



# Federal Air Surgeon's Medical Bulletin

*Aviation Safety Through Aerospace Medicine*

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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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## From the Federal Air Surgeon's Perspective

By Fred Tilton, MD

### TOO GOOD NOT TO REPEAT

Hello, Everyone,

I HAVE TOLD you in the past that I do not like to talk about the same topic in two different editorials. I have already violated that principle a couple of times with respect to MedXPress, and I am doing it again.

The first time I “broke the rule” was because I wanted to make sure that you were fully informed about my decision to make MedXPress mandatory for all pilots effective October 1. I am doing it this time because I thought you might like to get some feedback on the success of the transition.

Frankly, I was a little worried as we approached the first of October. I will never forget our first MedXPress year. Although the system had been beta tested, I believed that we would find some additional issues as we “went live,” and I wanted to address any issues as soon as possible. When I told my personal aviation medical examiner that I was going to use this new system, he expressed concern because the system was brand new and he knew very little about it. In fact, I was the first of his pilots to use MedXPress. I finally convinced him to give it a try, and I also told him to call me if he experienced any problems.

Over the next couple of months I received several calls from him with some “friendly” suggestions for what I might do with this new system. I told him that I really appreciated the calls, and that his feedback would be invaluable in helping us to make the changes necessary to improve the system’s functionality.

The next year when I called his office to arrange for my medical, his office assistant informed me that he would not perform my FAA medical examination unless I used MedXPress.

Now, fast forward to last year when I announced that we were going to make MedXPress mandatory. MedXPress had already proven to be an excellent tool. Among other things, it was easier for airmen to complete their medical applications; it has significantly reduced the workload in your offices because you no longer had to transcribe the front side of the 8500-8, and it eliminated many transcription and spelling errors. However, it had been more than five years since we implemented the system, and only about 40 percent of our pilots were using it. So to take full advantage of this excellent tool, we had to make it mandatory for all.

While October 1 came and went with very little fanfare, we know we still have some work to do. We need to make the system available for air traffic controllers, we need to make some enhancements to make the system more “user friendly,” and we received some helpline calls with suggestions for system improvements. We appreciate these suggestions, and we will use them to make the system even better in the future.

I also want to take this opportunity to thank you again for your support as we made the system mandatory. As I have told you many times in the past, the service you perform for us and the airmen and air traffic controllers you support plays an absolutely crucial role in assuring the safety of the national air space.

—Fred



## MedXPress Mom

Dear Editor,

Recently an 18 yo student pilot, accompanied by his mother, presented for his Airman Medical/Student Pilot Application and physical examination. His mother proudly announced that she had completed his application for him in MedXPress. Since the airman did not appear knowledgeable about MedXPress and had not input his own medical information, I had the airman complete a hard copy 8500-8.

What is the AMCD's take on someone other than the applicant completing the applicant portion of the form in MedXPress? (mother, spouse, friends, etc.)

F.D. Giles, DO  
Springtown, Texas

Dear Dr. Giles,

The airman is responsible for accurately and truthfully answering the questions, regardless of whoever else might be assisting him. However, it would be up to the aviation medical examiner to determine why the individual did not fill it out himself, so as to ensure that the applicant can speak English, is articulate, and has no obvious cognitive defects.

Judith K. Frazier, MD, MBA  
Certification Division Medical Officer  
Email: [Judith.Frazier@faa.gov](mailto:Judith.Frazier@faa.gov)

## Ophthalmology Form

Dear Editor,

1. [FAA Form 8500-7] is used by aviation ophthalmologists for FAA aircrew.

2. The form records the distant, near and intermediate vision as OD and OS. The latter terms can be confusing. Left or right is much easier. Also, there is no column for both eyes.

3. There is no column for colour visions tests in this form. Any special reason?

D.S. Sagoo, MD  
Kuala Lumpur, Malaysia

Dear Dr. Sagoo,

The 8500-7 form is meant to supplement the 8500-8 for those who need additional eye evaluation; it is not meant to be a substitute for or duplicate of the 8500-8. The same can be said for the 8500-14 form. Each form addresses supplemental information as well as includes some, but not all, of the information on the 8500-8. A quick reminder about the 8500-7—please be sure you use the most recent version available on the FAA website. An earlier version incorrectly implied that for contact lens use, further information was not needed. We always need a detailed history of the eye status (item 4) and a detailed summary (item 16). Too often, eye doctors seem to omit these blocks.

