



Federal Air Surgeon's Medical Bulletin

Aviation Safety Through Aerospace Medicine

Vol. 49, No. 1
2011-1

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



U.S. Department of Transportation
Federal Aviation Administration



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X-Ray Backscatter Security Scanners at U.S. Airports: How Safe Are They?

By Brian Pinkston, MD

Recent questions from aviation medical examiners about the use of the new x-ray Backscatter Scanners at airports have prompted the Civil Aerospace Medical Institute's Radiobiology Research Team members Dr. Wallace Friedberg and Kyle Copeland to publish a risk analysis for our readers.

Controversy about this technology from the public is primarily based on two issues: First, a potential loss of privacy due to the ability for the technology to "see through clothing" and provide a detailed view of a subject's anatomy; and second, the risk associated with being exposed to ionizing radiation.

Coming Your Way: AME Site Visits

By Harriet Lester, MD

Dr. Lester has been working with the Aerospace Medical Education Division and the Regional Flight Surgeon's Working Group to devise innovative strategies to best accomplish site visits. We appreciate this regional perspective.—Ed

In 2008, the FAA Office of Aerospace Medicine developed the AME Surveillance Program, which formalized site visits to aviation medical examiner



Photo courtesy Transportation Security Admin.

This technology is being utilized in U.S. airports by the Transportation Security Administration (TSA) as an alternative means to a physical search to determine if a person is carrying harmful or contraband materials on his or her body. Although identifying features and parts of anatomy are distorted to the

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offices and added other quality assurance oversight features. This surveillance program was a natural outgrowth of several national initiatives already in progress, including ISO9001 multisite certification in 2006 and the congressionally sponsored Safe Pilot Program.

Those of you who have attended AME seminars in recent years have heard us discuss the AME Surveillance Program. Many of you have already been visited by regional office Surveillance Program analysts. Some of you have not yet had this opportunity.

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Most Underutilized 'App' of Our Time Revealed

Hello everyone. I hope that 2010 treated you well, that you had a nice holiday season, and that 2011 is even better than 2010. With that in mind, I would like to spend a few minutes talking about FAAMedXPress (MedXPress).

You may recall that we introduced MedXPress with announcements that it was only available to airmen on the West Coast. In truth, the system was available across the whole country. However, we were trying to limit the number of users so that we could wring out any problems that we might have missed in our beta tests. At that time, I was due my annual Class II examination, so I entered all of my information into the database, and I asked my AME to give it a try.

Federal Air Surgeon's Medical Bulletin

Library of Congress ISSN 1545-1518

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The Federal Air Surgeon's Medical Bulletin is published quarterly for aviation medical examiners and others interested in aviation safety and aviation medicine. The Bulletin is prepared by the FAA's Civil Aerospace Medical Institute, with policy guidance and support from the Office of Aerospace Medicine. An Internet on-line version of the Bulletin is available at: www.faa.gov/library/reports/medical/fasmb/

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The Federal Air Surgeon's Column



By Fred Tilton, MD

It took me a while to convince him that he could use the system because of our East Coast location, but I kept insisting that I knew what I was talking about, and he finally, begrudgingly, agreed to make the attempt.

'The next year, when I called to schedule my appointment, his assistant told me that he would not see me for my FAA exam unless I used MedXPress.'

From my perspective as an examinee, the process worked quite well, but over the next few weeks, he experienced several technical issues, and he was not bashful about calling me to let me know about them. I assured him I was grateful for the calls because we needed the feedback to help us fix the system.

The next year, when I called to schedule my appointment, his assistant told me that he would not see me for my FAA exam unless I used MedXPress.

That was three years ago, and I now consistently get positive feedback from AMEs and pilots who use the system. Pilots can fill out the electronic 8500-8 in the privacy of their own home. Once a pilot has used the system, it populates his or her demographics in successive years, and we are considering changes that will "remember" the rest of the historical information as well.

The reason I am talking to you, our AMEs, about MedXPress is that I am very disappointed by the low utilization of the system. In 2010, only 21 percent of our examinees used MedXPress. We have advertised in safety meetings, in safety publications, and at our AME seminars.

I just returned from the seminar that we held in Jacksonville, Fla. One AME approached me and told me he did not use the system or intend to encourage his pilots to use the system because he only did 30 or 40 exams a year. He said that it would be too much bother to learn how to use a new system for so few exams.

I then proceeded to tell him how misguided he was. That's because with a paper system, someone on his staff has to enter the data from the 8500-8. This takes time and frequently introduces errors. With MedXPress, all he would have to do is take the confirmation number that the pilot gives him, enter it into AMCS, and bring up the exam.

Many doctors walk around with laptops or PDAs as they examine their patients. If an AME wishes, he or she could review the history, perform the exam, enter the exam data, and print the medical certificate—while the pilot is in the exam room. Obviously, the process would not be so simple if the airman had issues that required additional testing or deferral, but time would still be saved and errors reduced by using MedXPress.

If you do not use or encourage the use of MedXPress, please think about doing so. As a pilot, I think it is infinitely better than the paper system. I am convinced that once you start using it and benefit from the efficiencies it provides that you will not go back to the paper system.

Again, I hope 2011 is a great year for you, and thanks again for all you do for the Office of Aerospace Medicine and your pilots.

—*Fred*

Medications, Part III

The following is a continuation of certification issues that pertain to medications.

