



ASSEMBLY — 42ND SESSION

TECHNICAL COMMISSION

Agenda Item 24: Aviation Safety and Air Navigation Priority Initiatives

HEALTH PROMOTION, DISEASE PREVENTION AND MEDICAL SCREENING IN AVIATION MEDICAL EXAMINATIONS

(Presented by Australia)

EXECUTIVE SUMMARY

Prevention of aircraft incidents and accidents by identifying the precursors or warning signs of a critical event before it can manifest as a safety occurrence is fundamental to aviation safety. The principles of maintenance and reliability programs are embedded in airworthiness processes for aircraft, but not explicitly so in the health and medical processes for the license holders who operate these aircraft. Similar to maintenance programs for aircraft, license holders should undergo health promotion, early detection and screening assessments for relevant diseases as a normal part of the aviation medical examination. Prevention and early detection are preferable to waiting for a preventable disease to develop or become severe enough that the medical authority must cancel the aviation medical certificate. Including health promotion, prevention and screening programs into the aviation medical examination provides for an important safety and performance process that aligns with the Safety-2 principles of detecting signs of a potentially unsafe situation before it becomes a safety occurrence.

Action: The Assembly is invited to:

- note the value of including relevant national population and preventive health activities in medical examinations for aviation personnel to align with the maintenance, reliability and airworthiness programs for aircraft;
- encourage work towards the development of amendments to Annex 1 Chapter 6 to include health promotion and prevention in aviation medical examination and assessment processes; and
- support ICAO's work in developing guidance materials to support the development of locally relevant strategies for health promotion, preventive activities and screening for safety-relevant medical conditions.

<i>Strategic Goals:</i>	This working paper relates to Strategic Goal: <i>Every Flight is Safe and Secure</i>
<i>Financial implications:</i>	Nil.

<i>References:</i>	Annex 1 — <i>Personnel Licensing</i> , Chapters 1 and 6 Doc 8984, <i>Manual of Civil Aviation Medicine</i> Annex 6 — <i>Operation of Aircraft</i> Doc 9760, <i>Airworthiness Manual</i> A41-WP/256 – <i>Medical Certification and Mental Illness</i> World Health Organisation (Europe): <i>Screening Programs: a short guide</i> (2020) Royal Australian College of General Practitioners <i>Guidelines for Preventive Activities in General Practice</i> (2025)
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1. INTRODUCTION

1.1 Global aviation medical standards were formalised in the early 20th century, with the detection of disease or functional issues that may cause incapacity as the focus of the medical examination. The medical Standards of Annex 1 — *Personnel Licensing*, Chapter 6 — *Medical Provisions for Licensing* and the guidance material in the *Manual of Civil Aviation Medicine* (Doc 8984) are focused on the detection of safety-relevant disease after it has developed.

1.2 The low sensitivity of aviation medical examinations means diseases detected during the assessment may be so severe or advanced that the only action available to the medical assessor is to cancel or refuse the medical certificate. This is essentially the “Safety-1” approach where the management of a hazard in the aviation system is implemented only after the hazard has become evident through a system failure (presence of advanced disease) or critical incident (medical incapacity during flight crew duties).

1.3 The practice of preventive medicine and use of screening methods to identify early disease underpins best practice in primary care and is the foundation of optimal health at individual and population levels. Early detection through population-based screening allows early intervention so the disease may never progress to become clinically relevant. Similarly, the use of preventive measures will reduce the likelihood of diseases ever developing.

1.4 Health promotion, prevention and screening therefore aligns with the aviation safety movement towards a “Safety-2” approach where activities that promote reliability and support safe performance are implemented to prevent a safety incident or accident.

2. ALIGNING MEDICAL ASSESSMENTS FOR LICENSE-HOLDERS WITH AIRCRAFT MAINTENANCE AND RELIABILITY PRINCIPLES

2.1 Annex 6 — *Operation of Aircraft*, Section 11.3 describes the requirements for maintenance tasks, structural integrity programs, and aircraft system monitoring and reliability programs. The *Airworthiness Manual* (Doc 9760), Part III Section 7.4.2.2, describes the role of maintenance and reliability programs to perform tasks “sufficiently in advance in order to take corrective maintenance action prior to failure or reaching an unacceptable performance level.” The modern primary health approach to prevention and screening is analogous to the fundamentals of aircraft certification, maintenance, reliability and airworthiness programs.