We have traditionally used Latin abbreviations, OD and OS, feeling physicians would be comfortable with the terms, making them perhaps a better choice for forms that are used internationally. Changing the form is a complex process, and while right and left perhaps would be easier than OD and OS, we are not in the process of any new changes to this form at this time. However, we will consider your suggestion in any future updates to the forms.

Arleen M. Saenger, MD, MPH  
Aeromedical Standards and Policy (AAM-220)  
Email: [Arleen.Saenger@faa.gov](mailto:Arleen.Saenger@faa.gov)

## AME Information Links

### AME Guide

[www.faa.gov/go/ameguide](http://www.faa.gov/go/ameguide)

### AME Training Info

[www.faa.gov/go/amettraining](http://www.faa.gov/go/amettraining)

### AMCS Online Support

[www.faa.gov/go/amcssupport](http://www.faa.gov/go/amcssupport)

### Regional Flight Surgeon Contacts

[www.faa.gov/go/rfs](http://www.faa.gov/go/rfs)

### Pilot Safety Brochures

[www.faa.gov/go/pilotsafetybrochures](http://www.faa.gov/go/pilotsafetybrochures)

### Medical Certification Information

[www.faa.gov/go/ame/](http://www.faa.gov/go/ame/)

### MedXPress Login & Help

<https://medxpress.faa.gov>

### MedXPress Video Page

[www.faa.gov/tv/?mediaId=554](http://www.faa.gov/tv/?mediaId=554)

### FASMB Archives

[www.faa.gov/go/fasmb](http://www.faa.gov/go/fasmb)

### CAMI Library Services

[www.faa.gov/go/aeromedlibrary](http://www.faa.gov/go/aeromedlibrary)

## How to Find Information on the FAA Website

*Aviation Medical Examiners often need to find information in a hurry for their pilots. Since nearly "everything" is on the Internet these days, it is imperative that the information being sought out is easily accessible.*

By Mike Wayda

**T**O HELP YOU quickly locate important information, we are reorganizing the *Bulletin* to provide hard links to some reference materials. As a preview, the links on the left will be available in future newsletters on each page, so you can quickly go to a website from any page in the newsletter.

Note that the links are truncated, or are shortcuts from the full uniform resource locator (URL). For example, the "official" URL for the AME Guide is:

[http://www.faa.gov/about/office\\_org/headquarters\\_offices/avs/offices/aam/ame/guide](http://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide)

The shortcuts work, though, so you can write them down or bookmark them for future reference.

### AME Guide

The *Guide for Aviation Medical Examiners* contains pertinent information regarding all of the duties and responsibilities of an AME. Bookmark or otherwise record this shortcut for quick reference.

### AME Training Information

Describes all of the training courses available to AMEs, including basic and refresher seminars, plus links to periodic online training (CAPAME, MCSPT).

### AMCS Online Support

A source of important information pertaining to system alerts and notices, plus other timely information.

### Regional Flight Surgeon Contacts

Guide to email and phone contact information of all FAA Regional Flight Surgeon offices.

### Pilot Safety Brochures

Links to all Office of Aerospace Medicine pilot safety brochures, including some that have been translated into Spanish and Turkish.

### Medical Certification Information

AME designee information designed primarily for senior AMEs (those who are eligible to perform first-class medical examinations).

### MedXPress Login and Help

Applicants for medical certification have access to the electronic application form. Help screens aid in every step of the process.

### MedXPress Video Page

A video scenario that cleverly explains how MedXPress works.

### FASMB Archives

If you are looking for information that was published in previous issues of the FASMB, click on this link to find issues archived to 2002; also a repository of articles written by the Federal Air Surgeon and the former AMCD manager.

### CAMI Library Services

A resource for researchers; the primary focus of the collection is on aviation medicine, materials on human factors, engineering, management, and general reference. While the library physically resides at the Civil Aerospace Medical Institute in Oklahoma City, you can liberate this virtual tool to become your "information genie."



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## OAM Physicians On Call, Part 2

*More Help From the Friendly Certification Folks*

By Richard Carter, DO, MPH

**I**N PART 1 of this multi-part series, we asked you to help us minimize our backlog of deferred examinations. We asked that you issue certificates when you can. In this article, we will give you guidance on certification issues that require that you call us.