Antianginals. You should all be able to guess this one! Recall that with any use of medications, it is the medical condition—not the medication—that should be your guide. In this case, angina is a specifically disqualifying medical condition, so an airman of any class may not be granted certification (without a waiver) for angina. These medications mask the symptoms, meaning they decrease the likelihood of someone having angina under exertion. We do not accept these medications under any circumstance, even if the medication is being used to treat esophageal spasm. This includes Ranexa (ranolazine), a newer medication used for chronic angina. Should an airman be taking one of the many antianginal medications and presents for certification with the results of a stress test, you may not accept the test results unless the airman had discontinued the use of the medication at least 48 hours prior to taking the test.

Bladder medications. These are a group of medications that are generally used to relieve urinary difficulties, including frequent urination and the inability to control urination. Ditropan (oxybutynin) is one of the medications we frequently see that aviation medical examiners mistakenly grant certification for. Performance testing performed with patients on this medication found that it causes sedation, especially in the elderly, for whom it is commonly prescribed. It is unacceptable. Some of the medications that are acceptable are Detrol and Detrol LA (tolterodine) and Uroxatrol (alfuzosin). Enablex (darifenacin) can prolong the QT interval but is allowed with a 30-day pre-observation period, requiring the AME to get a statement concerning side effects and any evidence of unfavorable ECG findings. Vesicare (solifenacain),

CERTIFICATION UPDATE

Information About Current Issues



By Warren S. Silberman, DO, MPH

a muscarinic receptor antagonist, also requires a 30-day observation period and mention of any side effects.

Gastrointestinal medications. This is a huge grouping of GI medications covering anything from gastroesophageal reflux to colitis to peptic ulcer disease. Once again, it depends first on the medical condition being treated. Histamine H₂ receptor antagonists such as Zantac (ranitidine) are acceptable with no observation period. Reglan (metoclopramide), a medication that assists with the forward motility of the bowel, is unacceptable. All of the antispasmodic medications are unacceptable. For example, Bentyl (dicyclomine), Librax (chlordiazepoxide and clidinium), Levsin (hyoscymine), and Lomotil (diphenoxylate and atropine). Imodium (loperamide), an over-the-counter medication in the USA, is used for diarrheal illnesses. It is acceptable providing the airman is not taking more than two tablets per day. Again, the issue here is why the airman is taking the medication.

Migraine treatments. This is another condition (as most are) where it is the medical history that should initially determine whether we grant medical certification. This condition will usually require an authorization for special issuance. For this article, I am not going to get into the many presentations of migraine headaches but keep to the discussion of treatments. We had

UPDATE NOTICE

Our Medical Certification physicians wanted me to remind you all of an innovation that came out some time ago that you may not be aware of: You can print a medical certificate from the Aerospace Medical Certification Subsystem (AMCS). You now can also print a medical certificate if the airman has an AASI (AME Assisted Authorization for Special Issuance). When we developed this program, I made sure that we could keep track of airmen that have one of 20 allowable medical conditions (see "Revised Policy Announced on Special Issuance Procedures," FASMB, Spring 2002, p. 1).

To print a medical certificate for a third-class airman with one of these conditions, go into the AMCS and search for the airman's record. When you pull it up, you will find an icon or radio button all the way to the right of the airman's name that says "AASI." Click on it and a medical certificate will come up, allowing you to change the expiration date. We built in the capability that won't allow you to have a date of expiration past the date of the current medical examination. This function now makes it so you don't have to use a typewriter any longer!

a "neurology summit" in March 2010 and discussed many medical conditions, including migraine. Accordingly, some policy changes will occur as a result of this summit. One change is that we are only going to allow an airman to have one migraine headache per month and that we are encouraging airmen with migraines to be on a prophylactic medication, rather than waiting until having a headache to take an abortive medication. An exception would be if the headaches occur very rarely and are dissipated by sumatriptan derivatives, which are all allowed. However, airmen are required to ground themselves

Dr. Silberman manages the Aerospace Medical Certification Division.

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for 24 hours after using sumatriptan derivatives. Most migraine preventive medications are acceptable. Medications such as the ergotamine derivatives, nonsteroidal anti-inflammatory medications, and beta blockers are all acceptable. An airman who relied on the use of narcotic analgesics would not be approved. One of the more common medications that are used is Midrin (isometheptene, dichloralphenazone, and acetaminophen). This medication is unacceptable. Our FAA neurology consultants "liked" the use of calcium channel medications such as verapamil (Calan, Covera, Isoptin, and Verelan PM) as prophylactic medications, all of which are acceptable.

Parkinson's disease. With parkinsonism, the fundamental issue to be aware of is that the FAA has only allowed medical certification with an authorization for special issuance in only the mildest of cases. However, look for some future modifications of the required workup for this condition. About the only medication allowed in this condition is Levodopa with the carbidopa combination Sinemet. The COMT (catechol-O-methyltransferase) inhibitors entacapone, entacapone, tolcapone, and Stalevo (combination of entacapone, levodopa, and carbidopa) are not acceptable because of side effects like syncope, dizziness, fatigue, and hallucinations. Also unacceptable are dopamine antagonists pramipexole (Mirapex), ropinirole (Requip), and bromocriptine (Parlodel) because, without warning, they can cause falling asleep. Pergolide (Permax) can also result in sudden falling asleep and is thus unacceptable. Amantadine (Symmetrel) is used to treat influenza infections and is acceptable for short-term use in airmen, but it is unacceptable for treating parkinson's. Benztropine (Cogentin), an atropine-like medication, is unacceptable, as are trihexyphenidyl (Artane) and deprenyl (Eldepryl).



