The Aging Pilot

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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


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.
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

- Intercurrent Illness
- Medical Condition
- Genetic Susceptibility
- Physiologic Stressors
- Personality
- Medication or Supplement
- Fatigue
- Age
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

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

*Adapted from J. Reason
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?