Aviation Medicine Seminar Series

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• (1) How to Ace the Medical Exam
  December 13, 2003
  • AME training
  • How to find a Medical Examiner
  • What the exam involves
  • The 15 disqualifying conditions…
(2) Spatial Disorientation - January 10, 2004

- **Vestibular** based disorientation: What it is, How to deal with it
- **Vision** based disorientation: What it is, How to deal with it

“Say... What's a mountain goat doing way up here in a cloud bank?”
(3) Common Aeromedical Problems -
• February 14, 2004
• Motion Sickness
• Hyperventilation
• Hypoxia
• Carbon Monoxide
• Trapped gas
• Self imposed stress
• (4) Advanced Topics
  March 13, 2004
  • Hypoxia/Oxygen use and abuse
  • Altitude induced decompression sickness
  • Trapped gas
  • Cabin pressurization
How to Ace the Medical Exam
Wright Brothers First Flight, Kill Devil Hills, Kitty Hawk: December 17, 1903

Orville Wright

Wilber Wright
• **FAA Origin:** Air Commerce Act of May 20, 1926
  - Request by aviation industry for Federal Standards
  - *Thought to be the beginning of medical certification*
• 1934: Bureau of Air Standards
  - encouraged the airlines to establish first 3 ATC centers
• 1938: Civil Aeronautics Act
  - Transferred authority to Civil Aeronautics Authority
    - Regulate airline fares and determine routes
• 1940: FDR split the Authority into two agencies:
  - Civil Aeronautics Administration (CAA)
    - ATC, Airmen, Aircraft cert, safety enforce, airway develop
  - Civil Aeronautics Board (CAB)
    - Safety rulemaking, accident invest, economic regulation
Historical Development

- 1958: Federal Aviation Act
  - CAA became FAA
  - Safety rulemaking of CAB given to FAA
- 1966: Congress authorized creation of cabinet level Department of Transportation
  - FAA became organized under DOT
  - CAB’s accident investigation function was transferred to the new National Transportation Safety Board (NTSB)
Historical Development

- 1994: Office of Commercial Space Transportation transferred to FAA
- **September 11, 2001**: Congress created a new Transportation Security Administration that succeeded the FAA as the agency with primary responsibility for civil aviation security
U.S. Fatalities by Mode of Transportation
(44,148 in 2000)

- Highway 94.2%
- Aviation 2.4%
- Marine 1.7%
- Rail 1.7%
U.S. Aviation Fatalities by Type of Operation (777 in 2000)

- General Aviation: 76%
- Air Taxi: 9%
- Foreign/others: 2%
- Commuters: 1%
- Airlines: 12%

[Diagram showing aviation fatalities distribution]
U.S. Aviation Incidents

- Pilot Deviations: 36%
- Near Midair Collisions: 7%
- Runway Incursions: 10%
- Vehicle/Pedestrian: 8%
- Surface Incidents: 23%
- Operational Errors: 22%
Most Prevalent First Occurrences (1984-93)

- Loss of control in-flight
- Total loss of engine power (non-mechanical)
- Loss of control on the ground
- In-flight collision with object
- Partial loss of engine power (mechanical)
- Bad weather in-flight
- In-flight collision with terrain/water
- Airframe/component/system failure/malfunction
- Hard landing
Types of Medical Certificates

- **First Class** (6 calendar months)
  - Airline Transport Pilot
- **Second Class** (12 calendar months)
  - Commercial Pilot, Flight Engineer, Flight Navigator, Air Traffic Control Specialist
- **Third Class** (24/36 calendar months)
  - Private Pilot, Recreational Pilot, Student Pilot
Medical Certificate Applications by Class (430,932 in 2002)

- 1st Class: 47%
- 2nd Class: 32%
- 3rd Class: 21%
Final Certificate Denials

- First Class
- Second Class
- Third Class


Amounts: 0, 100, 200, 300, 400, 500, 600, 700
How does a Physician become an AME

• Application to District Office
• Acceptance by District Office
• Home Study Course with Exams
  • Regulations
  • Physiology
  • Case History
• A week Seminar Course in Oklahoma
  • physiological training, lectures, examinations
• 3 Years as an AME for Senior AME
How many legs does this elephant have?
The Evaluation Process

