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Requirements for cabin crew medical examinations and assessments

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Abstract

The aim of the current study is to review current regulations relatively to medical requirements necessary to achieve suitability to fly of the cabin crew. There are three classes of flight crew medical standards and licensing.
A first class medical certificate is required for all pilots who perform professional flights or skydiving instructors. A second class medical certificate is required only for persons who do not perform professional flights, skydiving activities or any other professional activity related to aircraft piloting (cabin crew, holders of Light Aircraft Pilot's Licence - LAPL, remote pilot operators).
Finally, a third class medical certificate is required for workers engaged in air traffic control.

Keywords: *cabin crew; medical examination; medical assessment.*

Introduction

The aim of the current study is to review current regulations relatively to medical requirements necessary to achieve suitability to fly of the cabin crew. There are three classes of flight crew medical standards and licensing. A first class medical certificate is required for all pilots who perform professional flights or skydiving instructors.

A second class medical certificate is required only for persons who do not perform professional flights, skydiving activities or any other professional activity related to aircraft piloting (cabin crew, holders of Light Aircraft Pilot's Licence - LAPL, remote pilot operators).

Finally, a third class medical certificate is required for workers engaged in air traffic control.

First class medical certificates are issued by an Aeromedical Center (AMC), the second class certificates are issued by an AMC or an Authorized Medical Examiner (AME); the LAPL medical certificates are issued by an AMC or AME.

First and second class medical certificates, as well as the LAPL medical certificate, are revalidated or renewed by an AMC or an AME.

The medical examination for the initial determination of mental and physical suitability is carried out upon a request from the person concerned or from a training organization. The medical examination for the periodic assessment can be carried out only upon

presentation, by the person concerned, of a license or a previous medical certificate.

For the cabin crew members, until 8 April 2014, in accordance with JAR-FLC 3 Amendment 5 - Section I, the suitability evaluation was made by an AMC or an AME; afterwards is performed in compliance with Regulation (EC) 216/2008 and annex IV of the Aircrew Regulation. Therefore medical certificates issued before 8 April 2014 are substituted with formats that are in accordance with the Aircrew Regulation when expired or, in any case, not later than 8 April 2017. The objective of the study is to compare the current regulations regarding the suitability evaluation of the cabin crew, mainly the Regulation 216/2008 and subsequent implementation (see materials and methods) compared to Acceptable Means of Compliance (AMC) and Guide Material (GM) developed by the European Aviation Safety Agency (EASA) and the regulations issued nationally by ENAC (Italian Civil Aviation Authority).

The order in which the above-mentioned regulations are reported in the study highlights the hierarchy of sources provided in the Italian judicial system.

Materials and methods

The materials used for the present study are the legal sources indicating the required qualifications of licensed physicians:

- Basic Aircrew Regulation (EU) 216/2008 of the Parliament and of the Council;
- Amending Commission Regulation (EU) n.1178 / 2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) 216/2008 of the Parliament and Council;
- Aircrew Regulation (EU) 805/2011;
- Commission Regulations (EU) 290/2012 of the Parliament and of the Council of 30 March 2012 amending Regulation (EU) No. 1178/2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No. 216/2008 of the European Parliament and of the Council;
- ENAC Regulation: Health Organization and Certification of medical fitness for the achievement of aeronautical licenses and certificates - Issue n.1 of 21 December 2011;
- ENAC Regulation: Health Organization and Certification of medical fitness for the achievement of aeronautical licenses and certificates - Issue n.1 Revised May 17, 2012;
- ENAC Regulation: Health Organization and Certification of medical fitness for the achievement of aeronautical licenses and certificates - Issue n.2 of 24 February 2014;
- EASA: Acceptable Means of Compliance (AMC) and Guidance Material (GM) to part MED of 15 December 2011 (non-binding);
- ENAC Circular: Implementation of the Regulation "Health Care Organization and medical certificates of fitness for the achievement of the licenses and certificates of aircraft" - MED-01 December 21, 2012;

The method adopted for the current study consists of comparisons between the EU regulations, the national regulations issued by ENAC, and the guidelines set out by EASA, which is the European agency for flight safety.