SCANNERS from page 1

viewing TSA agents, to maintain their privacy, some travelers have expressed concerns about a violation of their rights.

A more commonly expressed concern by our airmen to our AMEs, however, involves the increased risk associated with radiation from x-rays. Air-carrier crewmembers are occupationally exposed to higher doses of ionizing radiation than normally received by members of the general population due to their volume of flights in a year. The backscatter technology does increase this risk, but only minimally. This technology uses soft (low-energy) x-rays that bounce back from the body and nearby objects to form images useful for body screening.

Utilizing information from one device used by the TSA (Rapiscan Secure 1000 by Rapiscan Systems), the CAMI researchers found that from the manufacturer's worst-case scenario of exposure to radiation per scan, an individual could be scanned 2,500 times per year and not exceed the Health Physics Society's recommendations for maximum radiation dose for security screening. Interestingly, the average effective dose of ionizing radiation in 2006 to an average member of the U.S. population from non-medical sources was equal to the dose of 32,000 "manufacturer's worst scans."

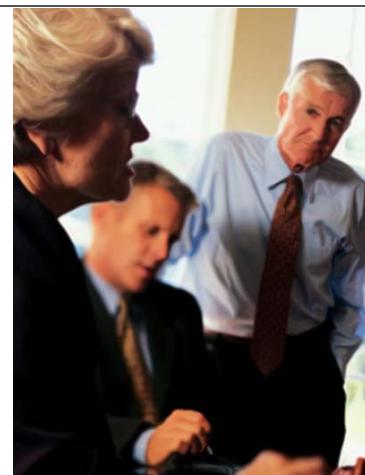
In summary, the additional dose of radiation from being scanned does not significantly impact radiation safety for most crewmembers. However, a pregnant crewmember should be aware that being scanned increases the dose to her unborn baby and may reduce the total number of future flights she can work during her pregnancy, to not exceed the recommended radiation limits.

To read the CAMI Radiobiology Research Team's full report, please see: www.faa.gov/library/reports/medical/fasmb/media/backscatter_research.pdf



Dr. Pinkston manages the Aerospace Medical Education Division.

SITE VISITS from page 1



AME site visits are mandated by our ISO9001 process; however, performing site visits serves many functions in addition to keeping us all in compliance with our ISO9001 quality assurance system. A site visit is always scheduled in advance with your office by regional office personnel, and it includes a discussion with you and your staff and a tour of your facilities.

We review your equipment, and both you and the FAA analyst fill out some paperwork. Photographs are usually taken. It is an opportunity for us to get to know you better and for you to tell us your concerns and ask questions.

Essential components of any type of site visit are communication and verification. As our designees, we trust you to represent the FAA to the pilot community, and we are obligated to make sure that we are all on the same page. Site visits and the overall AME Surveillance Program are "works in progress," so we welcome your suggestions as we all strive for the safest possible national airspace system.

Remote site visits are being explored as a future direction to complement and supplement "live" site visits. The "virtual site visit" adapts the standard site visit format, utilizing video and a "real-time" telephone interview.

Dr. Lester is the Eastern Regional Flight Surgeon.

AME Updates

Web-based training revised

By Brian Pinkston, MD

Happy New Year! The Aerospace Medical Education Division comes bearing gifts in the form of a new Multimedia AME Refresher Course, which was made possible by huge teamwork from the Regional Flight Surgeons, Mike Monroney Aeronautical Center staff, and our own division. We are now diligently working to provide you with other updated educational products in 2011 that will be completely Web-based.

For more information on the new MAMERC revision, see "Refresher Training Software Upgraded" on page 10.

In that spirit, I want to reemphasize the importance that the Aerospace Medical Certification Subsystem (AMCS) plays in both airman exam transmission, as well as a communication tool for updates to policy and administrative information. For example, a recent requirement placed upon us from the

Dr. Pinkston is the Aerospace Medical Education Division manager.

LAST HARD COPY—FOR A WHILE

The federal government has recently been hit by funding cutbacks in many areas, including printing. Therefore, we will not be able to provide printed copies of the *Bulletin* beyond this issue and will curtail all commercial printing for the near future. We will, however, continue to provide quarterly electronic copies of the *Bulletin* on the FAA Web site and will notify you via E-mail when a newsletter is available and how to retrieve it.

Inspector General's Office mandates that we ensure that AMEs are performing and certifying examinations entered into the AMCS.

Part of that requirement is to validate that all AME staff members who have access to AMCS are still authorized to do so. This means that an AME must personally sign into AMCS at least every 90 days to validate staff members. One by-product of this requirement is that AMEs are also alerted with updates of all new policy changes in the *AME Guide* through the AMCS messaging system.

Important note: Your account will be frozen if you fail to log in and validate your staff at least every 90 days, and it will require a call to the AMCS help desk to re-activate your account.

