



Federal Air Surgeon's Medical Bulletin



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Aviation Safety Through Aerospace Medicine
For FAA Aviation Medical Examiners, Office of Aerospace Medicine Personnel,
Flight Standards Inspectors, and Other Aviation Professionals.

U.S. Department of Transportation
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Pilot English Language Proficiency

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PROBLEM

The International Civil Aviation Authority (ICAO) has recently required all signatories to the United Nations Charter to indicate the English language proficiency of all pilots on their pilot certificates. This is necessary because the language of international aviation is English, and it must be used by air traffic controllers and pilots alike, even if pilots do not speak the language of the country in whose air space they are flying. As a consequence, all U.S.-certificated pilots have been issued pilot certificates with the statement, "English Proficient" on the reverse side. However, English proficiency can be lost by non-native English speakers over time if they don't use the skill. Aviation medical examiners (AMEs) are a key part of determining the current

Pseudo Social Security Numbers Uncovered

Untangling and Preventing Unnecessary Angst

By Susan Northrup, MD

There has been an increase in the number of first-class examinations apparently being transmitted without the required EKGs. A significant percentage of these are airmen who have been assigned pseudo Social Security numbers but annotate their actual Social Security Number (SSN) on the FAA Form 8500-8 (Application for Airman Medical Certificate and Student Pilot License). The aviation medical

QUICKFIX



By Dick Jones, MD

English proficiency of pilots when they apply for medical certificates. However, many AMEs are not aware of their role in this process.

SOLUTION

The following statements are extracted from the "Who May Be Certified" section of the *Guide for Aviation*
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examiner (AME), or staff, proceeds to transmit the EKG under the written SSN. Unfortunately, the EKG does not "marry up" with the transmitted 8500-8 in the Airman Medical Certification System, which then generates incomplete examination letters to the pilot and the AME – leading to panic and mayhem. Many airmen are not even aware they have been assigned a pseudo SSN.

There are three ways an airman may be assigned a pseudo SSN. The first, and most common, is when an airman requests that their SSN not be printed on the back of their pilot's license.

The Flight Standards District Office assigns a fake, or pseudo, SSN, which

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Security and a Good History

Hello, everyone. You may recall that my last editorial centered around the security of our medical information systems and your requirement to notify us regarding staffing changes in your offices. I usually try not to discuss the same topic in subsequent Bulletins, but I decided to make an exception in this case because I think the issue is extremely important.

Trust. To have a successful medical certification program, we must trust our airmen to be open and honest when they complete their 8500-8 applications. The first thing I remember hearing in medical school was, "If you do nothing else, be sure to take a good history." That lesson was repeated over



and over again, and the most criticism that anyone received occurred when a student or resident failed to elicit a complete history from his or her patient.

Our system is based on trust, and it can be difficult or even impossible to discover a medical problem if the airman does not tell us about it. However, trust is a two-way street. When airmen "take a risk" and tell us about a problem, they have the right to expect that we will use the information responsibly. They should expect that we will do everything in our power to "clear" them to fly, and they should also expect that we will be a reliable and secure repository for their sensitive medical information.

Your responsibility. With the last idea in mind, I informed you that you would be receiving a series of communications regarding the Aerospace Medical Certification Subsystem (AMCS) and your responsibility to make sure that members of your staff who were no longer authorized access to the system were removed from the access list. In the last quarter of fiscal year 2009, we disabled 462 AMCS accounts (76 in July, 53 in August, and 334 in September). The large number in September coincides with the letters we

mailed to you asking for your support on this issue.

Continued refinements. We will continue to refine the process of assuring that no unauthorized individual has access to AMCS. Our information technology experts are working on a software update that will require you to validate the authorized users in your office every time you log onto the system. We expect the update to be completed and implemented by the end of February 2010.

Revised AME Order. And, finally, we are revising the aviation medical examiner (AME) order to require AMEs to immediately notify us when a member of their staff is no longer authorized access to the system.

I want to thank all of you for your response to my last editorial and the communications you have received. The security of our medical information systems is extremely important, and I really appreciate your help on this very sensitive issue.

—Fred

P.S. The manager of our Aerospace Medical Education Division, AAM-400, Dr. **Richard Jones**, has decided to retire. He has a long history of service, first in the United States Air Force and then as the AAM-400 manager. You will see an article about him written by Dr. **Robert Johnson** later in this Bulletin [see page 12], so I will simply close by saying, "Dick, thanks so much for all you have done for me, the FAA, our AMEs, and the aviators you have served so well. Congratulations and, most of all, HAVE FUN!"

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Understanding the New DUI Policy

The Federal Aviation Administration has a new policy on a single DUI (driving under the influence, or driving while intoxicated) offense. You should be aware that when an airman obtains an FAA medical examination and signs Block 20, it is an affirmation that everything is true and correct, and it gives the FAA permission to make a single search on the National Driver Registry. Each week, the FAA Security Division E-mails several thousand airmen-identifying features to the database. If they receive a “hit,” they check the airman’s medical examination records to see if the airman informed the FAA of the offense.

Airmen must now report arrests, convictions, and administrative actions by checking “yes” at line 18.v of FAA Form 8500-8. There is also a requirement to report within 60 days any of the previously mentioned actions to FAA Security, per Title 14 Code of Federal Regulations part 61.15 (e). If airmen do not report such occurrences within 60 days, they are risking a suspension of their airman and airman medical certificates. They must also report the DUI on the very next FAA medical examination! In the past, we gave the airman a “free pass” on the first DUI offense. You were supposed to obtain the court documents and question the airman about alcohol or drug use but were permitted to issue if you determined that the airman did not have a substance abuse problem.