Results

In summary, candidates for flight crew license or cabin crew members should undergo the following assessments to achieve or confirm their eligibility to fly:

- ECG after 40 years,
- ECG after age 50 every 5 years;
- ECG every two years regardless of age, in presence of cardiovascular risk factors;
- audiogram only at the first issuance of the certificate;
- visual assessment;
- urine analysis at each medical visit;
- any other type of assessment only if indicated.

The doctor authorized to release the suitability is the doctor of an AMC or an AME or a medical specialist in occupational medicine; the maximum period of validity of the certificate is 60 months. The format of the medical report, according to the recommendation of ENAC, consists of four pages (ENAC Regulation: Health Organization and Certification of medical fitness for the achievement of aeronautical licenses and certificates - Issue n.2 of 24 February 2014). The first page is the header "Cabin Crew Medical Report for applicants or holders of a Certificate of Cabin Crew" (**Figure 1**).

The second page consists of ten areas (**Figure 2**):

i. the release status
ii. judgment of suitability
iii. certificate number of cabin crew
iv. last and first name
v. date of birth
vi. nationality
vii. signature of the applicant/holder of the certificate
viii. validity, valid until
ix. release date
x. signature and stamp of AME/AMC

The third page encompasses (**Figure 3**):

i. limitations

ii. expiration date of the previous medical report last and next aeromedical assessment and ECG

The fourth page lists the reasons of the decrease in medical fitness **(Figure 4)**.

