the risk of new seizures is less than 5% per year
CC	<p>Can be considered approved with MCL only if the following are met:</p> <ol style="list-style-type: none"> 1. No history of seizures after the age of 5 	<p>May be considered approved with MCL if a specialist after broad neurological examination can prove that the risk of new</p>	<p>Can be considered approved with MCL if the following are met:</p> <ol style="list-style-type: none"> 1. There has only been a history of one seizure

	2. No seizures for at least 10 years without antiepileptic therapy 3. Broad investigation reveals no conditions predisposed to epilepsy	seizures is lower than 2-5 % per year (depending on the type of seizure). If there are doubts about cause, follow the criteria for seizures without known cause.	2. No seizures have been possible for at least 10 years without antiepileptic therapy 3. Broad investigation reveals no conditions predisposed to epilepsy 4. There is a specialist opinion that the risk of new seizures is lower than 2-5 % per year (depending on the type of seizure)
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Increased risk of epileptic seizure

Some conditions may lead to an increased risk of epileptic seizures, e.g. suffered head trauma or craniotomy/brain surgery. The estimated annual risk should not exceed 1-2% before a medical certificate class 1 is issued, and this normally involves a waiting period. The estimate shall be based on a specialist opinion or justified by references or in established guidelines. In border cases, a certificate with limitations may be considered.

Vestibular schwannoma (acoustic neurinoma)

Applicants diagnosed with vestibular schwannoma are initially considered unfit for flight. Issuance of class 1 medical certificate with OML and SIC or class 2 medical certificate with ORL and SIC may be considered if the following are met:

1. The applicant meets the hearing requirements according to Part-MED, and the hearing has been stable for at least 6 months
2. There is no tinnitus to an extent that may affect flight safety
3. There are no neurological disturbances (beyond hearing loss and moderate tinnitus). Particular attention must be paid to vestibular disorders, including any history of vertigo. The AME should also be aware of the risk of ataxia or other cranial nerve disturbances.
4. An updated MRI caput shall demonstrate no signs of significant growth (>2 millimeters during the last year) or compression of the brainstem, cerebellum, or 4th ventricle
5. Treatment with surgery or radiation is not indicated
6. The applicant is aware of the low but present risk of acute incapacitation even if the tumor is benign. This also applies to hearing loss, which may be aggravated acutely due to spasm or occlusion of the labyrinth artery.
7. A follow-up plan has been documented, which includes MRI and ENT examination at least every 6 months the first year and then at least every 12 months. The ENT specialist shall assess whether the tumor remains stable, there are no neurological disturbances and no risk of acute incapacitation during the exercise of the privileges.

Following surgical treatment or radiation (gamma knife), unrestricted medical certificate class may be considered after 12 months of observation. Medical certificate class 1 with OML or unrestricted class 2 certificate may be considered no earlier than 3 months of observation after complete clinical recovery and achieved stability. Be aware that the effects of radiation can manifest themselves after several months or even years.

Issuance of medical certificate presupposes that the applicant has no history of postoperative epileptic seizure and that there are no noteworthy risk of seizures due to factors like the surgical approach (type of craniotomy), complications of peroperative retraction of the brain or postoperative MRI findings indicating a risk of seizures. There shall be no neurological deficits or disturbances that may affect flight safety. The AME should also consider whether all tumor tissue has been removed or whether tumor tissue remains.

MED.B.070 / ATCO.MED.B.070 - Ophthalmology

MED.B.070(f)/

Applicants who have undergone eye surgery shall be assessed as unfit. However, they may be assessed as fit after full recovery of their visual function and subject to satisfactory ophthalmological evaluation.

ATCO.MED.B.070(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 licensing authority subject to satisfactory ophthalmic evaluation.

Implanted intraocular multifocal lenses

Normally, intraocular multifocal lenses result in unfitness for flying, especially due to the risk of glare and reduced contrast vision (see, among other, AMC1 MED. B.070(i)(2)). However, the issuance of LAPL or class 2 medical certificate with or without VCL limitation may be considered in certain cases if the applicant undergoes satisfactory medical flight test and ophthalmological examination by an ophthalmologist with aeromedical experience. The ophthalmologist shall take into consideration environmental factors such as hypobaric hypoxia and impaired light conditions in the cockpit. The eye examination shall include testing of contrast vision and glare sensitivity, and the eye specialist shall assess the risk of halo or occurrence of other visual disturbances during the exercise of the privileges. Unlimited medical certificate may only be considered if the eye examination and contrast vision is normal and the risk of visual disturbances corresponds to the normal population.