Well, now you must obtain the court documents and question the airman, and if the airman had a blood alcohol level of ≥ 0.15 or a positive alcohol test, you must defer the airman’s medical certification to us. If the airman refused to allow the police to take a sample, you are required also to defer. We will then insist that the airman obtain a substance abuse evaluation from a recognized counselor as a condition of further consideration of issuance of a medical certificate.

Dr. Silberman manages the Aerospace Medical Certification Division.

Certification Update

Information About Current Issues



By Warren S. Silberman, DO, MPH

What Would the FAA Want?

I have decided to try a new approach with these articles and call them *What Would the FAA Want?* I plan to choose several medical conditions and tell you what medical records, consultations, and lab testing we require to make a determination about applicants’ eligibility to fly.

Amputation of an extremity. The main issue here: Does the airman have a prosthesis that is functional and would be equivalent, as much as can be expected, to the lost body part? We, of course, would want to know how the accident occurred and whether the airman actually wears the prosthesis. In the case of a lower-extremity amputation, we need to know if the airman can effectively push on the rudder pedals. In the case of an upper extremity, can the airman manipulate the controls, flip switches, and so on?

Amputation of an extremity will likely result in our having to request a medical flight test from an FAA Flight Standards inspector. If successful, the airman will receive a Statement of Demonstrated Ability (SODA). Should the applicant require a modification of the aircraft, he/she must take the test in the aircraft that was modified, and the applicant will receive a revised Airman Certificate that limits flying to only that particular aircraft type. If the airman wants to move into another aircraft, another flight test will be required. In that case, we will issue a restricted medical certificate (called a VSPPO or Valid for Student Pilot Purposes Only). This will allow the airman to fly, but prior to

soloing, the flight instructor should send the applicant to the Flight Standards District Office for a flight test. If the applicant passes, then he can be issued an unrestricted medical certificate and the Statement of Demonstrated Ability.

Osteoarthritis. This is the type of arthritis we older folks must deal with. Another name might be degenerative arthritis. The FAA wants to know what limitations, if any, one has with the arthritis. Which joints are involved? Is there any restriction in motion? Would the pain or restriction affect the flying safety? In the case of degenerative arthritis of the spine, does rotation restrictions interfere with the ability to see out of the windscreen? How much pain does the airman have? Is there any nerve root impingement? In most of these cases, while there isn’t any chance of sudden incapacitation, we are most concerned about the applicant’s ability to fly the aircraft (manipulate the controls, move rudder pedals, etc.).

We are also interested in prescribed medications. We accept all of the non-steroidal anti-inflammatory agents. Also still acceptable is the Cox-2 inhibitor, Celebrex (celecoxib). We do not accept any narcotic or synthetic narcotic analgesics. This includes tramadol! We will allow airmen to take an occasional analgesic, but less than twice a week, and they must “ground” themselves for five half-lives after taking the medication. Airmen who develop a chronic pain type syndrome will probably not be permitted to fly. In most cases of osteoarthritis with treatment, we will not even place the airman on a Special Authorization.

Paraplegia. In case you are not aware, we do have a few paraplegic airmen who fly. The FAA needs to know how the condition occurred. What are the details of the airman’s current condition? In other words, where is the level of paraplegia? Does the airman have any extremity function? Can they transfer themselves from their wheelchair in an aircraft? Do they have any pressure

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Certification from page 3

sores? What medications are they taking? Do they require a urinary catheter? Baclofen, a muscle relaxant that many of these individuals take, is unacceptable. In most of these cases, the aircraft will need such modifications as hand brakes, and the airman will surely require a medial flight test and SODA. Provide as much current information you can on each case. I refer you to my discussion of amputation (above), as the process to actually obtain medical certification is much the same.

Influenza. Anyone the least knowledgeable about aviation medicine should be able to figure this one out. I really hope that no airman is, let's say, short-sighted enough to attempt to obtain a flight physical while sick with influenza, but if you find out prior to initiating the examination, send them home until they become asymptomatic or, at least, have been afebrile for at least 24 hours without the use of antipyretics!

Regarding influenza vaccine, the FAA has no restrictions other than common sense. Airmen should ground themselves for one half-hour after receiving influenza vaccine, just to make sure they do not have any acute allergic reactions.

As for the use of the anti-influenza medications, Tamiflu (oseltamivir) or Relenza (zanamivir), neither medication is disqualifying, per se. When used for prophylaxis, it would be prudent to not fly for 48-72 hours after starting the medication to ensure the airman does not have any adverse reactions to the medication. When used for treatment of influenza infection, then the airman should not fly until symptoms are resolved and afebrile for at least 24 hours without the use of antipyretics. Remember, pilots must abide with the 14 CFR 61.53 prohibition against exercising the privileges of their pilot certificate during medical deficiency – symptoms of influenza or medication side-effects do constitute a medical deficiency.



Response to “ASK” Feature

Dear Editor:

I hope this feature (ASK) is respected and used. A number of new developments seem to occur which take time to get advice in the Bulletin or the Guide [to Aviation Medical Examiners]. The option of calling the RFS or Oak City is not always easy. So I have a couple of questions to ask.

1. Is there an official list of acceptable [to the FAA] drugs? The AOPA [Aircraft Owners and Pilots' Association] has a list but I cannot find a list in FAA lit.