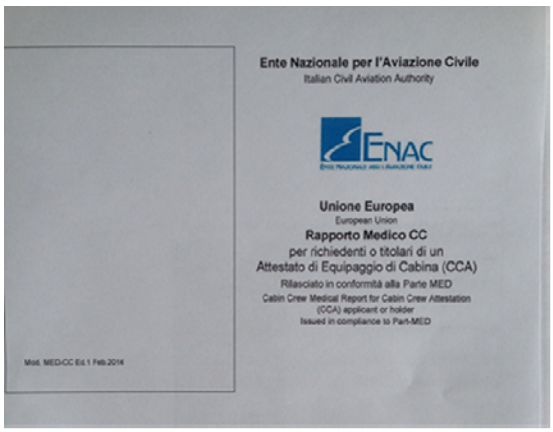

Figure 1: Page 1-Cabin Crew Medical Report

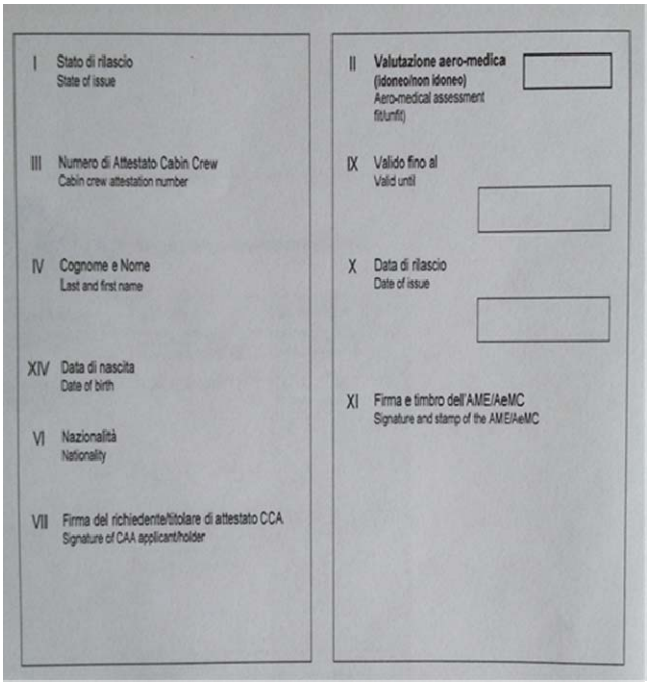

Figure 2: Page 2-Cabin Crew Medical Report

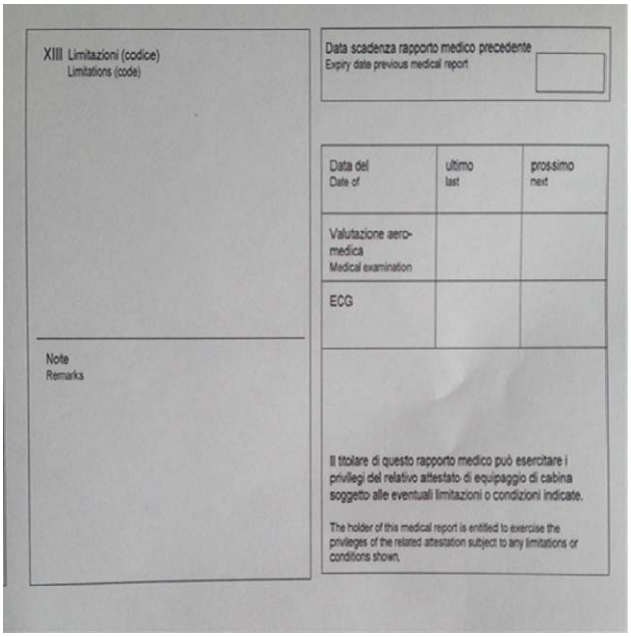

Figure 3: Page 3- Cabin Crew Medical Report

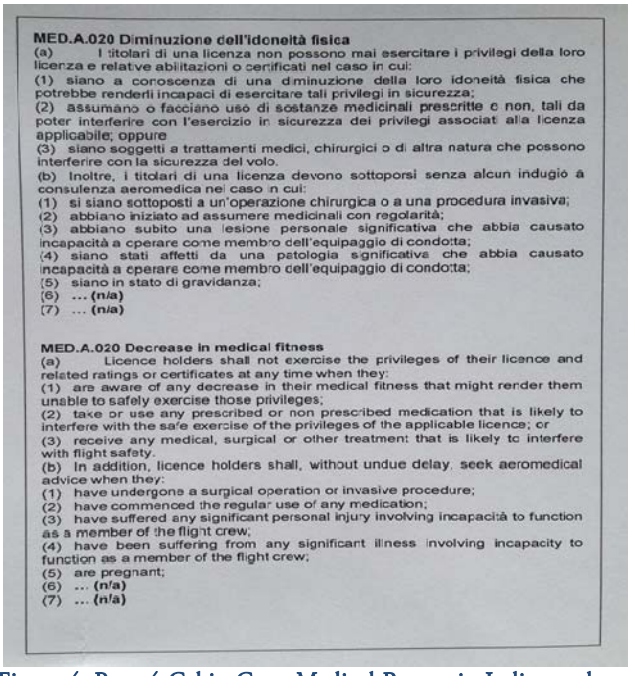

Figure 4: Page 4-Cabin Crew Medical Report in Italian and English

Discussion

The EU Commission Regulation 1178/2011 identifies in a dedicated section the requirements for medical fitness of the cabin crew. The cabin crew members carry out their duties and functions on board of an aircraft only if found suitable, thus without physical or mental disorders that could lead to inability to perform the assigned duties and functions.

Each crew member must undergo an aeromedical assessment before the first assignment on an aircraft, and thereafter at intervals of maximum 60 months (Implementation Regulation (EU) n.1178 / 2011 of the Commission of 3 November 2011, which establishes the technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) 216/2008 of the Parliament and Council).

