



# The Aging Pilot

Robert Haddon, MD, MS  
Mayo Clinic, Rochester  
Division of Preventive, Occupational and Aerospace Medicine

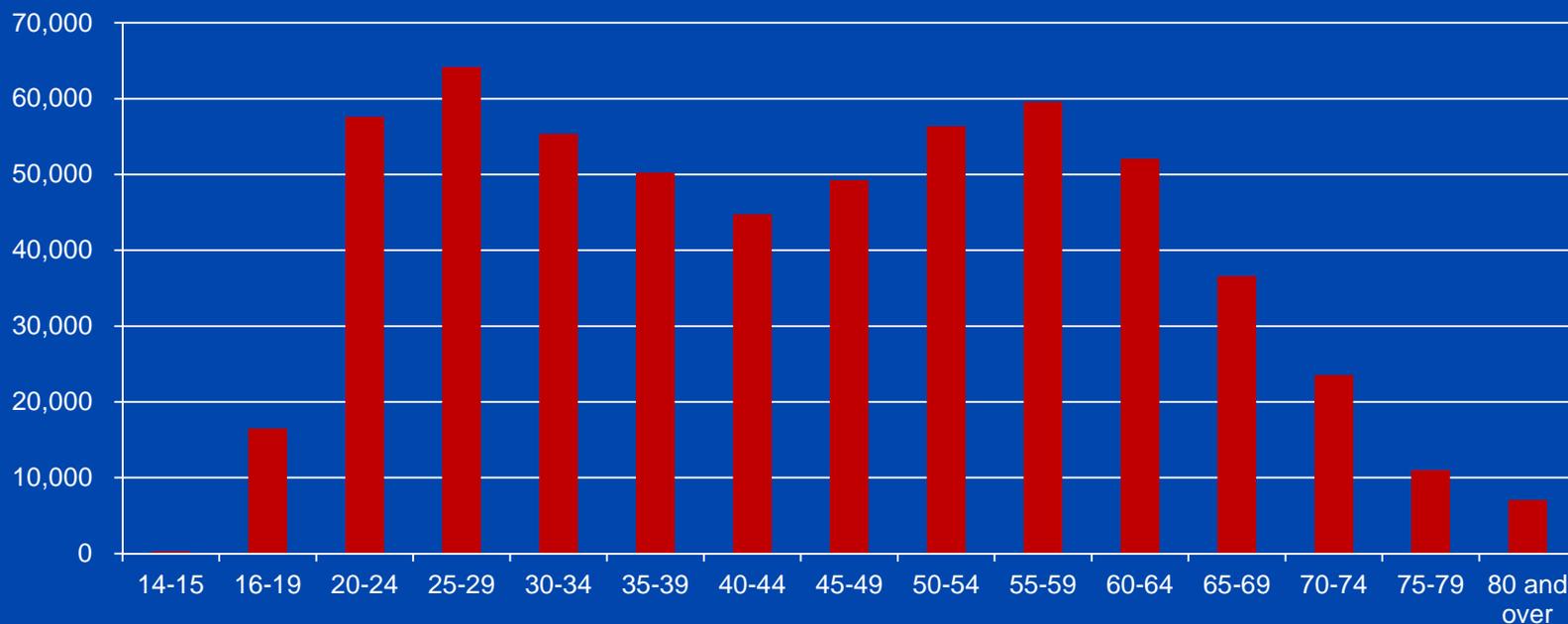
Civil Aviation Medical Association  
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# Disclosures

- Dr. Haddon has no commercial relationships to disclose.
- He works as a Consultant at Mayo Clinic, Rochester
- He formerly served as a flight surgeon for both USAFR and NASA.
- He is a Senior AME
- He is older than he looks

# Speaking of aging pilots

Total US pilots by age group 2016  
n = 584,361



# Overview

Age is not of itself a limiting factor for aeromedical certification, but it raises the probability of several simultaneous and interacting medical concerns.

- Eyraud and Borowsky, ASEM, June 1985.
- Looked at military aviator mishaps as a function of age. Experience tended to offset reaction and cognition decline

**Civil Aeromedical Institute, 2003**

**Pilot Age and Accident Rates Report 4: An  
Analysis of Professional ATP and Commercial  
Pilot Accident Rates by Age**

**Finds a “U-shaped” risk curve**

Ageing and fitness to work

Occup. Med. Vol. 50, No. 7, pp. 483-491, 2000

**G. Chan, V. Tan and D. Koh**

## Chan, et al

Work capacity or job performance in the ageing worker is multifactorial, involving an interaction between functional capacity, health and the nature of the work. Assessing fitness to work is thus a two-pronged process of identifying work ability (whether physical, mental or mixed) of the individual (while screening for pathological disease) and correlating it with the respective nature of the work, with reasonable job re-design.

## Chan, et al

There is also a greater role for health promotion, disease screening for maintenance of functional capacity, and possibilities for work accommodation.