Military AMEs have an additional requirement coming up with the New Year: training currency. Yes, as we discussed last year, the grace period for military AMEs to catch up on currency training through seminars is now over. Leah Olson and I (the International, Military, and Federal Region Program Analyst and Regional Flight Surgeon, respectively) are sending out termination letters to all military AMEs out of compliance. If you receive this letter, you will no longer be able to perform examinations. However, if you work with us to get your training current, we will consider reinstatement.

If you have any questions, write Leah Olson at Leah.Olson@faa.gov or me at Brian.Pinkston@faa.gov.

Thanks for all your hard work, and we look forward to serving you in the upcoming year!



Aviation Medical Examiner Seminar Schedule

2011

February 28–March 4	Oklahoma City, Oklahoma	Basic (1)
March 25–27	Providence, Rhode Island	OOE (2)
May 9–12	Anchorage, Alaska	AsMA (3)
June 13–17	Oklahoma City, Oklahoma	Basic (1)
August 26–28	Washington, District of Columbia	CAR (2)
October 6–8	Tucson, Arizona	CAMA (4)
October 31–November 4	Oklahoma City, Oklahoma	Basic (1)
November 17–19	Portland, Oregon	NPN (2)

CODES

CAR Cardiology Theme

NPN Neurology/Neuro-Psychology/Psychiatry Theme

OOE Ophthalmology-Otolaryngology-Endocrinology Theme

- (1) A 4½-day basic AME seminar focused on preparing physicians to be designated as aviation medical examiners. Call your Regional Flight Surgeon.
- (2) A 2½-day theme AME seminar consisting of aviation medical examiner-specific subjects plus subjects related to a designated theme. Registration must be made through the Oklahoma City AME Programs staff, (405) 954-4831 or -4803.
- (3) A 3½-day theme AME seminar held in conjunction with the Aerospace Medical Association (AsMA). This seminar is a new Medical Certification theme, with 9 aeromedical certification lectures presented by FAA medical review officers, in addition to other medical specialty topics. 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 provide continuing medical education for physicians.

Medical Certification Following Decompression Sickness With Permanent Neurologic Impairment

Case Report by John D. Swanson, IV, MD, MPH

Neurologic decompression sickness (AKA Type II DCS) can have devastating consequences even if appropriately recognized, especially when definitive treatment is not immediately available. It can occur as a result of exposure to hypobaric environments such as unpressurized flight at altitude; however, the more serious cases commonly result from decompression following hyperbaric exposure (8, 9). This case report outlines the sequence of events as they pertain to an airman who developed neurologic DCS while scuba diving in a remote location and the aeromedical considerations required in ultimately returning him to the cockpit.

History

Within ten minutes of surfacing from a recreational scuba dive, an otherwise healthy 42-year-old male airman with 5,800 hours of flight time began to experience shortness of breath, visual disturbances, and bilateral lower-extremity paresthesias. Within one hour, the airman's symptoms had progressed to near-complete blindness and frank paraplegia. Prior to this event, his airman duties included functioning as an airline transport pilot for a major airline, as well as piloting the F-15 Eagle for the Air National Guard.

Because immediate recompression was not available, the airman underwent in-water recompression on 100% oxygen (10, 14), during which time his symptoms almost completely resolved. Within one hour of resurfacing, however, he again developed dyspnea, paresthesias, and ultimately complete bilateral lower-extremity paraplegia. He was hospitalized at the nearest appropriate medical facility in the Solomon Islands, where he underwent hyperbaric oxygen therapy (HBOT), consisting of Table 6 treatment daily for four days and Table 5 treatment daily for two days (14). He was then transferred (12) to Sydney via MEDEVAC Jet pressurized to 1 ATM, where he underwent daily recompression therapy for an additional five days. Upon completion of this therapy, his bilateral lower-extremity function improved such that he was able to ambulate with the aid of axillary crutches and participate in outpatient physical therapy.

At 16 days post-injury, he was discharged from the spinal rehabilitation unit with the diagnosis of incomplete

T-12 (ASIA D) paraplegia, neurogenic bladder, and neurogenic bowel. The ASIA Impairment Scale (American Spinal Injury Association) defines Type D paraplegia as incomplete, where motor function is preserved below the neurologic level and most key muscles have a muscle grade greater than or equal to 3/5 (1, 15).

At 24 days post-injury, he returned to the United States, where he continued with outpatient rehabilitation and management of his urinary retention with indwelling catheterization (5, 6).

This airman experienced substantial neurologic insult as a result of DCS, and although his condition improved with HBOT and spinal rehabilitation, a thorough evaluation of the affected organ systems was warranted prior to reconsideration for airman duties. Based on Title 14 of the Code of Federal Regulations (CFR) Part 67.213 (b), he was ineligible for a second-class airman medical certificate following this event (2).

Upon his return to the U.S., the airman began outpatient treatment at a spinal cord injury rehabilitation facility, at which time his motor function on the left was noted to have improved to 4/5 below L-4. However, he had persistent sensory deficits as high as the T-9 level, as well as multiple foci of cutaneous hyperesthesia and neuropathic pain, requiring treatment with gabapentin (Neurontin), a disqualifying medication (3).

At two months post-injury, the indwelling catheter was removed, he was voiding spontaneously, and no longer required oxybutynin (Ditropan). His neurogenic bowel had also resolved.