MED.B.080 / ATCO.MED.B.080 – Otolaryngology

MED.B.080(b)(1)

Applicants with hypoacusis shall undergo further examination to establish that the medical condition does not interfere with the safe exercise of the privileges of the applicable licence(s)

AMC1 MED.B.080(a)(2)

Applicants with hypoacusis may be assessed as fit if a speech discrimination test or functional flight deck hearing test demonstrates satisfactory hearing ability. A vestibular function test may be appropriate.

ATCO.MED.B.080(a)(4)(i)(ii)

(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 (pure-tone audiometry) shall be referred to the licensing authority and undergo a 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.

Reduced hearing in pilots

In case of reduced hearing, the aeromedical examiner must obtain evidence that the hearing function is satisfactory before the application is referred to CAA Norway. In all cases, the applicant shall meet the requirements for pure tone audiometry, so the following guidelines are applicable only in the revalidation/renewal of class 1 medical certificates or when applying for a class 2 medical certificate with instrument rating (IR).

One or both of the following investigations may be regarded as evidence of whether the hearing function is satisfactory:

1. Medical flight test focusing on hearing function assessment

It should be stated in the documentation that the pilot does not have a hearing loss that affects flight safety. This includes a conclusion with a recommendation, as well as confirmation that the following requirements are met:

- a. Adequate perception of speech through all phases of flight
- b. Good ability to communicate with air traffic controllers (air traffic controller or AFIS)
- c. Good ability to communicate with other crew members during flight
- d. Precise perception of aviation phraseology that is not routinely used
- e. Precise perception of radio signals

2. Representative speech audiometry and assessment by an ENT-specialist

If the hearing function is investigated with speech audiometry, an assessment and recommendation from a radiographer or ENT specialist with sufficient knowledge of flight operational conditions shall be included. It is sufficient that the specialist collects the information relevant to the specific applicant through a dialogue with the applicant's aeromedical examiner or an instructor with adequate knowledge of the relevant aircraft. The

assessment shall consider the cause of hearing loss, whether the audiometry examination has been carried out with representative background noise and whether the applicant has a precise perception of aviation phraseology that is not used routinely. In other words, speech audiometry is not sufficient to be performed alone as it is the hearing function during flight that is being considered. Reference is made to UK CAA guidelines and ICAO manual of civil aviation medicine for further guidelines. However, CAA Norway considers that documentation of 100% speech perception (on one or both ears) at 60 dB or lower is sufficient documentation alone and does not require the examination to be carried out with representative background noise. It can also be considered to approve speech audiometry without background noise if the specialist or the aeromedical examiner attaches a satisfactory professional justification. The applicant shall meet hearing requirements without the need to turn the volume of the headset to a level that damages hearing. Please note that the pilot should also be able to communicate satisfactorily with other crew members.

If the result of the pure tone audiometry in an applicant with hypoacusis is unchanged from the previous aeromedical examination, the AME can make an individual assessment of whether there is a need to repeat the medical flight test or speech audiometry. In case of unchanged hearing, it is normally not necessary to repeat these supplementary examinations or to refer the applicant again to CAA Norway.

Reduced hearing in air traffic controllers

If an air traffic controller does not meet the pure tone audiometry requirements, the issuance of class 3 medical certificates can only be considered if documentation of satisfactory hearing function is present. This assumes that the applicant has carried out *both* representative test of hearing function *and* assessment by a specialist:

1. Representative test of hearing function

The air traffic controller shall undergo functional hearing test in an environment representative of the air traffic controller's normal operational working environment. In case of first-time examination, the air traffic controller should undergo speech audiometry.

2. Assessment and recommendation by ENT-specialist

The ENT-specialist shall have knowledge of the operational working environment of the air traffic controller, and there shall be a written assessment and recommendation on whether the air traffic controller can continue their work without their hearing loss affecting flight safety.