These evaluations are performed by an AME or AMC or by a specialist in occupational medicine. Specialists in occupational medicine may perform aeromedical assessments of the cabin crew if the competent authority is certain that: i. the national system of occupational medicine can ensure compliance with the applicable requirements of the Regulation; ii. they are authorized to practice medicine and qualified in occupational medicine in accordance with national laws; iii. they have acquired knowledge in aviation medicine related to the operating environment of the cabin crew.
The cabin crew members should therefore be exempt from:

- abnormalities, congenital or acquired;
- active, latent, acute or chronic diseases or disabilities;
- injuries, damages or adverse effects of surgical interventions;
- consequences or side effect of any prescribed or non-prescribed drugs, such as therapeutic, diagnostic or preventive effects which could compromise their functional capacity leading to inability to perform security duties and functions;

The initial aeromedical assessment must include at least an evaluation of the clinical history of the AME candidate as a crew member and a clinical examination of the cardiovascular, respiratory, musculoskeletal and otolaryngoiatric systems, as well as the visual system and colour perception.

Each subsequent evaluation must include an assessment of the medical history as a priority and physical examination in accordance with the best practices of aviation medicine. The medical examiner can always request further medical examination, test or investigation that are considered necessary.

At the end of each aeromedical assessment, applicants for and holders of a certificate of cabin crew receive a "medical report" and submit a copy of the report to the operator that makes use of their services.
The "medical report" should indicate the date of the assessment, if the candidate was deemed suitable or not, the date of subsequent aeromedical assessment and, if necessary, any restriction.
If the holder of a certificate of cabin crew do not fully meet the specified medical requirements, the AME will consider whether he is able to perform his duties safely in presence of one or more limitations. Any limitation concerning privileges conferred by a certificate of cabin crew are specified by the doctor and may be revoked only by an AME, AMC or by a specialist in occupational medicine in consultation with an AME.
EASA has specified aspects aimed at the improvement of an aeromedical assessment limited to the cabin crew through the publications of "Acceptable Means of compliance (AMC) and Guidance Material (GM) to part MED"of 15 December 2011 (non-binding). In conducting the examination, the examining physician should take into account the physical and mental capacity of the candidate to:

- undergo necessary training measures for the implementation of fire procedures, use of protective breathing equipment in a simulated smoke-filled environment and to provide first aid;
- be able to use emergency systems;
- be able to perform tasks in typical situations of the service (e.g. air recirculation, noise, altitude, etc.);
- carry out tasks efficiently during normal operations and in emergency situations and psychologically demanding circumstances such as assistance to crew members and passengers in case of decompression, stress management, crowd control, security threats;

With regard to medical aspects, an outline for the following systems have been provided (EASA: Acceptable Means of Compliance (AMC) and Guidance Material (GM) to part MED of 15 December 2011):

<u>The cardiovascular system</u>: electrocardiogram (ECG) after age 40, every five years after age 50. In presence of cardiovascular risk factors (smoking, cholesterol, obesity), ECG should be repeated every two years. The candidate must be fully recovered from asymptomatic myocardial infarction or surgery for coronary artery disease before being evaluated. Blood pressure should be kept within normal limits, and starting drug therapy causes a temporary suspension of the suitability to fly.
The cardiovascular assessment should be satisfactory in cases of:

i. history of ablation;
ii. installation of pacemakers in patients with rhythm disturbances:

Candidates with the following conditions are considered unsuitable:

i. symptomatic disease of the sinoatrial;
ii. complete atrio-ventricular block;
iii. symptomatic QT prolongation;
iv. presence of defibrillators or pacemakers for anti-ventricular tachycardia;
v. abdominal aortic aneurysms, thoracic or supra renal, before surgery;
vi. significant functional alteration of any of the heart valves;
vii. lung or heart transplant;
viii. ischemic heart disease;
ix. symptomatic coronary artery disease;
x. symptomatic coronary artery disease in pharmacological treatment;

<u>Cardiological assessment is needed in the following conditions:</u>

i. peripheral arterial disease before or after surgery;

ii. aneurysms of the abdominal aorta, before or after surgery;
iii. minor abnormalities of the heart valves;
iv. postoperative valve surgery
v. abnormalities of the pericardium, myocardium or endocardium;
vi. congenital abnormality of the heart, before and after intervention;
vii. systemic anticoagulation therapy,
viii. recurrent vasovagal syncope;
ix. pulmonary embolism;
x. rhythm disorders or conduction.

