

You're the Flight Surgeon

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You are the flight surgeon when a 31-yr-old male pilot presents to your flight medicine clinic with a chief complaint of visual hallucinations and describes seeing a “dark figure” in his home the previous evening. The patient had just returned from a long overseas mission involving sleep deprivation and alcohol consumption. The patient was taken to the emergency room after his wife found him sitting on the floor of the kitchen in the early hours of the morning. The patient's wife alerted local emergency medical services after realizing the patient had cut his leg with a steak knife and was visibly bewildered. At the time of the emergency room admission, his blood alcohol content (BAC) was 0.297 with a normal complete blood count, comprehensive metabolic panel, thyroid stimulating hormone, and urine toxicology screen. His physical examination and vital signs were normal. He was admitted and started on intravenous fluids with folate, vitamin B12 supplementation, and thiamine and diagnosed with altered mental status secondary to acute alcohol intake. He expressed no suicidal ideations at any time. He was discharged the following morning. A similar episode, which took place approximately 4 yr ago after another night of drinking, was unreported and medical care was not sought at that time.

1. Which of the following is true regarding alcohol-related psychosis?

- A. Of patients with acute alcohol intoxication, 15 to 25% will have a psychotic episode.
- B. Patients with an initial psychotic episode of any etiology are much more likely to have an additional substance problem.
- C. The prognosis for alcohol-related psychosis is poor.
- D. Alcohol-related psychosis is defined as a primary condition that manifests as hallucinations and delusions occurring in the setting of acute and chronic alcohol-related conditions.

ANSWER/DISCUSSION

1. B. The most common substance involved in a first-episode psychotic event is cannabis followed by alcohol.¹ Fortunately, the incidence of alcohol-induced psychosis is a rare (3%) complication of alcohol intoxication in patients with acute or chronic alcoholism.¹⁰ Also, the prognosis for alcohol-related psychosis with treatment is considered good, with only 10–20% of cases progressing to chronic.¹² Furthermore, it is the alcohol use and not necessarily the presence

(or absence) of a psychotic disorder that affects morbidity and/or mortality.^{9,12} Finally, alcohol-related psychosis is defined as a secondary condition that only occurs in the setting of alcohol intoxication.⁵

2. Which of the following represents the biggest difference between the fourth and fifth editions of the Diagnostic and Statistical Manual of Mental Disorders (DSM) as it pertains to the pathological use of alcohol?

- A. The DSM-IV described two distinct disorders, alcohol abuse and alcohol dependence, with specific criteria for each.
- B. The DSM-5 removes legal problems as a criterion.
- C. The DSM-5 adds craving as a criterion for diagnosis.
- D. All of the above.

ANSWER/DISCUSSION

2. D. The DSM-5 makes a number of changes to the diagnosis of problematic alcohol use. Perhaps the most significant is that the two distinct categories of alcohol abuse and alcohol dependence have been replaced with a single disorder called alcohol use disorder with three subcategories: mild, moderate, and severe.⁷

In this case the pilot was diagnosed with alcohol use disorder—moderate, meeting criteria including drinking more than was originally intended, spending a fair amount of time drinking, consuming alcohol that resulted in an unsafe or risky situation, and continuing to drink despite its ill aftereffects.

3. Which of the following is true about alcohol use in military pilots?

- A. Alcohol use is rarely implicated in aviation mishaps.
- B. Aviation error rates increase only at blood alcohol levels of 120 mg · dL⁻¹ (BAC 0.12) or greater.
- C. No specific blood alcohol level is defined to be within military regulations.
- D. Alcohol abuse is less common in military pilots as compared to the general population.

