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# Regulatory Medicine

## Aviation Medicine Training Programme for Aviation Medical Assessors & Examiners

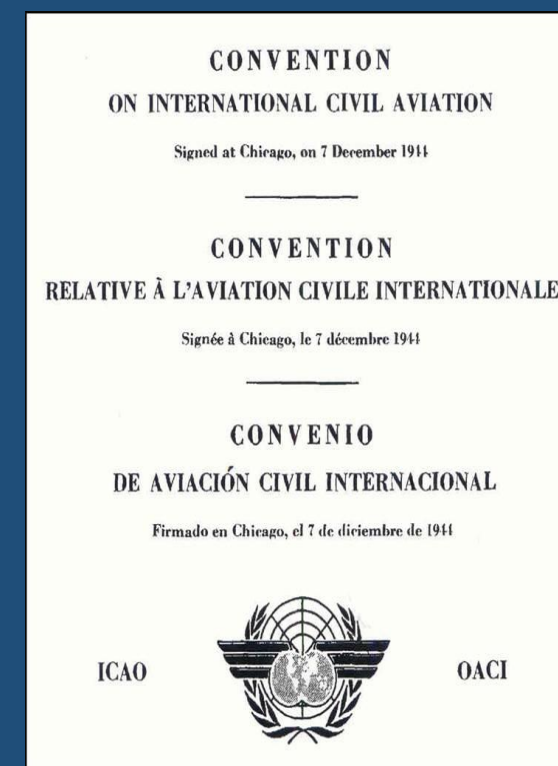
Aeromedical Services, Civil Aviation Authority of Sri Lanka.

## Modern Aviation history

- ❑ The period between 1945 and 1979 is sometimes called the post-war era
- ❑ During this period, aviation was dominated by the arrival of the jet age.
- ❑ In civil aviation the jet engine allowed a huge expansion of commercial air travel, while in military aviation it led to the widespread introduction of supersonic aircraft.
- ❑ The tremendous development of aviation during and after World War II demonstrated the need for an international organization to assist and regulate international flight for peaceful purposes, covering all aspects of flying, including technical, economic, and legal problems.
- ❑ Convention on International Civil Aviation was signed by 52 states on December 7th, 1944 – KNOWN as **CHICAGO CONVENTION**

## CHICAGO Convention

- ❑ The Convention on International Civil Aviation, drafted in 1944 by 54 nations, was established to promote cooperation and “create and preserve friendship and understanding among the nations and peoples of the world.”
- ❑ Known more commonly today as the , this landmark agreement established the core principles permitting international transport by air, and led to the creation of the specialized agency which has overseen it ever since – the **International Civil Aviation Organization (ICAO) in 1947.**





## International Civil Aviation Organization(ICAO)

- ❑ Promote the safe and orderly development of international civil aviation by setting necessary standards and regulations.
- ❑ ICAO serves as a the forum for regulation & cooperation in all fields of civil aviation amongst its current 191 Member States.
- ❑ Each State is sovereign which means there are no universal laws and ICAO does not have the mandate to legislate for States – States agree to adjust their national legislations according to standards agreed at ICAO.





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ICAO – Annexes – 19

Annex 10 – Aeromedical

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## All Annexes have;

- Standards ➡ **SHALL – Its mandatory to adhere/implement**
- Recommended Practices ➡ **SHOULD – can be adhered or implemented**
- Notes ➡ **It gives clarification to the standard or Recommended Practices**
- All States shall adhere to the ICAO Standards and such licence is recognized by all other ICAO member States.
- Recommended Practices do not carry the same privileges as it is not mandatory.

## What is ICAO Standard

It is defined by ICAO as "any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognized as **necessary** for the safety or regularity of international air navigation and to which Contracting States will conform in accordance with the Convention"

## What is ICAO Recommended Practice

It is defined by ICAO as "any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognized as **desirable** in the interest of safety, regularity or efficiency of international air navigation and to which Contracting States will endeavour to conform in accordance with the Convention".



It is MANDATORY to have a ICAO recognized Licence to exercise the privileges of relevant category (Pilots, ATCs and others)

## They have to fulfil 3 main requirements;

1. To hold valid licences
2. To ensure they have the requisite skills and experience to meet internationally agreed standards,
3. And are **medically fit, both physically and mentally, to safely perform their tasks.**





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# Where these Medical Standards & Recommended Practices are available?