2.2 Airworthiness and maintenance programs include consideration of the aircraft type, design, age, pattern of use, and the reliability expectations. In a similar way, medical prevention and screening activities to ensure license holder reliability and safety will include the determinants of

wellbeing, health and performance such as age, biopsychosocial, cultural and behavioural considerations. Also referred to as a salutogenic approach to wellbeing and performance, this principle has previously been supported by ICAO in the context of mental health, through A41-WP/256 at Assembly 41.

2.3 It is appropriate for the modern approach to aviation medical examination and assessment to align with the principles of airworthiness in this way, consistent with a system-wide approach to aviation safety.

3. AVIATION WORKFORCE BENEFITS

3.1 Implementation of health prevention, promotion and screening activities has the potential to make an important contribution to the global aviation workforce by optimising the health and performance of the license holder population. In particular, as the age range of license holders expands, and the inclusion of people from diverse health backgrounds becomes the norm, strategies to ensure reliability of the human in the system become more important.

3.2 Throughout most of the 20th century the prevalence of significant diseases in the over-60-year-old population was significant enough that the use of age 60 as a proxy for disease presence, and the assumption that a person aged under 60 years was likely disease-free, was a reasonable approach. Aviation workers from the 21st century have a very different health situation, particularly with younger people experiencing significant health burden through mental illness and substance use which are typically not identified or prevented through the routine aviation medical assessment. At the same time, through effective health promotion and wellbeing strategies many older people are relatively free from the presence or complications of chronic diseases of aeromedical significance well beyond their 7th decade of life.

3.3 Inclusion of prevention and surveillance in the aviation medical assessment process provides the additional benefit of better identifying modern safety-relevant medical issues while supporting healthy and safe aviation participation across a person's lifespan.

4. IMPLEMENTING HEALTH PROMOTION, PREVENTION AND SCREENING IN MEDICAL EXAMINATIONS

4.1 Performing health promotion, prevention and screening activities is within the normal capability of health care systems and is accepted as normal industry practice in primary health care. Inclusion of these matters in the aviation medical assessment process will therefore not present a major additional burden to the license-holder, the medical examiner or their national health services.

4.2 The World Health Organization (WHO) has developed guidance materials to assist States to develop health promotion and screening programs that are relevant to their local context, considering the population profile, endemic and prevalent diseases and available health resources. Major health authorities also provide resources and guidance through open-source publication that can be adjusted to local settings, such as the Royal Australian College of General Practitioners Guidelines for Preventive Activities in General Practice.

4.3 Importantly, the medical community collaborates internationally in developing advice on screening and prevention of diseases of major global impact such as cardiovascular disease, cancers and mental illness. These diseases represent a significant proportion of reasons for aviation medical certificate

cancellation or refusal, and in the case of mental wellbeing and illness are an increasing concern for aviation safety. These resources and guidelines are current and immediately available to all States.

4.4 With guidelines from WHO, professional organisations and technical authorities already developed and in many cases being implemented for the population, translation to the aviation setting for medical examinations will not require a significant body of work by ICAO or States.

4.5 It is important to note that it is not expected that ICAO will direct aviation medical examiners to perform health care activities that are the usual responsibility of health care providers. It remains the responsibility of the flight crew member and their health care provider to determine what tests and activities are relevant to the local population and the individual, and who should attend to those tasks.

4.6 Implementation of health promotion, prevention and disease screening in aviation may simply involve the medical examiner administering questionnaires to identify risks that are relevant to that license-holder, discussing whether they have engaged with their health care provider for the activities recommended by their local health authorities, and recommend that the person seek further medical care where there is an indication to do so.

4.7 Annex 1 Standard 1.2.4.3 requires the Licensing Authority to implement appropriate “aviation-related” health promotion for licence holders to reduce future medical risks to flight safety. All issues relating to wellbeing, health or disease will have an impact on aviation performance and safety, so all aspects of a license holder’s health and wellbeing are “aviation-related”. It is therefore important that the reliability interventions of health promotion, prevention and screening are incorporated in medical assessments just as they are for the aircraft these license-holders are operating.

4.8 To date, no detailed guidance is available from ICAO for States or medical examiners regarding how health promotion, prevention and screening can be implemented in the medical assessment process. This working paper intends to provide for an outcome where guidance material is made available to license holders and medical examiners so the ICAO medical assessment processes can support a state of optimal health throughout the license holder’s flying lifetime. This will ensure they can safely and reliably perform their duties without impairment by preventable or treatable medical conditions, retain their medical status as “fit to fly” and support a safer aviation industry.

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