2. I have been asked by a couple of airline pilots about Lap Band procedures. While I think that it is a good idea, how should I advise them about how long they will be unable to fly? Is a special issuance required, or will they be certified when their surgeon supplies an operative summary and current evaluation?

Thanks,
Mal Gilbert
Riverside, Calif.

Dear Dr. Gilbert,

We do not publish a list of acceptable medications, but we do provide information on medication use in the *Guide for Aviation Medicine Examiners* and the *Federal Air Surgeon's Medical Bulletin*. As you have observed, AOPA publishes a list of medications to assist its members. We do not vouch for the accuracy of the AOPA list. If you have questions regarding the use of medications, you should contact your Regional Flight Surgeon or the AMCD.

The lap band procedure is one of several procedures that we allow for weight loss. An airman who undergoes

bariatric surgery should notify their regional flight surgeon or AMCD, and AMEs should defer issuance of a medical certificate. Regardless of the procedure, the FAA will need an operative report from the surgeon to include any complications that might have occurred and a current status report, including electrolyte results and a CBC. The airman should also expect to be grounded for a minimum of 60 days and to be placed on a special issuance for several years following bariatric surgery.

Warren S. Silberman, DO
Manager,
Aerospace Medical
Certification Division

Circadian Rhythm

Dear Editor,

I have just read the article in the Medical Bulletin 47(3), 2009, concerning the new circadian brochure. I was quite interested when I saw the article because I've worked in the field of operator fatigue in transportation for several decades. The article is accurate, well written and useful. However, I have a little concern about the second-level headline leading the article: "Of all the stressors in aviation, jet lag seems to have the greatest impact." In fact, the greatest stressors of this nature in aviation are sleep loss and sleep disruption, which often are caused by jet lag.

My colleagues and I will be ordering and using the brochure. We appreciate its publication.

Sincerely,
James C. Miller, Ph.D., CPE



English Proficient from page 1

Medical Examiners:

An applicant for an Airman Medical and Student Pilot Certificate must meet the ICAO definition of “English Proficient,” which is equivalent to the FAA’s long-standing basic English standard.

At each exam, the Examiner must observe the applicant’s ability to read, write, and converse in English. This may be accomplished by observing the applicant read FAA Form 8500-8 instructions and questions, writing answers, and conversing with the AME.

If there is any doubt regarding the applicant’s English proficiency:

Providing Part 67 Medical Qualification Standard is met, applicants for Airman Medical and Student Pilot Certificate may be issued the Airman Medical Certificate. **The AME must NOT issue the Student Pilot Certificate.**

Providing Part 67 Medical Qualification Standard is met, applicants for an Airman Medical Certificate may be issued the Airman Medical Certificate.

In all cases:

The AME must notify the applicant of their concern, document the notification in block 60, and advise the applicant to report to the local FSDO for further testing.

The AME must also notify the FSDO and/or the RFS and document this in block 60. If the AME notifies only the RFS, then the RFS must notify the FSDO closest to the examining AME’s office. The AME must also document in block 60 the name of the person contacted.

The “Guide” further describes the criteria for judging English proficiency – all applicants must meet at least level 4 criteria as defined by ICAO. All AMEs must understand these requirements and adhere to this guidance!



Dr. Jones manages the Aerospace Medical Education Division.

QUICK FIX 2 AMCS User Names and Passwords – A Follow-Up

By Richard F. Jones, MD

PROBLEM

A few weeks ago, the Aerospace Medical Certification Division (AMCD) was visited by auditors from the Office of the Inspector General of the Department of Transportation. These auditors had a major concern that former staff members might still have access to the Aerospace Medical Certification Subsystem (AMCS) and therefore be able to view information protected by the “Privacy Act.” The Federal Air Surgeon was directed to solve this problem. Consequently, all AMEs were sent a letter with a list of all staff members our records indicated were still active. We requested the AMEs to let us know which employees no longer needed access to AMCS. We are grateful to all of those who took the time to respond to our request!

An interesting phenomenon was uncovered in this process, however. Many AMEs responded that our lists were inaccurate because a staff member was not on the list who had been transmitting examinations for many years using the AME’s user name and password. Others requested new staff members be recorded as using their AME user name and password for transmitting examinations. This is not how an AME’s log-in data is to be used!

SOLUTION

Here’s the point of this article: AMCS USER NAMES AND PASSWORDS ARE SPECIFIC TO THE INDIVIDUAL TO WHOM THEY ARE ASSIGNED AND MUST NOT BE SHARED WITH ANYONE, EVEN TRUSTED STAFF! EVERYONE WHO HAS ACCESS TO AMCS MUST OBTAIN THEIR OWN UNIQUE USERNAME AND PASSWORD!

Here’s how to request access to AMCS from AMCD: You can reach AMCS Support by phone at (405) 954-3238 or E-mail 9-amc-aam-certification@faa.gov to ask for a Password Request Form. The form can be sent to you via fax or E-mail. The form requires the signature of the AME and the staff member requesting the account. Once the AMCS Support staff receives the completed form, an AMCS account will be created, and a user name and password will be mailed.

NOTICE

We deleted AME names from the list of authorized users. This inadvertently led to other staff members with the same last name (mostly spouses) being eliminated from the list. We apologize for this omission. If you have a staff member with the same last name who did not appear on your list of staff members, please contact AMCS Support to verify the account.