## In Annex 1 – Personnel Licensing

**Chapter 1: Definitions and General Rules Concerning Licences**

**Chapter 6: Medical Provisions for Licensing**

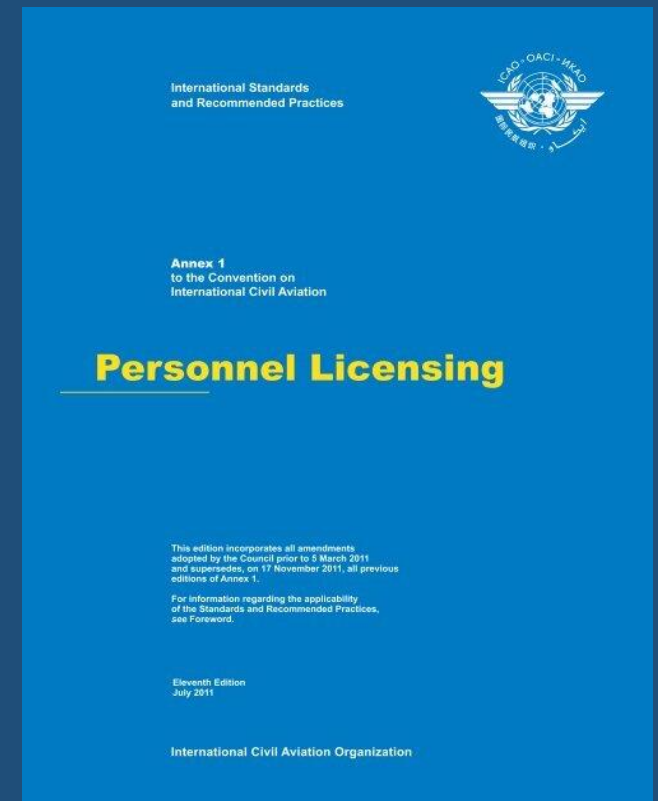
## Good to know

Chapter 2: Licences and Ratings for Pilots

Chapter 3: Licences for Flight Crew Members other than Pilots

Chapter 4: Licences and Ratings for Personnel other than Flight Crew Members

Chapter 5: Specifications for Personnel Licences





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## Medical Certification

Authority to grant medical fitness certification – Aeromedical Department of CAA  
Aeromedical Department

Shall practice Aviation Medicine and implement aeromedical regulatory requirements

### Aviation Medicine

Aviation Medicine is a medical specialty which combines aspects of **preventive, occupational, environmental and clinical medicine** with the **physiology and psychology of man in flight**.

It is concerned with the **health and safety** of those who fly, both crew and passengers, as well as the **selection and performance of those who hold aviation licences**.



## Medical Assessor

A physician, appointed by the Licensing Authority, qualified and experienced in the practice of aviation medicine and competent in evaluating and assessing medical conditions of flight safety significance (ICAO Annex 01 definition)

**Note 1.** *Medical assessors evaluate medical reports submitted to the Licensing Authority by medical examiners.*

**Note 2.** *Medical assessors are expected to maintain the currency of their professional knowledge.*



## Job functions of MA

1. Consultants for the Licensing Authorities
2. supervisors for the Aviation Medical Examiners

Normally has **advanced training in the specialty of aviation medicine** and **extensive experience** in regulatory and clinical Civil Aviation Medicine.

Medical Assessor is **in charge** of Accredited Medical Conclusions, evaluating medical reports submitted to the Licensing Authority and making final assessments in borderline cases.

An important duty of the Medical Assessor is the **safeguarding of medical confidentiality**, although pertinent medical information may be presented by the Medical Assessor to other officials of the Licensing Authority when justified by operational concerns or when an Accredited Medical Conclusion is sought.

Also the **audit of medical reports** by Aviation Medical Examiners and **refresher training** of **Medical Examiners** will usually fall within the remit of the Medical Assessor.

## Aviation Medical Examiner (AME)

A physician with **training in Aviation Medicine** and **practical knowledge and experience of the aviation environment**, who is designated by the Licensing Authority to conduct medical examinations of fitness of applicants for licences or ratings for which medical requirements are prescribed

Good to have practical knowledge and experience of the operating environments of the various licence holders.

1. actual flight deck experience in aircraft engaged in commercial operation
2. experience in the operational working conditions of air traffic controllers.

This is to **understand the practical demands**, both physiological and psychological, that the licence holder's task and duties impose.