- **Form:** 8500
- **Consultation:** Review of 8500
- **Physical Examination**
  - Vital signs: BP <155/95
  - No Rectal, No Breast/Pelvic
  - Eye: distant/near/intermediate
    - color vision test, Phoria test, Field vision test
  - Ears: 6’ Conversational
- **Laboratory Studies**
  - Urine: Protein and Glucose
  - EKG: As required
Completing the 8500 Form: Key points

- Answer each question completely…don’t leave blanks
- Answer each question honestly…
- Bring supporting information (medical records) for any medical condition or medication used
- If you have a SODA or Special Issuance letter *please* make sure to bring it along
What part of “Yes” don’t you understand?

- A yes answer doesn’t usually mean disqualification but it does mean that questions need to be asked
- BOTH the applicant and the AME must explain any YES answer
MD

PLEASE DON'T WASTE THE DOCTOR'S TIME WITH QUESTIONS
Consultation
Physical Exam

One Day in the Teaching Hospital

Steven Mussey MD
The Physician must do the Physical exam

- Any qualified person may do the rest (measuring, vision testing, UA, etc.)
- Class II age 50 or over, no ECG
- Class II below age 50, no intermediate vision or ECG
- Class III, no ECG, intermediate vision or heterophoria test
“Could you converse a little louder please, Doc!”

- Conversational voice test is the standard hearing evaluation
- 6 feet with back turned
- Alternatives:
  - Audiometry (pure tone)
  - Speech discrimination (70% at 65 dB)
Woman In Vanity... Or Skull?
hint: move farther a bit from the screen and blink to see the skull or the woman (looking at the mirror)
“Hi Bruce,
I am about to start training for my private pilot license, and was wondering if they test for marijuana use in the urine exam.

Thanks,

Steve”
Medications

- Flying under the influence of any medication is to be discouraged
- The underlying condition is often the primary concern
Good Medications

• NONE!!
Bad Medications

- Medicine that’s bad itself
- Medicine that implies a serious underlying disease process
- A combination of both
Intrinsically Bad Medications

- Antipsychotic medication
- Many cancer chemotherapy agents
- Alcohol
Good Medications but Bad Diseases

- Nitroglycerin
- Anticonvulsants
- Antabuse
Usually Not Acceptable

- Psychotropics
- Lithium
- “Older” antihistamines
- Methyldopa, reserpine, guanethidine
Usually OK Acute Medications
(If Underlying Condition OK)

- Aspirin, acetaminophen, ibuprofen, topicals
- Pseudoephedrine
- “Newer” antihistamines
More Usually OK Acute Medications

- GI meds (H₂-blockers, antacids, Pepto, proton pump inhibitors)
- Low-dose steroids
- Antibiotics
OK If Not Intended for Use During Flight

- Viagra®
- Levitra®
- Cialis®
Usually OK *Chronic Medications*

- Antihypertensives
- NSAIDs
- $\text{H}_2$-blockers, etc
- Allergy shots
- Prostate medications
Usually OK Chronic Medications

- Xanthines, β-agonists, cromolyn, etc
- Cholesterol-lowering agents
- GI meds
- Hormones
- Hypoglycemic agents
- Glaucoma drops
Individually OK Medications

- Antiarrhythmic agents
- Chronic steroid therapy
- Intermittent cancer chemotherapy
- Anti-coagulants
- Insulin
A new drug (one that is recently approved by the FDA) usually takes at least 1 year for the FAA to approve its use for pilots....and often times a lot longer.
Web Sites with Information on Medications

- www.AOPA.org
- www.EAA.org
- www.LeftSeat.com
- www.AviationMedicine.com
“Hi Bruce,
   I am about to start training for my private pilot license, and was wondering if they test for marijuana use in the urine exam.