QUICK FIX 3 ‘Over and Out’

By Richard F. Jones, MD

There will soon be a vacancy in the Aerospace Medical Education Division for a manager. I have reluctantly decided it is time to depart the fix for Corpus Christi, Texas, effective December 31, 2009. I am convinced this position is the best medical position in government, and I hope someone with talent out there agrees.

SOLUTION

If you are an interested physician with experience in medical education and are board-certified in Aerospace Medicine, a vacancy announcement is posted on the Internet at www.usajobs.opm.gov. Search for “Medical Officer” and “Oklahoma City.”



Who Is Who?

Aeromedical Implications of Gender Dysphoria

Case Report, by Carolina Valderrama, MD, MPH

Societal tolerance and biological research have opened opportunities to people with gender disorders to be treated with surgical or hormonal therapies, allowing them to better fit into a more traditional occupational role. This case report identifies what a certification team did to determine if an individual was well-adapted for aviation duties.

History

A 56-year-old male commercial pilot with 1,900 flight hours applied for a second-class medical certificate. He also requested a psychological evaluation required to begin hormonal treatment to correct gender dysphoria, which he has manifested since pre-adolescence.

He has not exhibited indications of neurosis, psychosis, personality disorders, or substance abuse; he consumes small quantities of caffeine, drinks alcohol socially; has not smoked or used recreational drugs; no medical problems or physical limitations.

The applicant owns a successful aviation business, is the elder of two siblings, is married, with two grown married children and a granddaughter, and he is a well-adjusted, goal-oriented, optimistic individual.

Initial Evaluation. The applicant is a Caucasian male and has fulfilled all the medical standards. He has a small amount of breast tissue, no other remarkable features, currently is taking spironolactone 25 mg each 12 h, estradiol 20 mg once a week, and aspirin 81mg daily. His last lab studies showed electrolytes, hematology, renal and liver functions within normal values, and a slightly elevated lipid panel. His pre-replacement therapy hormonal tests were in the normal range for males (free testosterone 12.2pg/ml, estradiol 32pg/ml, prolactin 4.2ng/ml). After 2 months of hormonal replacement, he showed an elevated level of estradiol (640pg/ml) and an adequate suppression of serum testosterone (30 ng/dl).

Case Management. Under the

Code of Federal Regulations, a history of gender identity disorder and use of medications makes one ineligible for medical certification, so he was deferred to the Aerospace Medical Certification Division (AMCD) by his aviation medical examiner, along with the complete psychological and endocrinological evaluations, plus the relevant lab studies and medical notes.

Aeromedical Disposition

Gender dysphoria and gender reassignment are conditions that may be eligible for issuance of medical certification, providing there are no associated medical, psychiatric, or psychological conditions. Use of hormonal replacement therapy is not disqualifying if the applicant has no adverse symptoms or reactions.⁴ Aviation duties are incompatible during the institution of hormonal treatment while the stabilization of the dose administered is being achieved, until an adequate physiological response has occurred, and the dose no longer needs changing. The decision to issue a medical certificate must be left to the AMCD or Regional Flight Surgeon; for this reason, cases must be deferred.^{2,4,7}

In the present case, the applicant's treatment included the use of spironolactone, which interferes with testosterone production, its metabolism to dihydrotestosterone, and by preventing the binding of androgens to receptors in target tissues. Its most common adverse effects are hyperkalemia, renal insufficiency, hypotension, and rash.¹

He was also using estradiol, an estrogen. Being the principal agent used to induce female characteristics, it directly stimulates the target tissue

receptors. In high doses, estradiol can suppress luteinizing hormone. Its most common adverse effects are the risk of increasing cholelithiasis and thromboembolic events, which may be mitigated by smoking cessation, use of transdermal estradiol, and antithrombotic measures.^{1,4}

During his psychological evaluation, the airman was pleasant, and during the interview process, his mood and affect indicated no anxiety, his thought processes were rational, his cognition and executive functioning of the brain were intact, and he reported no suicidal ideation. His judgment, insight, and reality testing were unimpaired, so his final diagnoses were: AXIS I—gender identity disorder, AXIS II—no psychiatric disorder, AXIS IV—minimal psychosocial stressors (routine daily life stresses), and AXIS V—Global Assessment of Functioning score of 80/82 (meaning absent or minimal symptoms, good functioning in all areas, interested and involved in a wide range of activities, socially effective, generally satisfied with life, and no more than everyday problems or concerns⁵).

His endocrinological report showed a healthy individual, on stable medication doses, without contraindications or complications for continuance on hormonal replacement therapy, a non-smoker, and using a daily aspirin for antithrombotic prophylaxis.

Recertification Process

To assess the degree of cross-sex change and to detect adverse reactions to medications, the endocrinologist should follow up frequently during the first year while adjusting the medication dosage (monthly every 4 months) and then every 6 months, but the frequency of follow-up is case-specific. Evaluation includes liver enzymes, lipid profile, glucose, serum potassium, urea, creatinine, hormonal profile (prolactin, free testosterone, and estradiol), and cardiovascular and thrombosis risk evaluations. Osteoporosis evaluation should be considered for thin people,

Continued—>

those >50 years old, who have taken hormones intermittently, or have had orchiectomy; breast cancer screening should be done when breast tissue develops.¹

Outcome

This airman had no adverse physical or mental conditions that would affect his performance as a pilot, so he was granted an authorization for special issuance of a second-class medical certificate for 12 months. Renewal depends upon his submission of an annual status report from his treating physician, including the interim history, prognosis, follow-up plan, treatment, any medications information related to his condition, current electrolyte levels, and the results of any other studies deemed necessary.