## ANNEX 01 - MEDICAL ASSESSORS & EXAMINERS

- 1.2.4.9 Contracting States **shall use the services of Medical Assessors** to evaluate reports submitted to the Licensing Authorities by medical examiners
- 1.2.4.8.1 The medical examiner **shall be required to submit sufficient medical information** to the Licensing Authority to enable the Authority to undertake Medical Assessment audits.
- 1.2.4.6 Contracting States **shall designate** medical examiners, qualified and licensed in the practice of medicine, to conduct medical examinations of fitness of applicants for the issue or renewal of the licences or ratings specified in Chapters 2 and 3, and of the appropriate licences specified in Chapter 4.
- 1.2.4.6.1 Medical examiners **shall have received training** in aviation medicine and shall **receive refresher training** at regular intervals. Before designation, medical examiners **shall demonstrate adequate competency** in aviation medicine.
- 1.2.4.6.2 Medical **examiners shall have practical knowledge and experience** of the conditions in which the holders of licences and ratings carry out their duties
- 1.2.4.6.3 Recommendation.— The competence of a medical examiner should be evaluated periodically by the Medical Assessor.

## MEDIC

**In-person examination of  
medical history & record**

**The evidence issued by  
specific requirements of**

*Medical Assessment is an integral part of the licence.*

1.2.4.1 An applicant for a licence shall, when applicable, hold a Medical Assessment issued in accordance with the provisions of Chapter 6.

1.2.4.2 States shall apply, as part of their State safety programme, basic safety management principles to the medical assessment process of licence holders that as a minimum include:

- a) routine analysis of in-flight incapacitation events and medical findings during medical assessments to identify areas of increased medical risk; and
- b) continuous re-evaluation of the medical assessment process to concentrate on identified areas of increased medical risk.

*Note.— A framework for the implementation and maintenance of a State safety programme is contained in Attachment A to Annex 19. Guidance on State safety programmes and safety management principles is contained in the Safety Management Manual (SMM) (Doc 9859) and the Manual of Civil Aviation Medicine (Doc 8984).*

1.2.4.3 The Licensing Authority shall implement appropriate aviation-related health promotion for licence holders subject to a Medical Assessment to reduce future medical risks to flight safety.

*Note 1.— Standard 1.2.4.2 indicates how appropriate topics for health promotion activities may be determined.*

*Note 2.— Guidance on the subject of health promotion activities is contained in the Manual of Civil Aviation Medicine (Doc 8984).*

Evidence is provided that a licence holder medically fit for each appropriate Class as per Annex 01, 1.2.4.1 by providing separate certificate or by including Statement in the licence

# Why these medical provisions are there in aviation regulations???

To optimize  
the flight safety

MANAGE  
MEDICAL  
RELATED RISKS

mitigate the risk of  
incapacitation

1.2.4.1 An applicant for a licence shall, when applicable, hold a Medical Assessment issued in accordance with the provisions of Chapter 6.

**1.2.6.1** Holders of licences provided for in this Annex shall not exercise the privileges of their licences and related ratings at any time when they are aware of any decrease in their medical fitness which might render them unable to safely and properly exercise these privileges.



# Validity periods of various Medical fitness certificates

## Validity of Medical Fitness certificates varies according to the age and Class

*Note 5.— See the Manual of Procedures for Establishment and Management of a State's Personnel Licensing System (Doc 9379) for guidance material on the development of a risk assessment process.*

1.2.5.2 Except as provided in 1.2.5.2.1, 1.2.5.2.2, 1.2.5.2.3, 1.2.5.2.4, 1.2.5.2.5 and 1.2.5.2.6, a Medical Assessment issued in accordance with 1.2.4.7 and 1.2.4.8 shall be valid from the date of the medical examination for a period not greater than:

- 60 months for the private pilot licence — aeroplane, airship, helicopter and powered-lift;
- 12 months for the commercial pilot licence — aeroplane, airship, helicopter and powered-lift;
- 12 months for the multi-crew pilot licence — aeroplane;
- 12 months for the airline transport pilot licence — aeroplane, helicopter and powered-lift;
- 60 months for the glider pilot licence;
- 60 months for the free balloon pilot licence;
- 12 months for the flight navigator licence;
- 12 months for the flight engineer licence;
- 48 months for the air traffic controller licence; and
- 48 months for the remote pilot licence — aeroplane, airship, glider, rotorcraft, powered-lift or free balloon.