Thanks,

Steve”
Steve,
If you plan on continuing your use of marijuana, or for that matter any drugs or alcohol, I would suggest you reconsider your interest in flying. Drugs, such as marijuana, can remain in your body and affect various physiological systems for days to weeks at a time. The use of this drug, as it is for many drugs, is incompatible with safe flying.

Please review FAR Part 67 for more detailed information.

BRG
Medical Certification Decision Making

- **ISSUE** a medical certificate
  - Only if applicant meets all medical standards
- **DENY** the application
- **DEFER** the action to the Manager, Aeromedical Certification Division, AAM-300, or the appropriate Regional Flight Surgeon
15 (initially!) Disqualifying Conditions

1. Diabetes Mellitus requiring insulin or other hypoglycemic medication
2. Angina Pectoris
3. Coronary heart disease that has required treatment or, if untreated, that has been symptomatic or clinically significant
4. Myocardial Infarction
5. Cardiac Valve Replacement
15 (initially!) Disqualifying Conditions

6. Permanent cardiac pacemaker
7. Heart replacement
8. Psychosis
9. Bipolar disorder
10. Personality disorder that is severe enough to have repeatedly manifested itself by overt acts
11. Substance dependence
12. Substance abuse
13. Epilepsy
14. Disturbance of consciousness without satisfactory medical explanation of the cause
15. Transient loss of control of nervous system function(s) without satisfactory medical explanation of cause
What to do if you have an (initially) disqualifying condition...

- “An airman who is medically disqualified for any reason may be considered by the FAA for grant of an Authorization for **SPECIAL ISSUANCE** of Medical Certificate (Authorization).”

- “For medical defects, which are static or non-progressive in nature (e.g., color blind, loss of limb), a **STATEMENT OF DEMONSTRATED ABILITY** (SODA), may be granted in lieu of Authorization.”
Authorizations for Special Issuances

Thousands

- First Class
- Second Class
- Third Class

Years: 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 0, 1
Authorizations for Special Issuances

- Total Applications
- Special Issuance Ratio

# of Applications vs. Authorization Ratio (%)

- Yearly data from 1987 to 2000
- Comparison of total applications and special issuance ratio

Authorizations for Special Issuances
“The AME may not issue a medical certificate if the applicant fails to meet specified minimum standards or demonstrates any of the findings or diagnoses described as disqualifying unless the condition is unchanged or improved and the applicant presents written documentation that the FAA has evaluated the condition, found the applicant eligible for certification, and authorized the AME to issue a certificate”
Can one drink a SODA?

- **Statement Of Demonstrated Ability**
  - Static physical defect that can be waived with very infrequent testing
  - Usually for vision or range-of-motion problems
More SODA

- Often involve a Medical Flight Test
- Class and Limitation specific
Title 14 CFR 61.53
Prohibition on Operations During Medical Deficiency

- Operations that require a medical certificate
  - *Knows or has reason to know of any medical condition* that would make the person unable to meet the requirements for the medical certificate necessary for pilot operation
  - *Is taking medication or receiving other treatment* for a medical condition that results in the person being unable to meet the requirements for the medical certificate necessary for the pilot operation

- Operations that do not require a medical certificate.
  - For operations provided for in 61.23(b)...a person shall not act as pilot in command, *or in any capacity as a required pilot flight crewmember*, while that person knows or has reason to know of any medical condition that would make the person unable to operate the aircraft in a safe manner.
How to Find an AME

- http://www.faa.gov
- http://ame.cami.jcobi.gov/
Medical Information Sources

- List of Aviation Medical Examiners
  - www.faa.gov

- Drug info
  - www.AOPA.org
  - www.EAA.org
  - www.LeftSeat.com
  - www.AviationMedicine.com

- Download a PDF file of this presentation
  - www.BruceGilbertMD.com
Special Thanks!

- Mr. Ridge Smith
  - AME Program Instructional Systems Specialists: FAA/CAMI
- Mr. Mike Wayda
  - Editor: Aviation News-CAMI Publications: FAA/CAMI
- FAA/CAMI AME Program Staff
QUESTIONS?