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GENDER IDENTITY DISORDERS

Definition. Gender Identity Disorder is designated when a person persistently prefers to live as another gender. Gender dysphoria, its affective component, makes a person want to swap birth sex and be treated like a person of the opposite sex.^{5,8}

Epidemiology. This is more commonly found among intersex conditions (congenital adrenal hyperplasia and partial androgen sensitivity). Its prevalence in the adult population has been estimated at 1:11,000 in men and 1:30,000 in women; cross-gender identification is less in early years and becomes more profound in adolescence and adulthood.⁸

Etiology. Therefore, multifactor disorders with genetic components often correlate with hormonal abnormalities like virilizing adrenal hyperplasia, genital malformations (exposure to phenobarbital or phenytoin), undescended testes, and polycystic ovaries. There is some inconclusive evidence associated with differences in a small area of the stria terminalis, fingerprint asymmetry, left hand lateralization, sibling sex order (the youngest for boys and the oldest for girls). Psychological theories include over-identification with the opposite parental sex figure or absence of the same-sex parent, and parents with other psychopathology.^{3,6,8}

Clinical features. Such individuals do not integrate affectively within the homosexual community and define their sexual attraction as being heterosexual, because their own image is like someone of the other gender. It is usually a continuous development since childhood, but they might be driven underground in an effort to gain community acceptance. Some tend to believe that their disorder will disappear, while others try to suppress it in various ways, including marriage and having children (if they fall in love with someone of the opposite sex). Usually, though, their partners do not accept their condition, so they frequently have difficulties with life as heterosexual couples and with accepting children. After failing, they may choose to change their physical sexual appearance.^{5,8}

Associated features. This disorder can be associated with psychosis or major affective disorders, borderline personality, fetishistic transvestism, and autogynephilia.⁸

Treatment. After a complete adoption of their new gender role in everyday life (real-life experience), they can begin hormonal and/or surgical modification of their physical characteristics, which may be either a complete change to the other sex or just enough change to reach an androgynous presentation, depending on individual preference. The complete treatment can be achieved only with psychological support to obtain an adequate acceptance of their new appearance.^{1,8}

Comprehensive textbook of psychiatry. Eighth ed. Philadelphia: Lippincott, Williams, & Wilkins, 2005.



Author information: Carolina

Valderrama, MD, MPH, was a second-year Aerospace Medicine Resident from the National University of Colombia (Universidad Nacional de Colombia). She wrote this report while completing a residency at the Civil Aerospace Medical Institute.

Acute Gastroenteritis and Syncope

Case Report, by Kevin Bohnsack, MD, MPH

Gastrointestinal complaints are the most common reason for sudden incapacitation in flight. Airmen that travel across the country and around the world for their careers are especially vulnerable to food-borne illnesses and adverse consequences such as traveler's diarrhea. An airman is expected to self-identify any condition that does not meet medical requirements and needs to be aware of the preventive measures, signs, symptoms, and adverse outcomes of this disease to ensure appropriate risk mitigation.¹

History

A 54-YEAR-OLD commercial airline captain noticed nausea and the urge to defecate the night before a planned flight from an outlying airport to a major hub. He thought he may have gotten sick from a meal taken the previous day at a local restaurant. At approximately 2 a.m., he awoke with worsening nausea and tried to defecate to relieve his abdominal symptoms. He was not able to do so and fell back asleep. He awoke a few hours later to start the day with symptoms of persistent nausea but decided that he would still fly in the interest of not wanting to cancel a flight at an outstation.

Preflight routine and take-off were unremarkable. Shortly after reaching altitude, they experienced some minor turbulence. He felt severely nauseous and had the urgent need to defecate. He gave up control of the aircraft to the first officer (FO) and asked that the flight attendant provide an air sickness bag. He subsequently noticed that his vision was graying out and he passed out in the seat. Upon awakening, he learned that he had vomited and lost control of his bowels. The FO reported in a written statement that he did not observe any seizure-related activity or a postictal state upon the captain's awakening. The loss of consciousness was estimated to be 1-2 minutes. The captain felt much better after this episode, cleaned himself up the best he could, and by the end of the flight was feeling well enough that he helped work radio communications 15 minutes out from landing.

After gathering up their gear and leaving the aircraft, the captain indicated to his FO that he didn't feel the need

to seek medical attention. However, an airline representative was informed of this situation and arranged for him to be evaluated at a local hospital.

Physical

When the pilot arrived at the emergency department, he was afebrile with a temperature of 98.5°F. His physical examination was unremarkable except for a pulse of 101. There was no abdominal pain upon palpation, but hyperactive bowel sounds were noted. His medical history was unremarkable and his only medication was a daily prophylactic baby aspirin.

Laboratory Studies

Laboratory studies showed a white blood cell count of 10.0 K/uL (4.0 – 10.8 K/uL) with a slight neutrophilia of 89.4% (44.0 – 88.0). Blood urea nitrogen was elevated at 24 mg/dL (9 – 20 mg/dL), but creatinine was normal at 1.1 mg/dL (0.7 – 1.3 mg/dL). Blood glucose was within normal limits at 89 mg/dL (60-110 mg/dL). Urine showed 10 mg/dL of ketones (normal=0) but was otherwise negative for glucose, protein, and white blood cells. Troponin and EKG were normal.

Aeromedical Disposition

There are several points about this case that are important for discussion, including the nature of gastrointestinal illness, sudden incapacitation, medical fitness for flight, and explained syncope.

