



NORWEGIAN ARMED FORCES

Institute of Aviation Medicine

# *Certification and Preventive medicine*

Anthony S. Wagstaff

Director, Institute of Aviation Medicine, Oslo, Norway

Associate professor, University of Oslo



- No financial conflicts of interest
- All expressed views are my own



# Overview

- Why do we work with pilots
- Is screening for disease helpful?
- Can we release added value to the medical examination?
- Some possibilities



# The background for my views

- Institute of Aviation Medicine Oslo 22 years
- Military authority on flight medical standards
  - Rulemaking and clinical evaluation
- Civilian aeromedical centre (JAA – now EASA) in Norway 13 years.
- AME – military and civilian experience
- Specialist in occupational health.



# Why have we done medicals for 100 years?

1. Flight safety
2. Flight safety
3. Flight safety



# The simple question is:

- Can we make a better contribution to flight safety?



# Are we dealing with a high risk population here?

- Civilian airline aircrew
- Relative risk



# Standardised mortality

- From disease – Low risk
  - Pilot SMR 0.56 (0.54-0.58)\*
- From occupation – High risk
  - Pilot SMR 46 (39-54)\*
  - Fatal occupational accident rate 0,7/1000/yr (US)

\*Hammer GP, et al. Occup Environ Med 2014;71:313–322.  
doi:10.1136/oemed-2013-101395 (93771 crew members from 10 countries followed over a mean of 21 years)





# At the moment

- We are only really working on the low-risk issues: the diseases
- Could we improve our work on the high risk pilot occupation?



# Clinical methods



- Based on diagnostic tests for disease
- Screening doesn't improve health outcomes, only in high risk populations
- Sudden sudden incapacitation events only relevant for a few conditions and the preventable risk is low
  - Cardiovascular, neurological
  - Only “physical” conditions screened
- What about 80% of accident causes which are human factors?
  - Fatigue, life problems, stress, etc etc

# Important facts:

- Most pilot health issues that lead to loss of licence are currently not picked up at periodic medical examinations
- Longitudinal follow-up (ie knowing the pilot and his/her work) increases the chance of picking up relevant health issues early – improving the chance of mitigation
- Prevention is efficient in reducing risks in groups:
  - Cardiovascular risk ( > 40)
  - Mental health problems\*

\*Cuijpers, Pim; Muñoz, Ricardo F.; Clarke, Gregory N.; Lewinsohn, Peter M. (2009). "Psychoeducational treatment and prevention of depression: The "coping with depression" course thirty years later". *Clinical Psychology Review* **29** (5): 449–58.

[\\*\\*Mental health promotion and mental illness prevention: The economic case". London School of Economics and Political Science. 2 February 2011.](#)



- How do we as medical people think about risk?

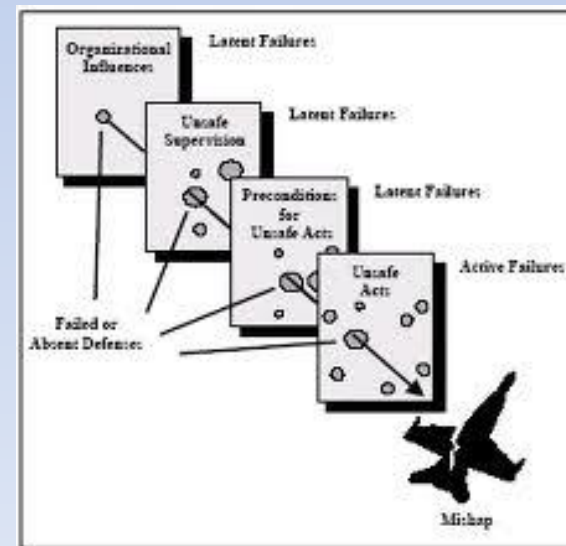


# Risk models

- Statistical risk and severity of outcome (e.g. 1% rule)
  - Assess risk level /Matrix – colorcoding
  - Often used in Health and Safety work

Navn på hendelse	Lite farlig	Farlig	Kritisk	Katastrofalt
Svært sannsynlig	5	6	7	8
Meget sannsynlig	4	5	6	7
Sannsynlig	3	4	5	6
Lite sannsynlig	2	3	4	5

- Threats, vulnerabilities and barriers:
  - Mitigation, threat reduction, threat containment etc
  - Often used in military analysis
  - Prevention issues are integrated



# So what are the possibilities for preventive efforts?



- Pick up on psychological issues, home/work problems, subtle depression etc.
- Cardiovascular prevention may reduce incapacitation events.
- More long –term outlook – “keep`em flying!”
  - We know that **prevention** actually works
  - Experienced pilots are valuable for flight safety

# Psychological factors – how?

- Need better methods, Aeromedical examiners need more structured tools and knowledge.
- TRUST between pilot and doctor must be improved to achieve meaningful meetings between pilot and flight doc.
- Reduce pilot's disempowerment :  
Decisions have to be more transparent



# Transparent decision-making



- Collaborative process between pilot and AME with the aim of keeping the pilot in the air safely.
- Clearly defined processes, pilot involvement in process
- Reduces “unknowns” – improve trust
- BETTER decisions



# Conclusions

- Aviation is still a high risk occupation, but not primarily from disease
- There are preventive tools we may more systematically apply to add value to Flight safety
- We should think long-term risk in our contact with pilots – experienced pilots are valuable
- More transparent decision-making processes, involving pilots themselves.