The Respiratory tract:
Candidates who present the following disorders are considered not suitable:

i. compromised respiratory function;
ii. subjects with pneumonectomy.

Cardiovascular assessment should be satisfactory in presence of:

i. asthma;
ii. active inflammatory disease of the respiratory system;
iii. active sarcoidosis;
iv. pneumothorax;
v. sleep apnea syndrome/sleep disorder;
vi. major thoracic surgery.

The cabin crew members should undergo pulmonary function tests on clinical indication.

Digestive system:

Candidates are to be considered unsuitable in presence of sequelae of disease or surgical procedures in any part of the digestive tract or its adnexa that can likely cause incapacity to fly (e.g. obstruction or stenosis or hernias with disabling symptoms).
Specialized assessment must be satisfactory in cases of recurrent dyspeptic disorders in pharmacological treatment, pancreatitis, symptomatic gallstones, stabilized chronic inflammatory diseases, total or partial surgical excision or deviation of one of these organs.

Metabolic and endocrine system:

The cabin crew members should not have functional or structural metabolic disorders that can interfere with their duties. Members with metabolic or endocrine disorders, including diabetic patients treated with insulin may be assessed as suitable if the medical control is adequate.

Female reproductive system:

The candidates who have undergone a major gynecological intervention are considered as unfit until full recovery and pregnant candidates are assessed as suitable to fly until 16 weeks. A limitation note can be inserted in the report: "does not work as a single member". The medical examiner must provide written advice to the pregnant candidate illustrating all significant complications determined by flight.

Musculoskeletal system:
Candidates must have sufficient height and strength to perform their duties safely.

Hematologic disorders:
Medical evaluation should be satisfactory in the following cases:

i. abnormal hemoglobin, anemia, polycythemia;
ii. coagulation disorders, hemorrhagic or thrombotic;
iii. acute or chronic leukemia;
iv. splenomegaly;
v. lymphatic disorders.

Genito-urinary tract:
Urine analysis should be part of any assessment and the urine should not present any abnormal value of pathological significance.
Candidates are considered unsuitable in presence of sequelae of disease or surgical procedures on the kidneys or urinary tract, caused by obstructions, stenosis or compression that can result in inability to fly. Specialized assessment must be satisfactory in cases of kidney disease or stories of renal colic due to one or more kidney stones or total or partial surgical excision or deviation of one of the organs involved.

Infectious diseases:
The HIV-infected patients are considered suitable if the investigation do not highlight any clinical disease.

Psychiatric and psychological disorders:
Unsuitable candidates are those who present:

i. stabilized history or diagnosis of schizophrenia, schizotypal or delusional disorder;
ii. history of a single or repeated acts of self-harm;

The assessment should be satisfactory in the case of behavioral disorders relatively to the use of alcohol or other drugs.
Specialized assessment is required in presence of:

i. mood disorders;
ii. neurotic disorders;
iii. personality disorders;
iv. mental or behavioral disorder;

Counseling must include a collection of biographical data, a review of attitudes, personality tests (MMPI and

Rorschach) and the interview, as well as findings and recommendations.

Neurological system

Candidates are considered unsuitable in the presence of:

i. epilepsy;
ii. recurrent disturbances of consciousness of unknown cause;

Specialized assessment should be satisfactory in cases of:

i. epilepsy without recurrence after five years and without treatment for more than 10 years;
ii. epileptiform EEG abnormalities and focal slow waves;
iii. progressive and non-progressive diseases of the nervous system;
iv. a single episode of disturbance of consciousness of unknown cause;
v. loss of consciousness after head injury;
vi. penetrating brain injury;
vii. spinal or peripheral nerve injury.

