

**61ST CONFERENCE OF
DIRECTORS GENERAL OF CIVIL AVIATION
ASIA AND PACIFIC REGION**

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AGENDA ITEM 3: AVIATION SAFETY

**ENHANCING AVIATION SAFETY THROUGH A RISK-BASED
AEROMEDICAL SURVEILLANCE AND REPORTING
FRAMEWORK**

Presented by Pakistan Civil Aviation Authority (PCAA)

SUMMARY

The aviation industry is experiencing increasing medical risks associated with ageing flight crew, metabolic disorders, cardiovascular disease, mental health conditions, fatigue, medication use, and other non-communicable diseases. While medical certification remains the cornerstone of aviation medicine, there is a growing need to transition from a compliance-based system to a proactive, risk-based aeromedical safety framework integrated within the State Safety Programme (SSP) and Safety Management System (SMS).

This paper proposes the establishment of a harmonized regional aeromedical surveillance and reporting framework that enables States to identify emerging medical safety risks, share de-identified safety data, promote evidence-based decision-making, and strengthen preventive interventions while maintaining medical confidentiality.

ENHANCING AVIATION SAFETY THROUGH A RISK-BASED AEROMEDICAL SURVEILLANCE AND REPORTING FRAMEWORK

1. INTRODUCTION

1.1 Aeromedical fitness is fundamental to aviation safety. ICAO medical standards ensure that flight crew, air traffic controllers, and other safety-critical personnel maintain an acceptable level of medical fitness throughout their careers.

1.2 Traditional aeromedical certification primarily evaluates an individual's fitness at the time of examination. However, emerging medical conditions may develop between examinations, potentially affecting operational safety. Several medical events occurring during flight operations have demonstrated the need for continuous risk assessment rather than reliance solely on periodic certification.

1.3 The Asia-Pacific Region continues to experience growth in commercial aviation, increasing pilot populations, longer operational hours, and an ageing aviation workforce. Consequently, States are encountering increasing numbers of applicants with chronic medical conditions requiring individualized risk assessment.

1.4 A modern aeromedical system should complement medical certification with proactive surveillance, safety reporting, trend analysis, and collaboration between aviation medicine specialists and safety investigators.

2. DISCUSSION

2.1 Current Challenges

States within the Asia-Pacific Region face several common challenges:

- Increasing prevalence of obesity, diabetes mellitus, hypertension, and cardiovascular disease among licence holders.
- Growing awareness of mental health conditions requiring balanced, evidence-based assessment.
- Variability in aeromedical certification practices between States.
- Limited regional sharing of anonymized aeromedical safety data.
- Absence of standardized indicators for monitoring aeromedical safety performance.

2.2 Need for Risk-Based Aeromedical Surveillance

A proactive surveillance framework would enable Civil Aviation Authorities to:

- Identify emerging medical trends before they contribute to safety events.
- Monitor the effectiveness of medical certification policies.
- Develop preventive health programmes for aviation personnel.
- Support evidence-based amendments to national regulations.
- Enhance confidence in aeromedical decision-making.

2.3 Integration with Safety Management

Aeromedical safety should become an integral component of the State Safety Programme.

The framework should encourage:

- Collection of de-identified aeromedical occurrence data.
- Analysis of medical incapacitation events.
- Identification of systemic medical hazards.

- Development of mitigation strategies using safety risk management principles.
- Feedback into licensing and oversight processes.

2.4 Regional Cooperation

The Conference may consider establishing a regional mechanism through which States voluntarily exchange:

- Medical incapacitation statistics.
- Lessons learned from significant aeromedical occurrences.
- Best practices in medical certification.
- Research findings relevant to aviation medicine.
- Emerging risks related to ageing populations, fatigue, medications, and chronic disease.

Such collaboration would facilitate harmonization while respecting national regulations and medical confidentiality.

2.5 Digital Transformation

States are encouraged to explore secure digital aeromedical systems capable of:

- Monitoring certification trends.
- Supporting risk-based oversight.
- Generating safety indicators.
- Facilitating research using anonymized data.
- Improving communication between Aeromedical Examiners and Civil Aviation Authorities.

2.6 Benefits

Implementation of a regional aeromedical surveillance framework is expected to:

- Improve early detection of medical safety risks.
- Reduce the likelihood of in-flight medical incapacitation.
- Strengthen aviation safety oversight.
- Promote harmonized medical certification practices.
- Support ICAO's objectives for proactive safety management.

3. ACTION BY THE CONFERENCE

The Conference is invited to:

- a) agree that States work collaboratively towards establishing a confidential, voluntary and non-punitive regional mechanism for the exchange of aeromedical incapacitation statistics, lessons learned and best practices to enhance aviation safety;
- b) encourage Member States to designate national focal points and voluntarily participate in the exchange of aeromedical incapacitation information in accordance with applicable national laws and ICAO provisions; and
- c) encourage Member States to report progress on the establishment and implementation of the regional mechanism at the 62nd Conference of Directors General of Civil Aviation, Asia and Pacific Regions (DGCA/62).