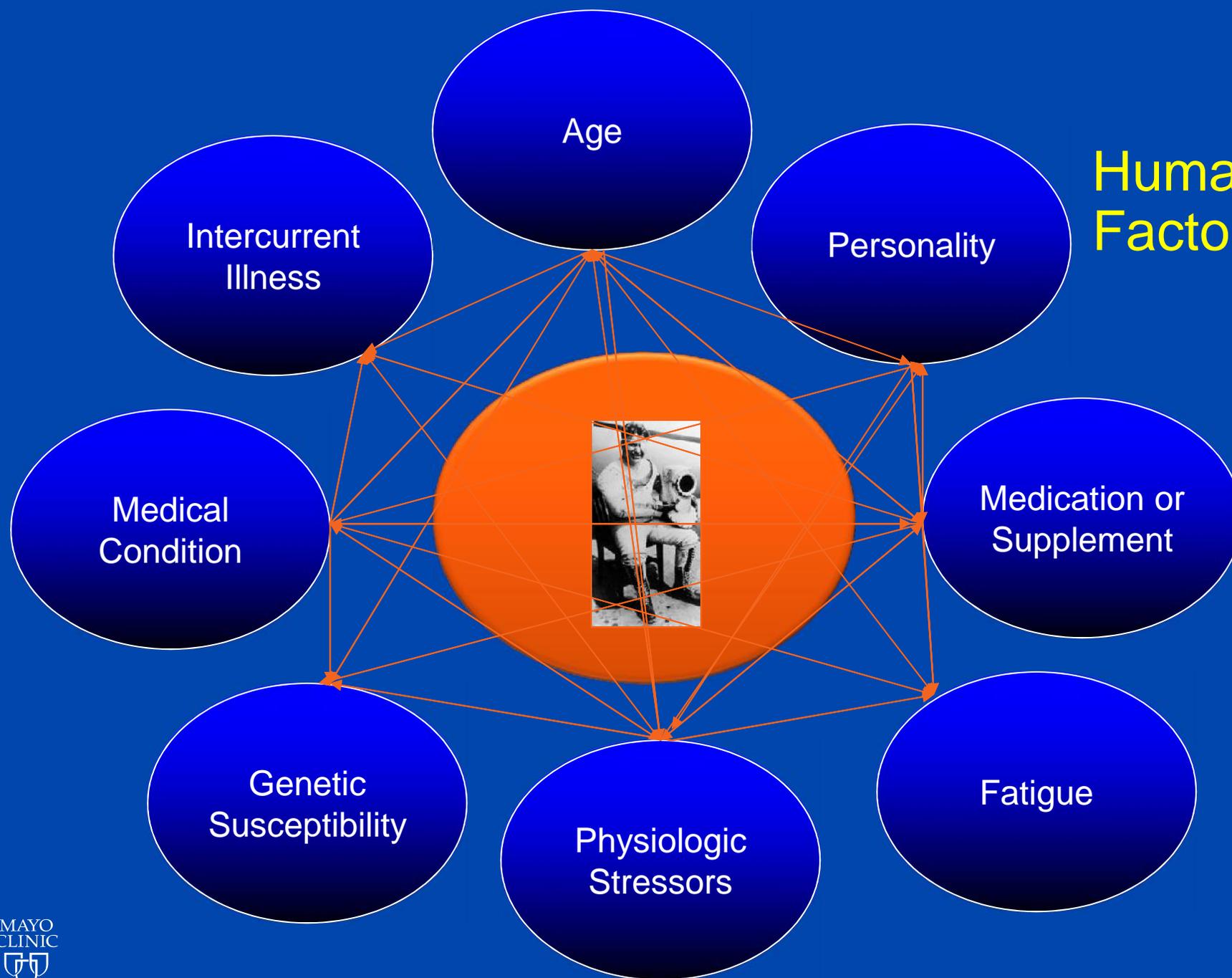
# Addressing an increasingly geriatric population?

- Decreased GFR
- Increased % body fat
- Decreased total body water
- Loss of muscle mass (Sarcopenia)
- Vision changes

# Aeromedical Concerns of Aging

- Cardiovascular
- Cognitive
- Mood
- Pharmacologic
- Ophthalmic
- Sleep and Fatigue
- Physiologic Reserve
- Substance Abuse

# Human Factors



## Anthony Bourdain: Medium Raw

- “You’re not getting any faster—or smarter—as a cook after age 37. The knees and back go first, of course. That you’d expect. But the hand-eye coordination starts to break up a little as well. And the vision thing. But it’s the brain that sends you the most worrying indications of decay.

## Anthony Bourdain: Medium Raw

- After all those years of intense focus, multitasking, high stress, late nights, and alcohol, the brain stops responding the way you like. You miss things. You aren't as quick reading the board, prioritizing...grasping at a glance what food goes where....Your hangovers are more crippling and last longer.

## Anthony Bourdain: Medium Raw

Your temper becomes shorter...Despair becomes more frequent. You're basically done—or on your way to being done. Your brain knows it, your body knows it—and tells you every day. But pride persists.”