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ANSWER/DISCUSSION

3. C. Alcohol is the most widely used and abused drug in the modern world and is of particular concern among active duty military members and aviators.³ As many as one-third of all adults in the United States consume alcohol in quantities that fall in the realm of alcohol abuse.¹⁷ One study reported 43% of active duty military members engage in at least one episode of binge drinking (defined as drinking on a single occasion ≥ 5 drinks for men or ≥ 4 drinks for women) in the past month.¹³ Almost 20% of survey respondents in the field of aviation report heavy drinking.¹¹ It is well established that alcohol is a cause or factor in almost half of automobile accidents in the United States.⁶ Unfortunately, only about 25% of individuals with alcohol problems ever seek treatment.¹⁷ To date, the U.S. Air Force (USAF) has not established a specific blood alcohol level to be deemed within military regulations.¹¹ The current USAF policy is the 12-h “bottle to throttle” rule, which stipulates all aircrew members refrain from alcohol consumption 12 h prior to scheduled takeoff.³ As of 2012, the U.S. Navy has added a regulation prohibiting alcohol consumption within 12 h of flight planning.³ Alcohol is unfortunately involved in 10–30% of all aviation mishaps.^{3,6} Also, the number of alcohol-related mishaps significantly outnumbers those that involve medications, illicit drugs, or illness.⁶ Furthermore, the error rate of pilots in a flight simulator increased threefold at BAC levels of 0.08 and 16-fold at 0.12.³ Finally, the prevalence of alcohol abuse is estimated to be at least as common in aviators as compared to the general population.³

4. Which of the following represents the current USAF policy regarding alcohol use disorders in aircrew members?

- A. Alcohol use disorders are only disqualifying for initial flying class applications.
- B. Alcohol use disorders are disqualifying for all flying classes of aviation without consideration for aeromedical waiver.
- C. Alcohol use disorder aeromedical waivers will be considered only after successful completion of the USAF Alcohol & Drug Abuse Prevention & Treatment program and submission of 100% abstinence contract.
- D. Aeromedical waivers for alcohol use disorders are submitted and approved at the discretion of the local flight surgeon.

ANSWER/DISCUSSION

4. C. The aeromedical concerns of alcohol greatly depend on individual circumstances. Alcohol is a central nervous system depressant and the negative impact alcohol has on the human system is of utmost concern. Alcohol consumption has a potential to present problems in both an acute and chronic fashion.⁶ Acute intoxication affects many levels of higher functions, including, but not limited to, coordination, fine-motor skills, situational awareness, decision-making, information processing, and communication.^{6,16} The vestibular system may be negatively affected up to 34 h after an episode of acute alcohol intoxication.⁶ The chronic effects can be attributed to the toxic effects of alcohol itself. For example, alcohol is known to have negative effects on sleep by producing a dose-dependent reduction in rapid eye movement time.⁶ Perhaps more impactful are the potential long-term negative effects of alcohol withdrawal or the detrimental effects on an individual's social, financial, and marital circumstances. Finally,

aeromedical waivers for alcohol disorders must be submitted to the member's major command Chief of Aerospace Medicine.

The distinction described earlier is an especially critical one as it relates to this individual's military career because primary psychosis—that is, psychosis not attributable to a medical condition—is potentially disqualifying for military service.* Because alcohol was identified as the cause by the primary care and mental health team, the procedure for recommending the individual be medically separated/retired was, therefore, not considered.

5. Which of the following is the next best step in the management of this patient?

- A. Ground the patient and have him follow up in 1 wk.
- B. Issue a verbal grounding for 1 wk and instruct the member he may return to flying without returning to clinic assuming complete resolution of symptoms.
- C. Permanently disqualify the member.
- D. Walk the patient to your medical treatment facility mental health clinic for an immediate intake.