Significant deterioration of hearing loss

If a deterioration of hearing exceeds normal age-related hearing loss (presbycusis), the applicant shall, in addition to the above-mentioned requirements, undergo investigation by an ENT-specialist, including assessment of the vestibular function.

Generally, the holder will be followed up with a new examination after one year, and if the hearing loss has stabilized, normal interval examinations can be resume

Guidance to Part-MED Subpart D/Part-ATCO.MED Subpart C

Requirements for approval as an
aeromedical examiner (AME)

MED.D.001 / ATCO.MED.C.001 – Privileges

MED.D.001(d)/ATCO.MED.C.001(b)

The scope of the privileges of the AME, and any condition thereof, shall be specified in the certificate.

Privileges that follow the AME certificate

It is displayed on the AME certificate which medical certificates an aeromedical examiner can issue. Depending on the specific approval, aeromedical examiners will normally have privileges to conduct aeromedical assessment and issuance of initial, revalidated or renewed class 2/LAPL medical certificates and cabin crew medical reports. Class 1 aeromedical examiners may also conduct assessment and issuance of revalidated or renewed class 1 medical certificates. Similarly, class 3 aeromedical examiners will normally have privileges to revalidate or renew class 3 medical certificates if medical requirements are met. Initial issuance of a class 1 or class 3 medical certificate shall be carried out at an appropriately certified aeromedical center (AeMC).

Aeromedical practice

As an aeromedical examiner, one is obliged to comply with the requirements of the applicable regulations when exercising the privileges that follow the AME certificate. CAA Norway assumes that the aeromedical examiner complies with the procedures described in this document that complement the requirements set out in Part-MED/Part-ATCO.MED.

CAA Norway requires the aeromedical examiner to keep up to date with and comply with current regulations and guidelines for aeromedical examinations and assessments. It is also expected that the aeromedical examiner is aware of their role as an expert in exercising their privileges following the approval given by CAA Norway.

CAA Norway may limit or revoke the approval as an aeromedical examiner if the aeromedical examiner does not exercise their work in accordance with applicable requirements.

MED.D.005 – Application for approval as an AME

MED.D.005(a) og (b)

An application for an AME certificate or for an extension of the privileges of an AME certificate shall be made in a form and manner specified by the competent authority.

Applicants for an AME certificate shall provide the competent authority with:

- (1) their personal details and professional address;
- (2) documentation demonstrating that they comply with the requirements of point MED.D.010, including evidence of successful completion of the training course in aviation medicine appropriate to the privileges they apply for;
- (3) a written declaration that, once the AME certificate has been issued, the AME will issue medical certificates on the basis of the requirements of this Regulation.

Application form for approval as an AME

When applying for approval or re-approval as an aeromedical examiner in Norway a fixed application form (NF-1122) must be used. This can be downloaded from CAA Norway's website. As described in the application form, documentation that shall be provided for are the authorization as a medical doctor, specialist approval, completed courses in aviation medicine and other relevant post-education if this has not already been sent to CAA Norway.

Fees

In accordance with the Regulation for Fees payable to CAA (Forskrift om gebyr til Luftfartstilsynet), a fixed annual fee applies for all AMEs. For AMEs based in Norway (using the EMPIC), a variable fee will also be incurred based on the number of aeromedical examinations of Norwegian applicants carried out. For AMEs based outside Norway this additional fee will be invoiced to the applicant directly (instead of the AME). If the aeromedical practice is located outside the Norwegian borders, the AME will also be charged a fee for inspections (as part of approval or the oversight) which shall cover work, travel, and accommodation for 2 inspectors. Normally, 1 on-site inspection is conducted during each 3-years approval period.

MED.D.010 – First time approval as an AME class 2

MED.D.010 Requirements for the issue of an AME certificate

Applicants shall be issued an AME certificate, where they meet all of the following conditions:

- (a) they are fully qualified and licensed for the practice of medicine and have evidence of completion of specialist medical training;
- (b) they have successfully completed a basic training course in aviation medicine, including practical training in the examination methods and aero-medical assessments;
- (c) they have demonstrated to the competent authority 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.