DECOMPRESSION SICKNESS

Decompression sickness results when there is a reduction in ambient pressure relative to the partial pressure of dissolved inert gasses in the tissues. In the human body, ambient partial pressure of nitrogen stabilizes dissolved nitrogen in the tissues such that a state of equilibrium is established. When the rate of decrease in ambient atmospheric pressure exceeds a critical threshold, nitrogen in the tissues becomes supersaturated relative to ambient atmospheric pressure, and dissolved nitrogen in the tissues comes out of solution to re-establish equilibrium. The result is bubble formation within the tissues, which can then embolize in the blood stream, causing ischemic damage to highly sensitive tissues such as those of the central nervous system. Recompression with hyperbaric oxygen therapy reverses this gradient and reduces bubble size, effectively reducing the state of critical nitrogen supersaturation within the body tissues. This allows re-equilibration to occur at a rate whereby ongoing bubble formation is unlikely to occur.

Although he initially experienced near-complete blindness on the day of injury, this fortunately resolved with immediate in-water recompression and did not recur (5, 6, 7).

The airman faithfully participated in outpatient rehabilitation for six months post-injury, during which time he was noted to be a highly motivated patient and no longer required the use of gabapentin. His only residual sensory deficits included mild diminished sensation in the bilateral lower extremities, most notable at L-3 on the left, where he failed to regain sensation (left medial femoral condyle). His motor function returned to 5/5 at all levels except S-1 on the left, where his plantar flexion (soleus, gastrocnemius) was still noted to be slightly diminished at 4/5. The

Continued →

airman was able to ambulate with symmetrical steps and normal cadence and was maintaining a rigorous exercise program on his own.

Aeromedical Concerns

As specified in 14 CFR part 67.401, an airman with a neurologic condition may be considered for special issuance of a medical certificate if the person can demonstrate an ability to execute airman duties without endangering public safety (4). Submission of all treatment records as well as a current status report from a qualified neurologist or neurosurgeon is required. It is the airman's responsibility to provide documentation that the condition is stable and does not interfere with cognitive or physical requirements necessary to safely pilot an aircraft.

Because this airman experienced a transient episode of blindness, eye evaluation (including completion of the FAA Form 8500-7) was undertaken, and no abnormalities were identified. In addition, an MRI/MRA of the brain was unremarkable, and an electrocardiographic workup was negative for patent foramen ovale (4, 7).

Role of the AME

The presence of neurogenic bladder and neurogenic bowel requires thoughtful consideration by the AME, particularly due to the potential for autonomic dysreflexia and resultant cardiovascular instability. In addition, attention should be directed at the degree to which these conditions may distract the airman from cockpit duties. Fortunately for him, both conditions resolved without complication.

The most obvious concern in this airman is the degree to which his residual motor and sensory deficits could interfere with the physical demands required to safely pilot an aircraft (11, 13, 16). His sensory deficits were partial in all dermatomes except L-3 on the left, a region that is unlikely to affect aviation. With respect to his motor deficits, however, careful assessment is warranted to evaluate his functional ability at the S-1 level on the left. Adequate plantar flexion strength is essential for satisfactory operation of the rudder pedals and braking apparatus in unmodified aircraft.

Outcome

At seven months post-injury, the airman was evaluated by the U.S. Air Force in the F-15C Eagle simulator, at which time his performance was noted to be exceptional and without noted deficiencies. Thereafter, he submitted all necessary documentation to the FAA requesting reconsideration for second-class privileges.

His complete medical file was reviewed, and the airman was authorized to perform a medical flight test in the Airbus A-320 simulator, which he successfully completed. No limitations were deemed necessary, and a Statement of Demonstrated Ability (SODA) was issued (4). He was also given a corrected (time-limited) medical certificate, at which time he was cleared to return to the cockpit.

Under 14 CFR §67.401, an Authorization for Special Issuance was granted. An updated current status report from his neurologist was favorable, revealing no adverse changes in his condition, and at one year post-injury, the airman was once again recertified by his designated AME for a second-class medical certificate.

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About the Author

Dr. John D. Swanson completed a residency at Wright State University in Dayton, Ohio, and is now board certified in Aerospace Medicine. He wrote this report while rotating at the Aerospace Medical Certification Division of the FAA Civil Aerospace Medical Institute.



Brief Psychotic Disorder

Case Report, by J.D. Haines, MD, MPH

Brief psychotic disorder is a short-term illness with psychotic symptoms. The symptoms often come on suddenly but last for less than one month. The illness may occur with or without a stressor or in the postpartum period. The condition responds favorably to a wide variety of anti-psychotic medications. Although the psychiatric literature provides a favorable prognosis for some, the aeromedical context requires a more guarded prognosis.

History

The applicant, a 50-year-old first-class airman, was employed as a test pilot for an aircraft manufacturer. The airman was involved in an aircraft crash investigation in which several people were killed. His employer was sued, and he was required to give a legal deposition in court.

He had never given a deposition before and was subjected to what he called a seven-hour "nightmare." He described the attorneys' questioning as "relentless." When he requested that certain questions be reframed or be given more time to consider his answers, they became even more aggressive. He described the situation as being very stressful and noted that he had quickly become "overwhelmed."

Following the deposition, the airman described feeling fearful that he had not responded to all the attorneys' questions to the best of his ability. Efforts to console him were unsuccessful. He became preoccupied with paranoid thoughts and believed he was being "monitored." He became suspicious of a repair truck in his neighborhood, reported odd phone calls, and believed he heard strange noises in his home.

