Safety Management in Aviation Medicine

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Plan

- What is ‘safety’
- Acceptable level of aeromedical risk
- Organizational accident
- Risk management
- Measuring and monitoring
- New ICAO Recommended Practices
What is safety?

- Zero accidents?
- Error avoidance?
- Regulatory compliance?

What is aeromedical safety?
- Zero in-flight incapacitations?
- Zero medical cause accidents/incidents?
Proposal:

- **Controlled** risk and **controlled** error are acceptable in an inherently safe system.

- How might we mitigate the risk to flight safety from in-flight incapacitation?
Concept of safety (Doc 9859)

- **Safety** is the state in which the risk of harm to persons or property damage is reduced to, and maintained at or below, an **acceptable level** through a **continuing process of hazard identification** and **risk management**.
Acceptable level

- What is the acceptable level with respect to medical fitness?
  - Zero incapacitations per year?
  - 1 incapacitation per year?
  - 10... or 100...
- How fit is ‘fit enough’ for Class 1 certification?
Coronary Heart Mortality, Males, England & Wales, 2002

Acceptable level of cardiac fitness?
The evolution of safety thinking

1950s
1970s
1990s
2000s

TECHNICAL FACTORS
HUMAN FACTORS
ORGANIZATIONAL FACTORS

TODAY

Courtesy: James Reason
Organizational factors

- Policy-making
- Planning
- Communication
- Allocation of resources
- Supervision, etc

Activities over which an organization has a reasonable degree of direct control
‘Organizational Accident’
Factors include

- Poor risk management
- Inadequate qualifications/experience
- Poor morale
- Workforce instability
- Poor ergonomics

Acceptance of violations
(Note - opposite of a safety culture)
Acceptance of violations

- ‘A pilot with depression, or taking an antidepressant is unfit’

- What is the chance of a pilot diagnosed depression committing a medical ‘violation’ and flying when unfit?
ALPA study 1997-2001

- 1200 professional pilots diagnosed with depression who contacted their office:
  - 60% intended to continue flying (without taking recommended medication)
  - 15% intended to continue flying (taking recommended medication) but without declaring such medication
  - 25% intended to declare their medication and cease flying
What is the greater risk?

- Pilots flying when unfit because of depression with or without taking antidepressants?

OR

- Pilots who are asymptomatic when taking antidepressants flying whilst being carefully monitored?

Note: ‘Safety is the state in which the risk of harm to persons or property damage is reduced to, and maintained at or below, an acceptable level through a continuing process of hazard identification and risk management’.
How do we know if we are ‘doing the right thing’?

- Monitor
- Measure
- Analyse
- What???
Measure, monitor, analyse - pre accident events

Number of occurrences

1 – 5

30 – 100

100 – 1000

1000 – 4000

Accidents

Serious incidents

Incidents

Latent conditions
Pre-accident events

Operational deployment

System design

Baseline performance

Operational performance

“Practical drift”
Safety management – Eight building blocks

1. Senior management’s commitment to the management of safety.

2. Effective safety reporting.

3. Continuous monitoring through systems to collect, analyse, and share safety-related data arising from normal operations.

4. Investigation of safety occurrences with the objective of identifying systemic safety deficiencies rather than assigning blame.

5. Sharing safety lessons learned and best practices through the active exchange of safety information.

6. Integration of safety training for operational personnel

7. Effective implementation of Standard Operating Procedures (SOPs), including the use of checklists and briefings.

8. Continuous improvement of the overall level of safety.
1.2.4.2 Recommendation.— States should apply, as part of their State safety programme, basic safety management principles to the medical assessment process of license 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.

Applicable November 2010
Annex 19 – new Annex

- Principles of Safety Management
- State Safety Programme
  - (safety management for regulators)
- Safety Management Systems
  - (safety management for service providers)
  - Google “ICAO Doc 9859”
- Annex 19 – applicable 14 November 2013
Summary

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