The *Guide for Aviation Medical Examiners* notes that a history of acute gastrointestinal disorders is usually not disqualifying once recovery is achieved.² Interestingly, airmen, especially commercial airline pilots with frequent travel, are especially vulnerable for contracting a food-borne illness. In fact, gastrointestinal complaints are the most common reason for an incapacitating event in the air, and this airman should have recognized that he was potentially compromising his personal and flight safety by stepping into the aircraft.^{3,4} Per CFR 61.53 Subpart A, an airman is specifically prohibited from operating an aircraft with a known medical condition that would not meet medical requirements.¹ In a statement provided to the FAA, this captain admitted that he should have called in sick.

Fortunately, very few, if any, accidents have been reported in commercial aircraft caused by sudden incapacitation from medical reasons.⁵ In two surveys separated by several decades, pilots have reported 27 to 29% incidence of incapacitating events that could potentially affect safety of flight.^{3,4} Table 1 shows the high incidence of gastrointestinal symptoms over other symptoms.

The *AME Guide* notes that the history of a transient loss of control of nervous system functions without

Continued →

Table 1. Percentage distribution of main causes of incapacitation.⁶

Rank		Buley, 1969 n=2295	James & Green, 1992 n=2209
1	Uncontrollable bowel action	20	15
2/3/4	Other GI symptoms*	45	43
5	Earache (incl. ear block)	7	8
6	"Faintness"	5	6
7	Headache (incl. migraine)	5	6
8	Vertigo/disorientation	5	5

*Other GI symptoms include vomiting, severe indigestion, and stomach cramps.

satisfactory medical explanation of the cause must be denied or deferred by the local examiner.² Work-up would include an echocardiogram, Holter monitor, and carotid ultrasound. In this case, the syncopal episode was most likely the result of acute gastroenteritis, but there is the possibility that he passed out from another underlying reason.

Case Outcome

Fortunately for this airman, the airlines had insisted on a medical work-up following this incident. The history, physical examination, and laboratory findings pointed towards an acute illness of gastroenteritis, associated with mild dehydration, which could predispose him to a syncopal episode. The medical records obtained by the AME and the FO's astute observations indicated no seizure activity or other concerning cardiovascular, psychological, or neurological pathology that would require additional work-up. This airman was qualified for his first-class medical certificate on the basis of the prompt medical evaluation, thorough documentation, and strong case for explained syncope.

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FOOD-BORNE ILLNESS

Etiology and Pathogenesis

Diarrhea has many potential causes, including chronic illness, malignancy, inflammatory bowel, malabsorption, or infectious etiologies from either a nosocomial or community source.⁷ Common causative agents for infectious diarrhea include viral strains such as rotavirus and norovirus or bacterial agents such as Shigella, Salmonella, Campylobacter species, and invasive E. coli.⁸ Diarrhea from food-borne illness may also be caused by parasites or non-infectious etiologies through the ingestion of noxious chemicals, heavy metals, or toxins.

History and Clinical Presentation

Important history that points towards an infectious etiology includes bloody diarrhea, weight loss, dehydration, fever, neurologic involvement such as paresthesias, motor weakness, cranial nerve palsies, sudden onset of nausea, vomiting, diarrhea, severe abdominal pain, or prolonged diarrhea lasting more than several days. Possible sources of disease may be found by asking whether the patient has consumed raw or poorly cooked foods, unpasteurized milk or juices, home-canned goods, fresh produce, or soft cheeses made from unpasteurized milk.

Diagnosis

The incubation period, duration of the illness, predominant symptoms, and recent exposure are the most important components of the history that lead to a clinical diagnosis. Stool cultures are rarely indicated unless the patient has a fever, bloody diarrhea, immunocompromised state, or if the illness is severe or persistent.

Treatment

Treatment is based on the clinical signs and symptoms and the likely offending organism. Protocols have been released that call for the empiric treatment of suspected traveler's diarrhea with a fluoroquinolone to reduce the severity and duration of disease.⁹ If there is suspicion of a food-borne illness, the treating physician should consider reporting the illness to public health officials for them to determine whether to pursue an outbreak investigation.⁷

Prevention

As always, the highest potential yield for combating GI illness is educating aircrews on appropriate food hygiene and basic sanitation such as hand washing to prevent contracting the disease.⁹ Eating in restaurants increases the probability of contracting traveler's diarrhea, and food from street vendors is particularly risky. Besides behavior modifications, Pepto Bismol and lactobacillus supplements have demonstrated a protective effect against traveler's diarrhea and should be considered for those airmen traveling to particularly high-risk areas.⁷

7. Diagnosis and management of food borne illnesses: A primer for physicians and other health care professionals. Morbidity and Mortality Weekly Report. 2004;53(RR04);1-33. Available online at: www.cdc.gov/mmwr/preview/mmwrhtml/rr5304a1.htm.
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Bladder Cancer in an Aviator

Case Report, by Kenneth Egerstrom, MD, MPH

This is the case of an airline transport pilot (first-class medical) on a Special Issuance for bladder cancer. He presented to his aviation medical examiner with a second recurrence of a urothelial tumor.