The airman's wife convinced him to seek medical help, so he consulted his family physician, who prescribed sertraline (Zoloft) and lorazepam (Ativan) for sleep and anxiety. He also sought care with a psychologist for increasing anxiety and despondency.

The psychologist diagnosed him with adjustment disorder with mixed anxiety and depressed mood. He was not found to be suicidal and was fully oriented, although he had paranoid

feelings regarding the deposition. He became fearful that he could be arrested if his answers during the deposition were not found to be completely accurate, even though he recognized that this was illogical. He experienced no hallucinations, disorganized speech, or grossly disorganized behavior.

The airman had a remote history of "heavy drinking" in college but reported that he now drinks only socially. There was no history of drug abuse. He had received psychological counseling several years ago for "anger management," but otherwise denied any psychiatric history, hospitalizations, or psychiatric medications. He had no known family history of psychiatric illness, and there was no evidence of malingering or factitious illness.

The airman subsequently developed increasing agitation and was referred to a psychiatrist who diagnosed a brief psychotic disorder and prescribed risperidone (Risperdal). Although the patient was concerned about taking an anti-psychotic medication, he finally agreed and experienced rapid improvement of his symptoms. Two weeks following initiation of risperidone, the airman was noted to have no further intrusive thoughts or paranoid ideation and was sleeping normally without nightmares.

The risperidone was subsequently discontinued, as was the sertraline after he had completed a three-month course of therapy. The airman was discharged from psychiatric and psychological care with an excellent prognosis.

Aeromedical Issues

The primary aeromedical concern following a confirmed diagnosis of a brief psychotic episode is the airman's

Brief Psychotic Disorder

Brief psychotic disorder is a short-term illness with psychotic symptoms. The symptoms often come on suddenly but last for less than 1 month, after which time the patient recovers completely.

DSM-IV-TR diagnostic criteria

Presence of 1 (or more) of the following symptoms:

- Delusions, hallucinations, disorganized speech (e.g., frequent derailment or incoherence), grossly disorganized or catatonic behavior (note: do not include a symptom if it is a culturally sanctioned response pattern).
- Duration of an episode of the disturbance is at least one day but less than one month, with eventual full return to premorbid level of functioning.
- The disturbance is not better accounted for by a mood disorder with psychotic features, schizoaffective disorder, or schizophrenia and is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition (1).

This illness manifests itself in 1 of 3 forms:

- Brief psychotic disorder with obvious stressors—occurs in response to trauma, stress, disasters.
- Brief psychotic disorder without obvious stressor—no trauma or stress triggers.
- Brief psychotic disorder with postpartum onset—within 4 weeks of delivery (2, 3).

The cause of brief psychotic disorder is unknown. It is an uncommon disorder that usually first appears in young adults in their 20s and 30s and is more common in females. People with personality disorders seem to be more prone (4).

The work-up for brief psychotic disorder includes a complete history and physical, laboratory studies, and a complete psychiatric/psychological evaluation. Treatment involves psychotherapy, hospitalization (in severe cases), and psychopharmacology. Medications used include Risperdal, Clozaril, Seroquel, Geodon, and Zyprexa. Tranquilizers may be useful for symptoms of anxiety and insomnia.

A recent review of the literature shows the recurrence of psychotic symptoms or emergence of other psychiatric illness is sufficiently high and unpredictable to make brief psychotic disorder unacceptable without an individualized, detailed specific case review.

complete recovery, and the predictable risk of recurrence. Title 14 CFR Part 67 states that an airman may not have an "established diagnosis of a psychosis in which the individual has manifested delusion, hallucination, grossly bizarre or disorganized behavior or other commonly accepted symptoms of this condition" or may be expected to have such in the future.

This airman has a specifically disqualifying condition normal functioning off medication. If the airman requests reconsideration, then the case requires review by the FAA Chief Psychiatrist (AAM-202) following a complete psychiatric and psychological evaluation.

After a specific, individualized case review, as well as an extensive literature review, the Federal Air Surgeon issued a final denial in this case.

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About the Author. *J.D. Haines, MD, MPH, is a board-certified family physician with 23 years' civilian experience in family, emergency, and sports medicine. He currently serves on active duty in the U.S. Navy as Wing Surgeon, 2nd Marine Air Wing (Fwd) at Camp Leatherneck, Afghanistan. He completed a residency in Aerospace Medicine in January 2010 and wrote this report while rotating as a Resident in Aerospace Medicine at the FAA's Civil Aerospace Medical Institute.*



AME Resources

New Laser Hazards Brochure Published

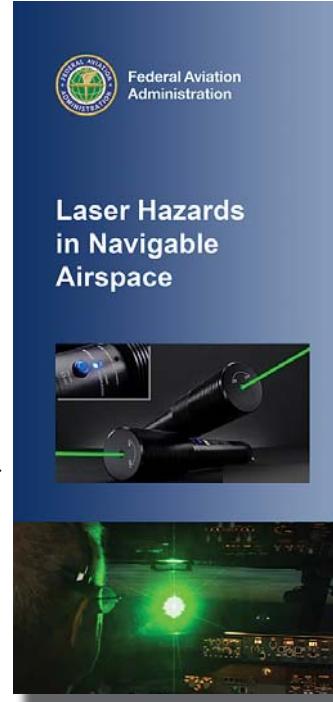
By Mike Wayda

ALTHOUGH LASERS HAVE many legitimate outdoor uses, such as in astronomical research, deep-space communications, orbital satellite imaging, and outdoor displays to attract and entertain the public, the misuse of laser devices poses a serious threat to aviation safety. Aviators are particularly vulnerable to laser illuminations during low-level flight operations at night, when the irresponsible use of laser devices can threaten the lives of flight crews and passengers.