ANSWER/DISCUSSION

5. D. Given the sensitivity of the situation, a “warm handoff” with mental health is critical. This will allow for expedient mental health and medical care for this aviator. Anecdotally, the presence of a serious medical, mental health, and/or substance abuse problem can make aviators and flight surgeons feel they must choose between full disclosure and medical evaluation and treatment or protecting the aviator's flying career. This is a false assumption and a false choice, and fortunately the USAF has a well-defined process for getting aviators back on flying status even in the setting of alcohol misuse.¹⁶

Once identified, the member was admitted to the local inpatient behavioral health facility. After a 3-wk stay, the patient was discharged to a partial day program. During this time, the patient's progression was excellent and he was discharged to outpatient therapy at the local medical treatment facility and enrolled in the local Alcohol & Drug Abuse Prevention & Treatment program.

6. Which of the follow is true regarding the prognosis of this patient?

- A. There is a 50% chance this member will never fly a USAF aircraft again.
- B. In general, the prognosis of this patient is poor.
- C. There is a high likelihood this pilot will be returned to flying status.
- D. None of the above.

6. C. According to the most up-to-date Air Force Waiver Guide, there were 245 flying class II cases (rated pilots/flight surgeons) in which 57 members were disqualified. This represents a 77% approval

* U.S. Air Force. Section Q: Psychiatry and mental health, Q30. In: Medical standards directory; 2017:58. [Accessed 11 Apr. 2018]. Available from [https://kx2.afms.mil/kj/kx4/FlightMedicine/Documents/Medical%20Standards%20Directory%20\(MSD\)/MSD%202170529.pdf](https://kx2.afms.mil/kj/kx4/FlightMedicine/Documents/Medical%20Standards%20Directory%20(MSD)/MSD%202170529.pdf) to those with access.

rate for flying class II waivers.¹⁶ Fortunately, the success rates in highly motivated aviators are high with proper treatment and support. This must include complete abstinence from alcohol during the remainder of the member's USAF flying career, successful treatment in the alcohol and drug abuse after-care program, and no other substance misuse or abuse of any kind.¹⁶

The U.S. Navy Aeromedical Reference and Waiver Guide acknowledges the problems and acceptance of alcohol consumption and culture, as well as recognizes the profound impact alcohol can have on short-term memory, reasoning, decision-making, and attention to detail.⁸ Furthermore, acute alcohol intoxication reduces G_z tolerance and can produce ataxia, vertigo, nausea, and even dysrhythmias that may last up to 1 wk in the case of cardiac conduction pathology.⁸ The Navy's waiver process involves a similar series of steps, including regular (monthly) visits with the flight surgeon, alcohol and drug abuse program and mental health reviews, endorsement from the commanding officer, and a personal statement from the member pledging abstinence from alcohol.⁸

For U.S. Army aviators, a single episode of alcohol misuse is not of significant concern, although the member must receive an evaluation from the Alcohol Substance and Abuse Program. For multiple episodes, a waiver will be considered on a case-by-case basis after the following are submitted: completion of an alcohol education program, proof of an active sobriety program with continued abstinence, letters of recommendation and support from the immediate aviation chain of command, flight surgeon recommendations and a summary of findings, and laboratory evaluation.¹⁵

The Federal Aviation Administration requires copies of all records regarding prior psychiatric/substance-related hospitalizations and visits, an evaluation by a board-certified psychiatrist, and evaluation of all relevant information by their consulting psychiatrist.² The Federal Aviation Administration funds a program called HIMS (Human Intervention Motivation Study), which is an occupational-specific program for the treatment of substance abuse in commercial pilots. Its goal is to identify and provide and coordinate treatment for affected aviators with intent to return to flying status.^{4,14} As of 2007, more than 4000 pilots have entered this rehabilitation program and returned to flying duties since program inception in 1973, with only a 10–12% reported relapse rate.¹⁷

This patient was referred up the proper designated chain of command and was ultimately granted an aeromedical waiver. This determination was made because the member has remained abstinent from alcohol, successfully completed inpatient, intensive outpatient, and standard outpatient treatment, demonstrated improved self-care and stress management, continued exemplary work, and has an identifiable and avoidable cause of his psychosis. The member returned to his primary aircraft and has been a successful aviator and valuable USAF asset.

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