

Aerospace medicine and psychiatry

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As part of my psychiatry residency training, I had the privilege to work with and learn from an aerospace psychiatrist. Aerospace medicine is a branch of preventive and occupational medicine in which aviators (pilots, aircrew, or astronauts) are subject to evaluation/treatment. The goal is to assess physical and mental health factors to mitigate risks, protect public safety, and ensure the aviators' well-being.^{1,2} Aerospace psychiatry is a highly specialized area in which practitioners are trained to perform specific evaluations. In this article, I review those evaluations for those looking to gain insight into the field.

Aviation medical examination

Under Title 14 of the Code of Federal Regulations, the Federal Aviation Administration (FAA) requires aviators to be evaluated for medical certification by undergoing an aviation medical exam.² In order to be deemed "fit for duty," aviators must meet strict physical and mental health standards set by the FAA. The extent of these standards varies by the class of licensure (*Table 1, page e2*). Aviation medical exams are performed by any physician who has been designated by the FAA and completed the appropriate FAA aviation medical examiner (AME) training. Aviators who meet the medical standards for their licensure class are recommended for medical certification. If the AME brings up further questions due to the limits of the examination and/or a

lack of medical records, the certification will likely be deferred pending further evaluation by an FAA-approved medical specialist and/or the receipt of additional medical records. Questions about a possible psychiatric diagnosis/history or substance use disorder will lead to referral to a psychiatrist familiar with aviation standards for further evaluation.

Special issuances and Conditions AMEs Can Issue

There are 15 disqualifying conditions for medical certification (*Table 1, page e2*). However, a special issuance of a medical certification may be granted if the aviator shows to the satisfaction of the aviation medical examiner that the duties of the licensure class can be performed without endangering the public safety and that the condition is deemed stable. This may be shown through additional medical evaluations/tests and/or records.

There are certain medical conditions for which an AME can issue a medical certificate without further review from other specialists; thus, an AME can review and follow the Conditions AMEs Can Issue (CACI) worksheet to recommend medical



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Disclosure

The author reports no financial relationships with any companies whose products are mentioned in this article, or with manufacturers of competing products.



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Clinical Point

In order to be deemed 'fit for duty,' aviators must meet strict physical and mental health standards set by the FAA

Table 1

Summary of medical standards

Medical certificate	Pilot type		
	First-class airline transport pilot	Second-class commercial pilot	Third-class private pilot
Distant vision	20/20 or better in each eye separately, with or without correction		20/40 or better in each eye separately, with or without correction
Near vision	20/40 or better in each eye separately (Snellen equivalent), with or without correction, as measured at 16 inches		
Intermediate vision	20/40 or better in each eye separately (Snellen equivalent), with or without correction at age ≥ 50 , as measured at 32 inches		No requirement
Color vision	Ability to perceive those colors necessary for safe performance of airman duties		
Hearing	Demonstrate hearing of an average conversational voice in a quiet room, using both ears at 6 feet, with the back turned to the examiner, or pass one of the audiometric tests below		
Audiology	Audiometric speech discrimination test: Score at least 70% reception in one ear Pure tone audiometric test ranges		
ENT	No ear disease or condition manifested by, or that may reasonably be expected to be maintained by, vertigo or a disturbance of speech or equilibrium		
Blood pressure	No specified values stated in the standards The current guideline maximum value is 155/95 mm Hg		
Electrocardiogram	At age 35 and annually after age 40	Not routinely required	
Mental	No diagnosis of psychosis, bipolar disorder, or severe personality disorders		
Substance dependence and substance abuse	A diagnosis or medical history of "substance dependence" is disqualifying unless there is established clinical evidence, satisfactory to the Federal Air Surgeon, of recovery, including sustained total abstinence from the substance(s) for not less than the preceding 2 years A history of "substance abuse" within the preceding 2 years is disqualifying "Substance" includes alcohol and other drugs		
Disqualifying conditions	Unless otherwise directed by the FAA, the examiner must deny or defer if the applicant has a history of: <ul style="list-style-type: none"> • diabetes mellitus requiring hypoglycemic medication • angina pectoris • coronary heart disease that has been treated or, if untreated, that has been symptomatic or clinically significant • myocardial infarction • cardiac valve replacement • permanent cardiac pacemaker • heart replacement • psychosis • bipolar disorder • personality disorder that is severe enough to have repeatedly manifested itself by overt acts • substance dependence • substance abuse • epilepsy • disturbance of consciousness and without satisfactory explanation of cause • transient loss of control of nervous system function(s) without satisfactory explanation of cause. 		

ENT: ear, nose, and throat; FAA: Federal Aviation Administration

Source: Reference 3



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certification (*Table 2*⁴). The CACI guidelines and worksheets are updated by the FAA regularly to ensure aviators' health and minimize public risk.

Psychiatric & Psychological Evaluation

Aviators may be referred for Psychiatric and Psychological Evaluation (P&P) if an AME discovers additional concerns about psychiatric and neurocognitive disorders. These cases are not clear-cut. An example would be an aviator who was receiving a psychotropic medication in the past and reported past heavy alcohol use. The P&P includes a thorough psychiatric evaluation by an aerospace psychiatrist and extensive psychological testing by an aerospace psychologist. These clinicians also review collateral information and past medical/AME records. Aviators may be recommended for medical certification with special issuance or may be denied medical certification as a result of these examinations.

Human Intervention Motivation Study program

The Human Intervention Motivation Study (HIMS) program was established to provide an avenue whereby commercial pilots with active substance use disorders can be identified, treated, and successfully returned to active flight status.⁵ The goal of the HIMS program is to save lives and careers while enhancing flight safety. Physicians trained in HIMS evaluations follow the multifactorial addiction disease model. This evaluation is used to identify active substance use and initiate treatment, and to maintain sobriety and monitor aftercare adherence.

Table 2

Conditions AMEs Can Issue

Arthritis
Asthma
Bladder cancer
Breast cancer
Chronic kidney disease
Colitis
Colon cancer
Glaucoma
Hepatitis C, chronic
Hypertension
Hypothyroidism
Migraine and chronic headache
Mitral valve repair
Pre-diabetes
Prostate cancer
Renal cancer
Retained kidney stone(s)
Testicular cancer
AMEs: aviation medical examiners
Source: Reference 4

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Clinical Point

The P&P includes a thorough psychiatric evaluation by an aerospace psychiatrist