The increasing number of incidents involving pilots being blinded by lasers prompted the FAA Civil Aerospace Medical Institute to research the laser hazards issue and publish information to document these events and establish exposure limits. The research team

documented more than 3,000 reports of aircraft laser illumination events that had occurred over a 20-year period.

In 2005, responding to the rapid increase in the number of laser illuminations of aircraft, the Department of Transportation published Advisory Circular 70-2 entitled "Reporting of Laser Illumination of Aircraft." This provides an official reporting mechanism and coordinates efforts between local and federal law enforcement agencies



responsible for the apprehension and prosecution of violators.

Another byproduct of the research program is a new brochure, *Laser Hazards in Navigable Airspace*, which is now available on the FAA Web site and in print form.

Online: www.faa.gov/pilots/safety/pilotsafety-brochures/

Print version: http://ame.cami.jccbi.gov/form_and_brochure/Brochure-OrderForm.asp



Web Site Shortcuts Implemented Use them to reduce clicks

Many users of the Federal Aviation Administration's Internet services have commented regarding the excessive length of URLs (Uniform Resource Locator) required when navigating to frequently accessed content. We are pleased to announce the recent implementation of several abbreviated URLs.

AMCS Support Page

www.faa.gov/go/amcssupport

AME Guide

www.faa.gov/go/ameguide

AME Seminar Schedule

www.faa.gov/go/ameseminars

AME Training Information

www.faa.gov/go/ametraining

Content specific to AMEs

www.faa.gov/go/ame

Aerospace Medicine Technical Reports

www.faa.gov/go/oamtechreports

We hope the shortened URLs will help you when navigating to these commonly accessed services.

Information provided by David Nelms, Program Analyst and CAMI Web Content Administrator, Aerospace Medical Certification Division.



New Faces in Aerospace Medicine

David Schall Great Lakes Regional Flight Surgeon

David Schall, MD, was recently selected to become the Great Lakes Regional Flight Surgeon. He will manage the region's medical programs, budget, and personnel matters, while also providing medical advice. A Chief Flight Surgeon in the U.S. Air Force with more than 1,600 hours' flight time, Dr. Schall was a military flight surgeon for 30-plus years.

He graduated from the University of Missouri-Kansas City School of Medicine and completed an Air Force residency in Aerospace Medicine with a master of public health degree from Johns Hopkins University. Dr. Schall completed his residency in otolaryngology head and neck surgery at the University of Nebraska, followed by a fellowship in otology-neurotology skull base surgery at the Ear Foundation in Nashville, Tenn.

Dr. Schall held a variety of senior positions in the Air Force, including Vice Commander of Wilford Hall Medical Center in San Antonio, Texas; Major Command Surgeon, Pacific Air Forces; and, most recently, Combatant Command Surgeon for the European Command in Stuttgart, Germany. He has coordinated international medical engagements worldwide. He served as consultant to the Air Force Surgeon General in otolaryngology head and neck surgery with areas of interest in spatial disorientation and management of the dizzy flier. A prolific writer, he has authored in more than a dozen journals.

Dr. Schall replaces Dr. **Nestor Kowalski**, who retired in August 2010.

Information for this article provided by AVS Flyer.



New Deputy in Certification Division

Courtney Scott, DO, MPH, is a new physician on the Aerospace Medical Certification Division (AMCD) staff. His responsibilities are to:

- Serve as Deputy to Dr. **Warren Silberman**, Chief of AMCD.
- Manage the AMCD physicians and some of the staff.

Dr. Scott served in the U.S. Air Force for 22 years and held top-level medical positions, including Commander and Dean of the U.S. Air Force School of Aerospace Medicine. His final USAF assignment was in a joint position as commander of the tri-service Defense Medical Readiness Training Institute, the group that teaches the prestigious Combat Casualty Care Course, or C4 as it is known. He retired in 2008 with the rank of colonel.

Prior to joining the AMCD, Dr. Scott specialized in international affairs and global health security for the Department of Homeland Security in Washington, D.C. He worked with international infectious disease experts to study the complex and globally connected issues of emerging pandemic threats in the context of protecting the American people.

When he was presented the prospect of working in aerospace medicine, Dr. Scott said he was quick to respond and again become involved in the mission of aviation safety: "When the opportunity came to return to my roots in aerospace medicine with the FAA, I could not resist. I have longstanding relationships with many people in the Federal Air Surgeon's office, in the Regional Flight Surgeons' offices, and in the Civil Aerospace Medical Institute. I am honored to once again be able to work with these outstanding public servants. We have a great mission and vision here, and it is a privilege to work with this team!"



Refresher Training Software Upgraded

Users welcoming revisions

By Susan E. Buriak, MS, MPH, PMP

An updated version of the Aviation Medical Examiner Refresher Course (MAMERC, ver. 2.0) was launched on December 22, 2010, to replace obsolete software and content deficiencies that we could not repair.