Background

A 45-year-old male applied for renewal of his first-class medical certificate. He flies for a major cargo carrier and has carried a medical certification since 1983. He has been on an AME-Assisted Special Issuance (AASI) since 2004 for bladder cancer and has a history of incidentally discovered asymptomatic renal stones. He underwent transurethral resection of a non-invasive and low grade (Ta, N0M0, Grade-1) bladder tumor in 2004. In March 2007, a recurrent superficial low-grade lesion was discovered on routine follow up cystoscopy. That lesion was destroyed by fulguration and the airman subsequently underwent a six-week regimen of once-weekly intravesical therapy of Mitomycin B. He was issued a time-limited first-class medical certificate with a warning not to fly for 24 hours after instillation of intravesical therapeutic medication. He presented to his AME in 2008 reporting a second recurrence of a superficial, low-grade lesion that had been locally destroyed. Documentation submitted included an endorsement letter from his urologist and abdominal imaging that showed no renal stones.

Aeromedical Concerns

Impairment to flying may result from urinary frequency/urgency and tumor(s) or clots causing urinary tract obstruction with resultant pain.

Continued on page 11

Etiology of Bladder Cancer

Bladder cancer is the fourth most-common cause of cancer in males and affects men three times as often as women (1). Its incidence also increases with age, with 90% of cases occurring in individuals over 55 years old (1). Cigarette smoking is one of the most well-known risk factors, increasing the risk 2- to 4-fold (2) and is attributed to causing 50-66% of all bladder cancers in men (3). Unfortunately, unlike lung cancer, the risk for bladder cancer remains elevated for a long time after the person quits tobacco.

Exposure to toxins, such as those in the textile, dye, and rubber tire industries, are also a risk factor. Historically, these industries used β -naphthylamine, 4-aminobiphenyl, and benzidine, all unequivocally associated with bladder cancer. These chemicals have been banned, but the long delay between exposure and the development of malignancy makes it difficult to ascertain a definitive relationship for a whole host of other compounds that are still used in the chemical, dye, and rubber industries (2). Finally, chronic infections can also be a risk factor for bladder cancer. This is seen more commonly in under-developed countries and thought to be largely related to infection with schistosomiasis (4).

As with most cancers, prognosis is largely, but not entirely, determined by stage and grade (5). The American Joint Committee on Cancer staging system (also known as TNM) is the most widely used system for staging (6; Table 1), while the World Health Organization and International Society of Urologic Pathologist published a recommended revised consensus classification system in 2004 for Grade (7). The upper urinary tract should be imaged during initial work-up, as 5% of bladder cancers can have an upper tract lesion (8).

Treatment is largely dependent upon the grade and stage, with more invasive treatment indicated as the grade and stage increase. Invasive disease (Stages T2, T3, T4) usually results in resection of the bladder, lymph node dissection, and removal of other adjacent structures that are affected. The risk of metastatic disease increases as the stage increases. Non-invasive disease (Stages Ta, Tis, T1) is usually treated with transurethral resection of a bladder tumor to remove the lesion and send a specimen for pathologic grading. Often, intravesical therapy is used as an adjunct to tumor resection and/or as a prophylactic measure to reduce the rate of recurrence. Chemotherapy or immunotherapy agents can be used in this manner. Bacillus Calmette-Guérin is widely used as an intravesical immunotherapy agent, but other agents can be used as well. A key point with these agents is that patients often have no side effects for several cycles, and then 90% will develop cystitis (1,3), and more than 25% will develop fever, malaise, and hematuria (3).

Because of a fairly high risk of recurrence for both invasive and non-invasive disease, there will always be a need for scheduled follow-up evaluation. Early after treatment, the patient may be required to undergo urologic evaluation (urinalysis, cytology, cystoscopy, imaging, and additional labs) every three months. After two years without recurrence, indefinite annual examinations are usually recommended (9). Several urothelial malignancy markers have recently been approved by the FDA, but there is not sufficient evidence for their routine use in detecting new disease or surveillance for recurrence (8, 10).

Table 1. American Joint Committee on Cancer Bladder Cancer Staging System (6)

TX	Tumor cannot be assessed
Ta	Non-invasive papillary carcinoma
Tis	Carcinoma in situ
T1	Tumor invades lamina propria
T2	Tumor invades muscularis propria
T2a	Invades superficial muscularis propria (inner half)
T2b	Invades deep muscularis propria (outer half)
T3	Tumor invades perivesical tissue/fat
T3a	Invades perivesical tissue/fat microscopically
T3b	Invades perivesical tissue/fat macroscopically (extravesical mass)
T4	Tumor invades adjacent organs

Metastatic disease could cause any number of symptoms, including sudden incapacitation or subtle decrement of higher cognitive function. Ongoing intravesical therapy may be incompatible with flying duties due to the side effect profile of the various agents. And finally, there is a relatively high risk for recurrence, necessitating frequent urologic follow-up. Fortunately, most recurrences after treatment of non-invasive primary bladder cancer are superficial disease and are unlikely to cause sudden incapacitation. Invasive disease requires more invasive initial therapy and has a higher risk for recurrence of metastatic disease.

Outcome

The airman was not qualified for a first-class medical certificate under 14 CFR part 67.113, general medical condition for his bladder cancer. However, he does have the right to request a Discretionary Issuance under Part 67.115. In fact, he was previously granted an AME-assisted special issuance (AASI) as outlined in Part 67.401. He still meets the requirements issued a time-limited AASI with a warning to cease flying should he develop any recurrence of his cancer or side effects after intravesical therapy.

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Pseudo SSN from page 1

starts with a 999. A new pilot's license is sent to the airman with a six-digit identification number on the reverse side instead of an SSN.

The second method occurs when the airman asks you not to use his/her SSN. The Aerospace Medical Certification Division (AMCD) assigns a pseudo SSN beginning with an 888.