*Note 1.— The periods of validity listed above may be extended by up to 45 days in accordance with 1.2.4.4.1.*

*Note 2.— When calculated in accordance with 1.2.5.2 and its sub-paragraphs, the period of validity will, for the last month counted, include the day that has the same calendar number as the date of the medical examination or, if that month has no day with that number, the last day of that month.*

ICAO Annex 01, Chapter 01

## Class I (CPL/ATPL)

MC is valid for 12 months

MC is valid for 6 months if;

- $\geq 40$
- $\geq 60$

*counted, include the day that has the same calendar number as the date of the medical examination or, if that month has no day with that number, the last day of that month.*

1.2.5.2.1 The period of validity of a Medical Assessment may be reduced when clinically indicated.

1.2.5.2.2 When the holders of airline transport pilot licences — aeroplane, helicopter and powered-lift, and commercial pilot licences — aeroplane, airship, helicopter and powered-lift, who are engaged in single-crew commercial air transport

MC is valid for 24 months if  $\geq 40$   
years

MC is valid for 12 months if  $> 50$   
years

## Class II (SPL/PPL)

MC is valid for 60 months

MC is valid for 24 months if  $\geq 40$

# What will be the next step if the MC expiring ???

## Client shall be aware of his medical expiry date

## He /She shall start medical renewal process 45 days prior to expiry

The duration of the period of validity shall be in accordance with the provisions of 1.2.5.2.

1.2.4.4.1 The period of validity of a Medical Assessment may be extended, at the discretion of the Licensing Authority, up to 45 days.

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

1.2.4.5 Except as provided in 1.2.5.2.6, flight crew members, remote flight crew members or air traffic controllers shall

## Shall renew the MC by undergoing Medical Examination & Assessment prior to the expiry



## If the Medical validity expires, then

- Can grant an extension if the Client requests

The duration of the period of validity shall be in accordance with the provisions of 1.2.3.2.

1.2.4.4.1 The period of validity of a Medical Assessment may be extended, at the discretion of the Licensing Authority, up to 45 days.

*Note.— It is advisable to let the calendar day on which the Medical Assessment expires remain constant year after year by allowing the expiry date of the current Medical Assessment to be the beginning of the new validity period under the proviso.*

- If the Client operating in an area distant from designated medical examination facilities - can request for a deferment

1.2.5.2.6 *Circumstances in which a licence holder operating in an area distant from the Licensing Authority, provided that*

- a) a single period of six months
- b) two consecutive periods of three months for operations provided that the holder is examined by an examiner of the area who is legally qualified to practise in the Licensing Authority where the licence holder resides
- c) in the case of a private pilot licence holder, by an examiner designated by the Licensing Authority. A report of the medical examination shall be submitted to the Licensing Authority
- d) two consecutive periods of three months

## Eligibilities to consider deferment

Non availability of an AME of State of licence where the licence holders resides

Deferment shall not exceed

1. Single period of 6 months for non commercial flight crew (training purposes, SPL & PPL)
2. Two consecutive periods of 3 months for commercial flight crew (CPL, ATPL) provided a medical examination certificate from an AME/ Physician recognized by the licencing State.
3. Single period of 24 months for PPL holders provided a medical fitness certificate issued by an AME in the residing State
4. Two consecutive periods of 3 months for remote flight crew member

## Annex 01, 1.2.6 Decrease in medical fitness

1. Licence holders shall not exercise the privileges of their licences and related ratings at any time when they are aware of any decrease in their medical fitness which might render them unable to safely and properly exercise these privileges.



### 1.2.6 Decrease in medical fitness

1.2.6.1 Holders of licences provided for in this Annex shall not exercise the privileges of their licences and related ratings at any time when they are aware of any decrease in their medical fitness which might render them unable to safely and properly exercise these privileges.

1.2.6.1.1 Recommendation.— **States should ensure** that licence holders are provided with **clear guidelines** on medical conditions that may be relevant to flight safety and when to seek clarification or guidance from a medical examiner or Licensing Authority

1.2.6.1.2 Recommendation.— Each Contracting State should, as far as practicable, **ensure that licence holders do not exercise** the privileges of their licences and related ratings during any period in which their **medical fitness has, from any cause, decreased** to an extent that would have prevented the issue or renewal of their Medical Assessment