Granting of AME-privileges class 2

The requirements for granting class 2 AME-privileges are described in Part-MED point MED.D.010 and implies that the following shall be documented:

1. Medical doctor authorization
2. Completed medical specialist training
 - Although clinical specialties are most relevant, there is currently no delineation of which medical specialties are approved for AME under European regulations
 - According to Part-MED, it is sufficient that the AME at one point has met the requirements for possessing a medical specialty, so that there is no requirement for renewed approval of the specialty.
3. Completed AME basic training course
 - Flymedisinsk institutt (FMI) at Blindern in Oslo has periodically arranged basic courses in aeromedical medicine, and information about upcoming courses is normally published on their website: <http://flymed.no/>
 - Basic courses in aviation medicine are also arranged abroad, but it is recommended first to ensure that the course is approved by the aviation authorities of an EASA member state.
4. Adequate facilities, procedures and functional equipment for conducting aeromedical examinations.
 - Medical equipment includes minimum stethoscope, otoscope, ophthalmoscope, reflex hammer, BP apparatus, Snellens visual chart or equivalent, Ishiara colour test (24 plate version), device for measuring Hb and lipids, ECG, spirometry and audiometry and N5/N14 chart. The N5/N14 reading chart can be provided by CAA Norway. Technical equipment must be calibrated according to the guidelines, and the AME shall have a system for future calibration.
 - Prior to initial approval, CAA Norway shall carry out inspection of facilities and procedures for aeromedical practice before the facility is used for aeromedical certification.
 - If the doctor has no adequate knowledge of updated procedures for aeromedical certification (for example, when undergoing basic courses in other EASA member states) supplementary administration courses are carried out by CAA Norway.

MED.D.015 – Approval as an AME class 1

MED.D.015 Requirements for the extension of privileges

Applicants shall be issued an AME certificate extending their privileges to the revalidation and renewal of class 1 medical certificates where they meet all of the following conditions:

- (a) they hold a valid AME certificate;
- (b) they conducted at least 30 examinations for the issue, revalidation or renewal of class 2 medical certificates or equivalent over a period of no more than 3 years preceding the application;
- (c) they successfully completed an advanced training course in aviation medicine, including practical training in the examination methods and aero-medical assessments;
- (d) they have successfully completed practical training of a duration of at least 2 days, either at an AeMC or under the supervision of the competent authority.

Extension of AME-privileges to class 1

The requirements for extension to class 1 privileges are described in Part-MED point MED.D.015. The AME shall hold a valid AME certificate, as well as meet the following requirements:

1. The AME should have conducted at least 30 aeromedical examinations for class 2 medical certificates in the last 3 years
 - This requirement shall ensure sufficient experience both with the aeromedical clinical *examination* and with the aeromedical *assessment* of medical fitness, as well as the use of the regulations and guidelines applicable to the issuance of medical certificates in accordance with Part-MED.
 - The AME may replace some or all class 2 AME examinations with class 1 or class 3 medical certificates. In this case, this shall be done under the observation and supervision of an AME with the necessary privileges. Personal data of the applicant and the date of the examinations shall be registered on a document approved by CAA Norway, and the document shall be signed by the responsible AME (observer with class 1 or 3 privileges).
2. The AME shall have completed advanced course in aviation medicine
 - This course shall ensure both aeromedical professional competence and understanding of relevant regulations. In special cases, an equivalent professional course in aviation medicine can be approved if supplemented with an administrative course in the use of Part-MED.
3. The AME should have carried out practical training at an aeromedical center or under the guidance of CAA Norway
 - This requirement can be covered through 2 days of practical training at an aeromedical center/CAA Norway. CAA Norway can be contacted for further information. Please see “Checklist for AME training at AeMC”:
https://luftfartstilsynet.no/globalassets/dokumenter/skjema/flymedisin/checklist-for-ame-training-at-aemc_2020.pdf.
 - There are also requirements that the AME has demonstrated satisfactory practical competence during the practical training, which is documented by a certificate signed by the head of AeMC – cf. AMC1 MED. D.015(c) and (d).