Finally, individuals without an SSN are assigned a pseudo SSN, which may start with an 888, 877, or 999, depending on who generates it. This number becomes the FAA's identification number for the pilot in all FAA systems.

An electronic solution is being developed, but until that is fielded, there are some steps you can take to limit the separation of transmitted data.

The simplest would be to ask to see the airman's pilot license. If an SSN is not printed on the reverse side on the upper right corner, it is a pseudo SSN.

The pseudo SSN can be found in the Aerospace Medical Certification Subsystem (AMCS). Search for the airman via last name and date of birth. AMCS will populate the SSN block with the FAA identification number.

If the EKG has already been transmitted and, upon exam transmission in AMCS, you see a pseudo SSN, contact either the AMCD or your Regional Flight Surgeon's office with both numbers. The AMCS staff will attempt to "marry" the EKG with the exam.

Clear and prominent marking of the airman's medical record with the pseudo SSN is strongly recommended. Advising the airman of the pseudo SSN is also advisable.

Your assistance in identifying the SSN disconnects will greatly diminish unnecessary letters being sent to airmen and the angst these letters generate. Thank you for your continued efforts on behalf of the Federal Aviation Administration.



Dr. Northrup is the Southern Regional Flight Surgeon.

Aviation Medical Examiner Seminar Schedule

2009		
November 20 – 22	Seattle, Wash.	OOE (1)
2010		
January 22 – 24	Atlanta, Ga.	CAR (1)
March 1 – 5	Oklahoma City, Okla.	Basic (2)
April 9 – 11	Salt Lake City, Utah	N/NP/P (1)
May 10 – 13	Phoenix, Ariz.	AsMA (3)
July 12 – 16	Oklahoma City, Okla.	Basic (2)
August 6 – 8	Washington, D.C.	OOE (1)
October 7 – 9	Pensacola, Fla.	CAMA (4)
November 1 – 5	Oklahoma City, Okla.	Basic (2)

CODES

AP/HF Aviation Physiology/Human Factors Theme
 CAR Cardiology Theme
 N/NP/P Neurology/Neuro-Psychology/Psychiatry Theme
 OOE Ophthalmology-Otolaryngology-Endocrinology Theme

- (1) A 2½-day theme AME seminar consisting of 12 hours of aviation medical examiner-specific subjects plus 8 hours of subjects related to a designated theme. Registration must be made through the Oklahoma City AME Programs staff, (405) 954-4830, or -4258.
- (2) A 4½-day basic AME seminar focused on preparing physicians to be designated as aviation medical examiners. Call your Regional Flight Surgeon.
- (3) A 3½-day theme AME seminar held in conjunction with the Aerospace Medical Association (AsMA). Registration must be made through AsMA at (703) 739-2240. A registration fee will be charged by AsMA to cover their overhead costs. Registrants have full access to the AsMA meeting. CME credit for the FAA seminar is free.
- (4) This seminar is being sponsored by the Civil Aviation Medical Association (CAMA) and is sanctioned by the FAA as fulfilling the FAA recertification training requirement. Registration will be through the CAMA Web site: www.civilavmed.com.

The Civil Aerospace Medical Institute is accredited by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians.

New Certification Theme Seminar Set For AsMA Meeting

The 2010 AsMA (Aerospace Medical Association) meeting in Phoenix will see the world premier of a new theme for AME seminars. The Certification theme, dealing solely with medical certification and standards, will be presented by FAA medical officers.

Primary to this theme will be the discussion and dispensation of problematic medical issues related to the certification of airmen. AME questions on special issuance, what must be deferred, and how the FAA makes decisions on specific medical conditions are among the topics to be addressed at this seminar.

The Aviation Physiology and Human Factors theme, which is usually presented at AsMA, has not been rescheduled at this time.

CAMI Education Division Manager To Retire

By Robert F. Johnson, MD, MPH, MBA

Richard F. Jones, the Civil Aerospace Medical Institute Education Division Manager since 2001, has decided it's time to retire to the sunny Texas coast. Dr. Jones will be missed by his colleagues at CAMI and throughout the FAA aviation medical examiner and aerospace medicine community. He plans to retire at the end of 2009.



Dr. Jones

Dick's professional career spans federal government, military, and private practice. He has made significant improvements to the AME seminars and the aerospace medicine outreach while he has led education at CAMI. He spearheaded the availability of electronically available course material, broadened the offerings of AME seminars, and brought practical, "hands-on" spatial disorientation training simulators to airshows and aviation-related conferences throughout the U.S. and abroad. His vast experience and his mentoring will be hard to replace.

Dick started his career in aerospace medicine as a basic U.S. Air Force flight surgeon and, after a number of base-level assignments, moved up to be the Manager of Flight Medicine at Air Force Headquarters. He completed his 27-year Air Force career as the Commander of the Armstrong Laboratory at Brooks AFB in San Antonio, Texas. He then went into private practice in Occupational and Aviation Medicine and served as a Senior AME in Green Bay, Wisconsin.

The opportunity to lead the CAMI Education Division became available in 2001, and Dick closed his medical practice and joined the management team at CAMI, expertly leading the Aerospace Medical Education Division.

Dr. Jones has brought much and has added immeasurably to the FAA Medical Education Program. He dedicated his professional life to aviation safety and the care of aviators. He has passed that commitment to his colleagues, staff, and students. We wish him well in his retirement, and the empty cockpit he leaves will be difficult to fill.



Dr. Johnson is the deputy director of the Civil Aerospace Medical Institute.