# Well then!

- What aeromedical concerns are listed?
- Are these really all due to aging?
- How is working as a chef different than flying an aircraft?
- How can these effects of aging be mitigated?

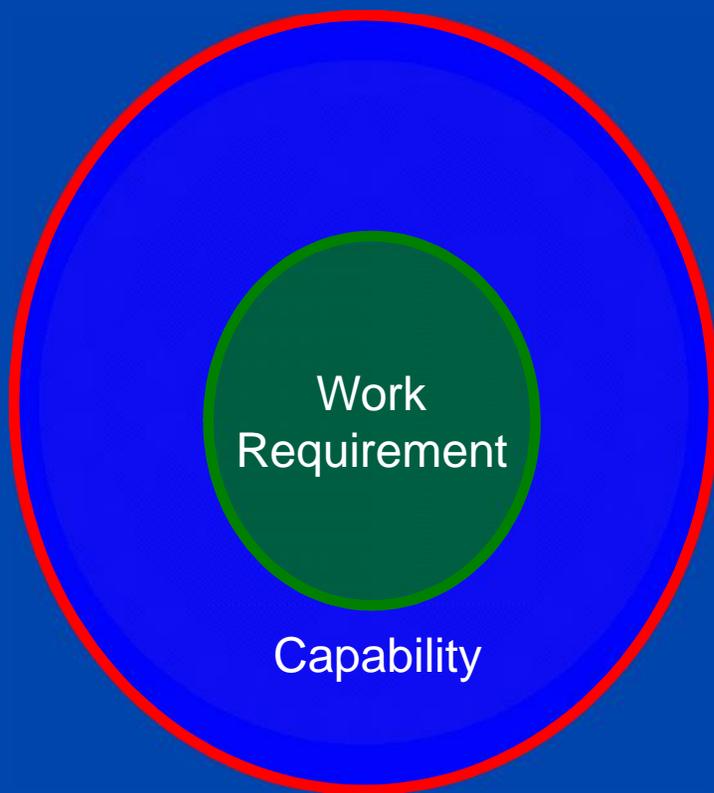
# Icebergs

Condition	Prevalence General Pop	Prevalence Truck drivers	Prevalence Pilots	Detect at Physical	Detect at Autopsy	Potential as Human Factor
Mood Disorder	8.3%	Same as gen pop	USAF – <1% Civilian - 12-20%?	Maybe	No	Medium to High
Minimal Cognitive Impairment	Age Dependent	Unknown	Unknown	Maybe	No	Unknown
Fatigue	4-20%	50%	? 20%	No	No	High
Metabolic Syndrome	35-38%	Same as gen pop	Unknown	Maybe	Maybe	Unknown
Obstructive Sleep Apnea	20%	5.6%	Unknown	Maybe	Unlikely	Medium to High
OTC Meds	77%	Unknown	Unknown	No	Yes	Unknown to high
Illicit Drug/Rx Use	8.3-?%	Unknown	Unknown	Maybe	Maybe	High
Anxiety Disorder	17.8%	Same as gen	Unknown	Maybe	No	Medium to High

## Medications and Aging Pilots

- More of them!
- Higher chance a disqualifying drug being missed
- Drug-drug interactions and adverse effects can be related to the number of physicians involved in care
- The AME may be only one physician of many!
- A good history and access to clinical records is paramount

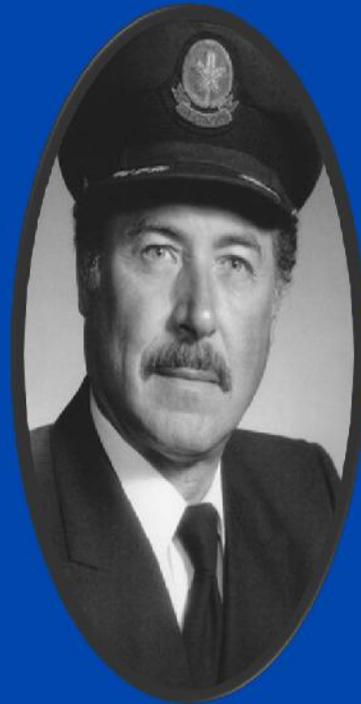
# Cognitive Capability vs. Work Requirement delta needed for “Fit to Fly” decision



## The Pilot as Hero

Intent should be to maximize the chances, **medically**, that every pilot can make correct choices w/out interference from “resident pathogens”\* that adversely impact coping resources.

We can't do that if we don't have the data to inform us on what stressors are important/present and how to effectively prevent their impacts.



## Discussion

- How early should we as AMEs discuss aging with pilots? (Think Scrooge!).
- Can an AME shoulder the administrative overhead that is typical in the certification of a pilot with multiple co-morbidities?
- Will BasicMed put more older pilots in the air?
- Will the advent of AI and “Smart” aircraft and remote guidance relax medical standards?

[haddon.robert@mayo.edu](mailto:haddon.robert@mayo.edu)