## Decreased Medical Fitness –CAASL requirements

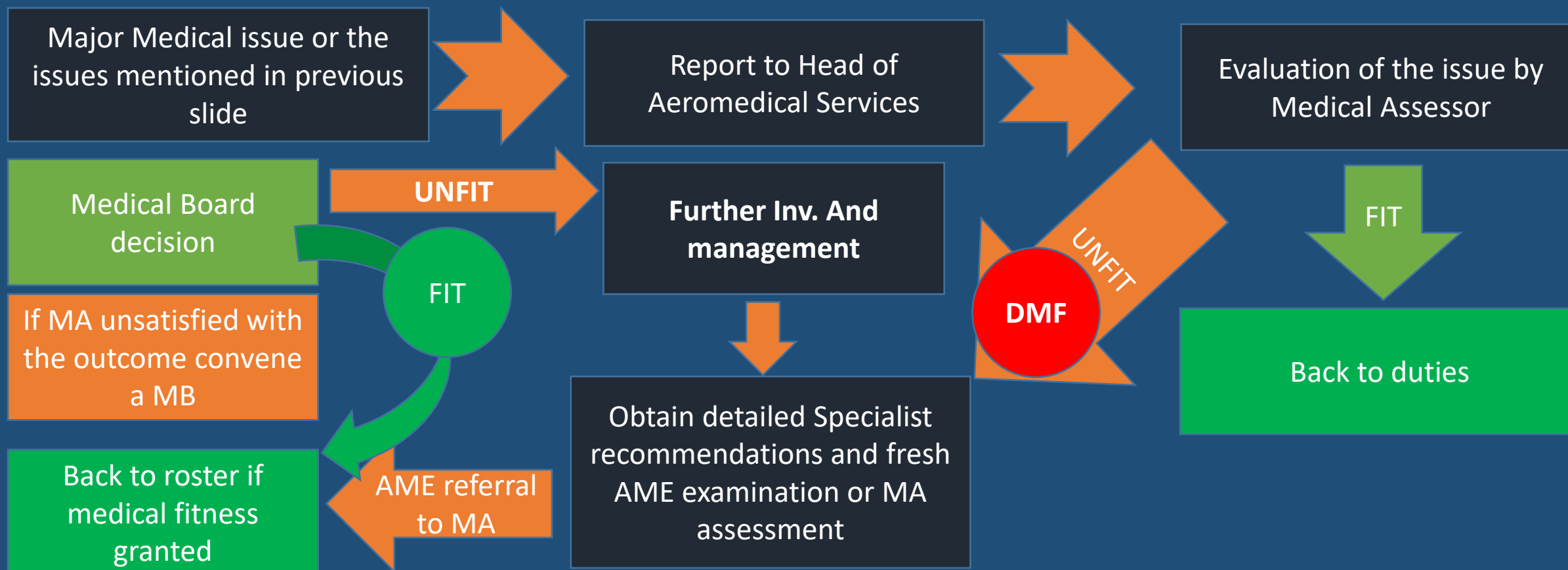
**Licence holders shall not exercise the privileges of their licence and related ratings or certificates at any time when they:**

- 1) are aware of any decrease in their medical fitness which might render them unable to safely and properly exercise those privileges;**
- 2) take or use any prescribed or non-prescribed medication which is likely to interfere with the safe exercise of the privileges of the applicable licence;**
- 3) Receive any medical, surgical or other treatment that is likely to interfere with the safe exercise of the privileges of the applicable licence and flight safety.**

In addition, licence holders of a medical certificate shall, without undue delay and before exercising the privileges of their licence, seek aero-medical advice when they:

- 1) have undergone a surgical operation or invasive procedure;
- 2) have commenced the regular use of any medication;
- 3) have suffered any significant personal injury involving incapacity to function as a member of the Flight crew;
- 4) have been suffering from any significant illness involving incapacity to function as a member of the Flight crew;
- 5) are pregnant;
- 6) have been admitted to hospital or medical clinic;
- 7) First require correcting lenses.

## Decreased medical fitness (DMF)



## WHY WE DO A MEDICAL EXAMINATION & ASSESSMENT ON LICENCE HOLDERS

- A medical examination is necessary to ensure that the holder of the license is in **sufficient health** to operate the aircraft properly without jeopardizing flight safety.

Do a Pilot need to be 100% perfect in medical fitness to engage in flying duties?????

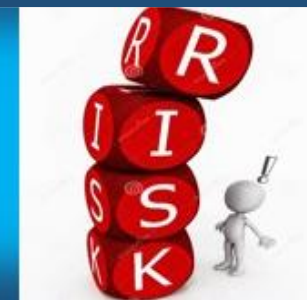
- Medical Examination & Assessment is done to determine whether the Licence holder is medically fit **enough** to perform their safety sensitive duties.
- AMEs & MAs shall be able to determine the **“Acceptable Aeromedical risk”** on a licence holder.