ATCO.MED.C.010 – Approval as an AME class 3

ATCO.MED.C.010 Requirements for the issue of an AME certificate

Applicants for an AME certificate with the privileges for the revalidation and renewal of Class 3 medical certificates shall:

- (a) be fully qualified and licensed for the practice of medicine and hold a Certificate of Completion, or have evidence of specialist medical training;
- (b) have successfully completed basic and advanced training courses in aviation medicine, including specific modules for the medical assessment of air traffic controllers and the specific environment in air traffic control;
- (c) demonstrate to the competent authority that they:
 - (1) have adequate facilities, procedures, documentation and functioning equipment suitable for aero-medical examinations; and
 - (2) have in place the necessary procedures and conditions to ensure medical confidentiality.

Granting of AME-privileges class 3

Initial issuance of class 3 AME certificates are subject to the same requirements as for initial issuance of class 2 AME certificate in addition to an advanced course in aviation medicine. The course shall include lessons or training in, among other things, the operational working environment and the current medical requirements for air traffic controllers. The AME shall have sufficient knowledge of the working environment and the operational requirements of an air traffic controller to assess whether an impairment in physical or mental functional ability or other medical conditions affect flight safety. In addition, the AME shall be able to assess the risk and consequences of acute onset of incapacitation and whether various limitations in such circumstances can be applied to ensure flight safety. If the advanced course is approved only for class 1 privileges, this can be supplemented with additional courses and/or experience approved by CAA Norway and which entail equivalent training or competence.

MED.030 / ATCO.MED.C.025 – Extension of approval as an AME

MED.D.030 Validity of AME certificates

An AME certificate shall be valid for a period of 3 years, unless the competent authority decides to reduce that period for duly justified reasons related to the individual case. Upon application by the holder, the certificate shall be:

(a) revalidated, provided that the holder:

- (1) continues to fulfil the general conditions required for medical practice and maintains his or her licence for the practice of medicine;
- (2) has undertaken refresher training in aviation medicine within the last 3 years;
- (3) has performed at least 10 aero-medical examinations or equivalent every year;
- (4) remains in compliance with the terms of the certificate;
- (5) exercises the privileges in accordance with the requirements of this Annex (Part-MED);
- (6) has demonstrated that he or she maintains his or her aero-medical competency in accordance with the procedure established by the competent authority.

(b) renewed, provided that the holder complies with either the requirements for revalidation set out in point (a) or with all of the following requirements:

- (1) continues to fulfil the general conditions required for medical practice and maintains his or her licence for the practice of medicine;
- (2) has undertaken refresher training in aviation medicine within the previous year;
- (3) has successfully completed practical training within the previous year, either at an AeMC or under the supervision of the competent authority;
- (4) remains in compliance with the requirements of point MED.D.010;
- (5) has demonstrated that he or she maintains his or her aero-medical competency in accordance with the procedure established by the competent authority.

ATCO.MED.C.025 Validity of AME certificates

An AME certificate shall be issued for a period not exceeding 3 years. It shall be revalidated provided the holder:

- (a) continues to fulfil the general conditions required for medical practice and maintains registration as a medical practitioner;
- (b) has undertaken refresher training in aviation medicine and in the working environments of air traffic controllers within the last 3 years;
- (c) has performed at least 10 aero-medical examinations every year. This number of examinations may only be reduced by the competent authority in duly justified circumstances;
- (d) remains in compliance with the terms of their AME certificate; and
- (e) exercises the AME privileges in accordance with this Part.

Revalidation of AME certificate

The requirements for revalidation of AME privileges include documentation of the following:

1. The AME shall satisfy all general requirements for medical practice and still hold national approval for medical practice during the period for which the AME certificate is issued for
2. The AME shall document that they have undergone satisfactory aeromedical refreshment training over the last 3 years
 - If the AME has undergone at least 20 refresher hours, of which at least half are carried out by or under the supervision of CAA Norway (for AMEs based in Norway),

the requirement is deemed to be met for class 2 privileges. For revalidation of AME class 1 privileges, at least 10 hours of refresher training hours per year must be documented