Visual system:

Routine ophthalmological examination should be included in all aeromedical assessments, whilst a specialized examination should be performed only when indicated. Distant visual acuity, with or without correction should be equal to 5/10 in both eyes and the candidate must be able to read a chart N5 at 30-50 cm even with correction.

The field of vision and binocular vision must be normal; contrast sensitivity should be sufficient with recognition of the first 9 Ishihara tables. The use of glasses or contact lenses is permitted if the visual function is satisfactory, that is tolerated. In cases of myopia, lenses must be worn while in cases of hypermetropia lenses should be always available.

Candidates who have undergone refractive surgery may be assessed as suitable upon specialized examinations, while those with amblyopia are unsuitable; orthokeratological lenses should not be used.

Otorhinolaryngological apparatus:

Individuals with hearing loss must demonstrate satisfactory functional hearing ability with a vocal conversation at a distance of at least 2 meters. An audiometric evaluation should be performed during the first visit with a loss of no more than 35 dB at the following frequencies 500 Hz, 1000 Hz, 2000 Hz, or not more than 50 dB at 3000 Hz in both ears assessed separately. Further evaluations should include ear, nose and throat examinations.

Specialized assessment is required in cases of:

i. acute or chronic disease of the middle or internal ear;
ii. tympanic membrane perforation or dysfunction;
iii. disorders of the vestibular function;
iv. nasal obstructions;
v. sinus dysfunction;
vi. malformations or acute/chronic infections in charge of the oral cavity or upper respiratory tract;
vii. significant voice or word disturbances.

Dermatological diseases are not a reason of non-suitability, however, an associated systemic complication requires specialized evaluations.

In the area of oncologic diseases, the evaluation is satisfactory if the treatment is being effective and complete recovery is possible.

People with a diagnosis of intracerebral malignant tumor are assessed as unsuitable to fly.

Conclusion

The analysis of current regulations evidenced the lack of some medical evaluations, in particular the focus on audiometric examinations and spirometry is unsatisfactory.

The paragraph “MED.B.015 Respiratory System in the Regulation 1178 of 3 November 2011” shows the total absence of indications for carrying out a spirometry, which is performed only for those who have a class two license and only when "clinically indicated".

The paragraph “MED.B.080 Otolaryngology in the Regulations 1178 of 3 November 2011” reports the following relatively to audiometric examinations: "c) Examination 1) Hearing should be tested at all medical visits. i) For first and second class medical certificates, when the license must include an instrument rating, hearing is tested with pure tone audiometry examination during the first visit and in subsequent revalidation or renewal evaluations every five years till age 40, and then every two years. ii) At the first visit, candidates examined with pure tone audiometry should not have a hearing loss greater than 35 dB at frequencies of 500, 1000 and 2000 Hz, or more than 50 dB at 3000 Hz in each ear. During the medical visit for revalidation or renewal, candidates with a greater hearing loss must demonstrate satisfactory functional hearing ability. iii) Applicants with hypoacusis should demonstrate satisfactory functional hearing ability".

However, these procedures are not considered mandatory. In the suitability evaluation of flight crews, it would be appropriate if spirometry and audiometry become part of routine examinations during medical visits for revalidation or renewal, and not only at first visit as currently reported for audiometry (**see Table 1**).

Table 1. Proposal of health protocols

Health protocol: license achievement	Health protocol: revalidation or renewal
Visual assessment	Visual assessment
Urine analysis	Urine analysis
Audiometry	Audiometry
Spirometry	Spirometry
ECG (after age 40 or in presence of cardiovascular risk factors)	ECG (after age 50 and every two years in presence of cardiovascular risk factors)

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