## Two basic principles are essential when assessing an applicant's medical fitness for aviation duties as

1. The applicant shall be **physically and mentally capable** of performing the duties of the licence or rating applied for or held
2. There **shall be no medical reasons** which make the applicant liable to incapacitation while performing duties

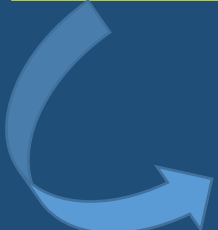
**Do aeromedical risk analysis on issues identified during the examination.**



## RISK OF IN-FLIGHT INCAPACITATION

One of the major purposes of medical examinations and determination of medical fitness of an applicant is to **assess the probability of a medical condition** resulting in in-flight incapacitation.

Aeromedical risk analysis is important for determining in-flight incapacitation risk.

- 
1. No adequate predictive epidemiological data
  2. Difficulty in acquiring information from applicants
  3. Time consuming & bound
  4. Pressure from third parties & applicant
  5. Further investigations
  6. ....lot more

### Consider

1. Epid data available
2. Experience & expertise of the applicant
3. Severity of the ailment – minor to severe
4. investigation reports
5. Relevant Consultant's recommendation on the management & prognosis
6. Discussion with Colleagues, MA and other experts

## **Other FACTORS to be considered,**

- 1. Assessment of functional capacities: check for any impairment of physical functions which affect aviation duties (vision, hearing, motor functions, sensory functions)**
- 2. Any causes for unsafe conduct: Substance abuse, mental conditions, environmental conditions, family history, social history, fatigue, sleep deprivation, obesity etc..)**
- 3. Long term occupational and health issues**
- 4. Health promotion – discuss about life style modification etc.**

## Application of ICAO Standards to the Medical Examination & Assessment

### Annex 01, Chapter 6, Note 1.

The Standards and Recommended Practices established in this chapter cannot, on their own, be sufficiently detailed to cover all possible individual situations. Of necessity, many decisions relating to the evaluation of medical fitness must be left to the judgment of the individual Medical Examiner. The evaluation must, therefore, be based on a medical examination conducted throughout in accordance with the highest standards of medical practice.



6.4.2.4 The applicant shall not have suffered any head injury, **the effects of which are likely to interfere** with the safe exercise of the applicant's licence and rating privileges.

- Shall not have suffered...effects of which are likely to interfere
- Assessed as Unfit unless.....
- Shall be adequately investigated.

undergone coronary bypass grafting or angioplasty or cardiac intervention or suffered from any other condition which is likely to interfere with the safe exercise of the licence and rating privileges.

**unless** the condition is **PROVEN** that condition is not interfere with flight safety

**Unfit until proper evaluation is carried and PROVEN that condition is not interfere with flight safety**

6.4.2.5 All abnormalities **shall be adequately investigated.**

## Annex 01 -The flexibility clause

1.2.4.10 If the medical Standards prescribed in Chapter 6 for a particular licence are **not met**, the appropriate Medical Assessment **shall not be issued** or renewed **unless the following conditions are fulfilled**:

- a) **accredited medical conclusion** indicates that in special circumstances the applicant's failure to meet any requirement, whether numerical or otherwise, is such that exercise of the privileges of the licence applied for is **not likely to jeopardize flight safety**;
- b) relevant ability, skill and experience of the applicant and operational conditions **have been given due consideration**; and
- c) the licence is **endorsed with any special limitation or limitations** when the safe performance of the licence holder's duties is dependent on compliance with such limitation or limitations.

## Accredited Medical Conclusion(AMC)

The conclusion reached by **one or more medical experts** acceptable to the Licensing Authority for the purposes of the case concerned, **in consultation with flight operations or other experts** as necessary.

Assess the probability of a medical condition resulting in in-flight incapacitation.

Incapacitation risk analysis

Obtain Expert opinion

Any previous precedence

Reach the AMC with or without limitations/restrictions

## **SUMMARY**

- **Medical certification is a must to hold a valid licence.**
- **Medical Examiners/Medical Assessors shall perform risk based analysis and obtain Expert opinion in borderline cases prior to decision making or AMC.**
- **Aeromedical risk of incapacitation shall be managed. Impossible to achieve zero aeromedical risk.**
- **Need to apply flexibility clause when necessary.**
- **No one is in perfect health status. Case by case examination & assessment required.**
- **Health promotion is very important during medical examination.**
- **Thorough knowledge in ICAO aeromedical regulations essential for AMEs & MAs.**





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