The final exam (60 items) was also updated. Additionally, two Regional Flight Surgeons and two Civil Aerospace Medical Institute physicians verified and validated the changes.

The Aerospace Medical Education Division worked closely with Medical Certification subject matter experts to align course content with the *Guide for AMEs* and pertinent federal regulations.

The "Depression" video was updated to reflect recent allowable medication changes. Four additional videos will be updated and re-released in version 2.1, slated for completion during the third quarter of this year.

So far, 41 users have completed their refresher training using the new software, and 103 have just begun training. Overall, users were "very satisfied" with the revised coursework.

You may register and enroll in MAMERC training on the FAA Web site:

www.faa.gov/go/ametraining

Ms. Buriak is the Aerospace Medical Education Division's program manager for curriculum development and quality assurance. Her E-mail address is Susan.E.Buriak@faa.gov.



Color Vision Testing

Dear Editor,

I just read the latest Medical Bulletin (*AME Alert: Color Vision Testing*; Vol. 48, no. 4, p. 4)...about color vision testing. I just bought a new Titmus vision machine in June [2010]. The manufacturer no longer uses the same designations used in the past. My new machine is a V2 model. That model is not listed in your alert. I assume that it is okay since this is a new machine, but I wanted to check.

Thanks,

Randy Martin, MD
Montgomery, Texas

Dear Dr. Martin,

Any commercially available vision tester in the U.S. can be used to screen for acuities and phorias, so the Titmus V2 would be OK for those. However, at this time, the Titmus V2 is not FAA-approved for color vision screening of pilots. New versions, or "designations," of vision testers do not necessarily use the same light source or the same test plates for color vision as earlier versions from the same manufacturer. Consequently, the test results may not meet FAA requirements. For this reason, only the color vision testers, exactly as listed in the AME Guide, can be used for color vision testing of airmen.

The acceptable color vision testers listed in the Guide have been tested by vision researchers in the Human Factors Division at CAMI—all have been validated as meeting our aviation-specific requirements for both chromaticity and the pass-fail criteria (note: our pass-fail criteria may be different than the manufacturers'). We contacted the manufacturer for documentation of the light source and testing plates for the Titmus V2. To date, they have not provided the documentation we need to determine if this version is acceptable for FAA exams.

Arleen M. Saenger, MD
Manager, Aeromedical Standards and Policy Branch



Baldness and Finasteride

Dear Editor,

Dr. Silberman's article [*Federal Air Surgeon's Medical Bulletin*, Vol. 48, no., p. 3] on baldness meds: finasteride, 1mg daily is an oral med for male pattern baldness. At this dose, it is relatively free of side effects, and I wonder if any treating doc needs to clear [its use with the FAA]. The foam or lotion also used is 5% Minoxidil. This is also very safe. In larger doses it is an antihypertensive, and would need a comment.

Thanks,

Howard Keller, MD
Kailua, Hawaii

Dear Dr. Keller,

The medication Finasteride is an acceptable medication for prostate enlargement and thus would also be acceptable for this alternate use. The AME should inform the FAA in Block 60 at a minimum that the medication is being used for this particular indication, versus the one it is usually used for—otherwise, we will probably request more information from the airman.

Warren Silberman, DO

Sleep Apnea

Dear Editor,

Do aviation medical examiners specifically test all pilots for sleep apnea?

Martin Long

Sleep Medicine Center, Chicago, Ill.

Dear Mr. Long,

To supplement the medical standards contained in Part 67 (Under Title 14 of the Code of Federal Regulations, Part 67), the Office of Aerospace Medicine provides substantial guidance material created specifically for use by designated aviation medical examiners. This Guide for Aviation Medical Examiners is available on-line, and specifies pertinent medical information required for history of obstructive sleep apnea and periodic limb movement disorder. Pilots suspected by the AME or the personal physician to have

such conditions must provide a medical report satisfactory to the FAA. Normally, this report would include a baseline polysomnogram, treatment regimen, etc. If appropriate, these airmen are granted a special issuance for aviation.

Courtney D. Scott, Jr., MD
Aerospace Medical Certification Division

ECG Question, Night Vision Goggles

Dear Editor,

1) Dr. Tilton's column mentions EKGs transmitted to them indicate the person tested should have been sent to ICU—what provision is the FAA taking to notify these patients or the physicians ordering the tests? My EKGs transmitted from Odessa [Texas] are done in the hospital, and I get a copy later. In our little hospital in Iraan, Texas, all activity is put on "hold" in lab, X-ray, EKG, and clinic departments while I check the EKG before it is transmitted.

Appropriate transmission of emergency information should partly be assumed by the FAA if the emergency merits immediate ICU referral.

2) In previous edition [Night Vision Goggles: The Basics for AMEs; Vol. 48, no. 2, p.6] two special courses in OKC were mentioned. Can you send me schedules concerning night vision [classes]?

Edwin Rathbun, MD
Iraan, Texas

Dear Dr. Rathbun,

(1) The AME is responsible for granting certification to the airman. You should provide the performing lab with the list of "normal variants" that the FAA accepts. Tell the lab that if the ECG performed shows anything other than what is on the list you provided, they should fax the ECG to your office immediately.

Warren Silberman, DO

(2) There is not a schedule of course offerings yet. The final details are being completed, and a schedule will be published soon—perhaps by the time you read this.

G.J. Salazar, MD
Southwest Regional Flight Surgeon



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