- As a rule, CAA Norway shall have pre-approved that the courses or equivalent experience are counted as professional refresher training for AMEs.
 - Parts of the refresher training can be covered by international aeromedical conferences, where the AsMA, ECAM or ICASM conference is normally credited with 10 refresher hours.
 - Four-hour flight in simulator or aircraft is credited with 1 refresher hour (limited up to 5 hours over 3 years). Alternatively, 1 refresher hour can be replaced with 5 sectors on the flight-deck jump seat .
 - In the event of a class 3 extension, the professional refreshment training shall include satisfactory training in the medical requirements and the operational working environment for air traffic controllers.
3. The AME should have conducted at least 10 aeromedical examinations each year
 - In special cases, CAA Norway may approve a lower number of examinations if a valid sick leave is documented and/or the AME can document equivalent training experience.
 4. The AME shall exercise their privileges in accordance with applicable regulations and with the requirements that follow the AME certificate or the decision on approval
 5. The AME shall demonstrate that they adequately maintain the aeromedical competence, beyond the minimum requirement of performed aeromedical examinations or refresher courses. This can be done by conducting an online competency tests with a random selection of multiple-choice questions. A result of more than 70% is considered sufficient documentation to meet this requirement, and the passed competence test is valid as documentation for up to 6 months. For further information, please contact CAA Norway.

Renewal of AME certificate

The requirements for renewal of AME privileges include documentation of the following:

1. The AME shall satisfy all general requirements for medical practice and still hold national approval for medical practice during the period for which the AME certificate is issued for
2. The AME shall document that they have undergone satisfactory refreshment of aeromedical knowledge during the last year
 - In the event of an extension of AME class 1 rights, at least 10 hours of refresher hours must be documented within the last year
 - In the event of an extension of AME class 2 rights, at least 8 hours of refresher hours must be documented within the last year
3. The AME should have carried out practical training at an aeromedical center or under the guidance of CAA Norway during the last year
 - This requirement can be covered through 2 days of hospice at an aeromedical center and/or CAA Norway. CAA Norway can be contacted for further information.
 - The AME must demonstrate satisfactory practical competence during the hospice, which is documented by a certificate signed by the head of AeMC.

4. The AME shall exercise their privileges in accordance with applicable regulations and with the requirements that follow the AME certificate or the decision on approval
5. The AME shall demonstrate that they adequately maintain the aeromedical competence. This can be done by conducting an online competency tests with a random selection of multiple-choice questions. A result of over 70% is considered sufficient documentation to meet this requirement, and the passed competence test is valid as documentation for up to 6 months. For further information, please contact CAA Norway.

MED.D.025 – Aeromedical examiners duty to report on changes that may affect the AME-certificate

MED.D.025 Changes to the AME certificate

(a) Holders of an AME certificate shall, without undue delay, notify the competent authority of the following circumstances which could affect their AME certificate:

- (1) the AME is subject to disciplinary proceedings or investigation by a medical regulatory body;
- (2) there are changes to the conditions under which the certificate was granted, including the content of the statements provided with the application;
- (3) the requirements for the issuance of the AME certificate are no longer met;
- (4) there is a change to the aero-medical examiner's practice location(s) or correspondence address.

(b) Failure to notify the competent authority in accordance with point (a) shall result in the suspension or revocation of the AME certificate in accordance with point ARA.MED.250 of Annex II (Part-ARA).

ATCO.MED.C.020 Changes to the AME certificate

(a) AMEs shall notify the competent authority of the following circumstances 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 under which the certificate was granted, including the content of the statements provided with the application;
- (3) the requirements for the issuance of the AME certificate are no longer met;
- (4) there is a change to the aero-medical examiner's practice location(s) or correspondence address.

(b) Failure to notify the competent authority shall result in the suspension or revocation of the AME certificate, on the basis of the decision of the competent authority that suspends or revokes the certificate.

Notification of disciplinary proceedings or investigation

Aeromedical examiners who are subject to disciplinary proceedings or investigation by the national regulatory body shall notify CAA Norway of this in writing without unnecessary delays. Assessment of whether this is of relevance for the AME privileges shall be made by CAA Norway.

Notification of change of address for aeromedical practice

If an aeromedical examiner wishes to carry out an aeromedical examination at a new office or medical practice site, this shall be notified and pre-approved by CAA Norway. A new inspection of the facilities will then be carried out before a new certificate of approval can be issued for aeromedical examiner with a new address for aeromedical practice.