### **Verbal authorization for uncomplicated situations.**

You can call the Aerospace Medical Certification Division (AMCD) or a Regional Flight Surgeon (RFS) for verbal authorization in specific, uncomplicated situations. We do advise that all **third-class** airman inquires should go to your **Regional Flight Surgeon**. For first- and second-class pilots, and specifically detailed medical inquires (examples, central serous

retinopathy, renal cancer), call AMCD. The AMCD number, (405) 954-4821/option 6, links you to dedicated operators that will route you to the physician on call. Please follow operator instructions. If we are not immediately available, we will try to call back the same day. We may also ask for an after-hours call-back number (usually your cell number), as we may return your call after normal working hours. The operators in OKC will take calls from 0800 to 1615 CDT.

**Verbal Authorization to Issue.** In certain straightforward, uncomplicated cases, you may be able to call for a verbal authorization to issue. Most experienced AMEs have a good idea of what information we require and begin the conversation, “I have favorable reports, and would like to issue” (meaning – I am requesting verbal authorization for Special Issuance and permission to issue a time-limited medical certificate).

When you call, we will want you to discuss the detailed written reports from the airman’s clinical provider. We want to know a description of the medical condition history, exam, testing, treatment plan, and prognosis. We also want your clinical description of how the airman is currently doing and if you have any concerns since you actually see them in clinic. Even if you are not a pilot, ask yourself, if I had to get in a plane with this pilot, would I want to do it with this person in this condition? The vast majority of calls seeking verbal authorization do get authorization to issue. This is a tribute to the hard work of AMEs, tracking down reports of tests and procedures, and many times talking to the airman’s physicians to provide a satisfactory narrative summary of the current medical status and prognosis.

**Examples of cases appropriate for a verbal authorization from a typical day on-call.** AME Assisted Special Issuance (AASI) initial certification conditions.

All of the AASI conditions— thyroid cancer, asthma, sleep apnea, and so on— require initial approval for Special Issuance from an AMCD/RFS physician. See:

[www.faa.gov/go/ameguide](http://www.faa.gov/go/ameguide)

**Example 1:** Third-class, thyroid cancer, s/p 3 yrs, stable hypothyroid condition on Synthroid, with favorable reports (surgical report, hospital records, and updated current status), all with favorable prognosis. I advised AME issue time-limited certificate. The applicant is 44 years old, so I advised AME issue time limit of 2 years. AMCD will send the airman an AASI letter for hypothyroid condition/medication, with warning for the past thyroid cancer and surgery. So follow up exams may be issued by the AME if the reports are favorable and if the airman has an AASI letter.

**Example 2:** The airman provides a summary report from the urologist, history of new diagnosis of kidney stones, now stable (not likely to pass per urology note). The most recent imaging (KUB) demonstrates a retained kidney stone. The AME calls prior to transmitting the new exam, discussed the case with AMCD or RFS, and verbal authorization to issue is granted. The AME can then issue the certificate and transmit the exam. If verbal authorization cannot be given over the phone, we will request that you send the reports to AMCD.

**Example 3:** The airman provides a summary report from the pulmonologist for a new diagnosis of sleep apnea, now stable on CPAP (continuous positive airway pressure). Verbal authorization for initial certification of sleep apnea requires determination of effective treatment of sleep apnea and minimized risk of daytime drowsiness. Sleep apnea effectively treated with CPAP is preferred, and we need a minimum of two weeks of CPAP use for initial approval. The sleep specialist’s report should indicate airman is getting 6 or more hours of effective sleep, and 75% of nights. We request the CPAP machine compliance data, with the clinician’s interpretation. Adaption to the CPAP machine may require short-term use of medication, such as Restoril (temazepam), and we warn airman about long-term use (not allowable), and specify 72 hours no-fly for the brief periods needed for CPAP adaption.

*Continued* →

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(405) 954-4821/option 6, links you to dedicated operators that will route you to the physician on call

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**Example of issue when you can.** A phone call to AMCD is not always required. An AME had called to confirm that he had issued correctly. This third-class airman's history was as follows:

- Hypertension, well controlled with medication, ECG (no changes), labs OK, no symptoms. This was an initial issue for the AME.
- Normal cardiac catheterization. Routine cardiac screening (2004), resulted in incidental discovery of an abnormal ECG, abnormal stress test, and subsequent cardiac catheterization (2006), with discovery of 30-40% mild narrowing of the LAD. The airman had reported "no evidence of cardiac disease, just hypertension."
- Benign prostatic hypertrophy (BPH), well controlled with medication, no symptoms.
- Cholesterol, well controlled with medication, no symptoms.
- Benign nasal polyps.
- Scar, medical nasal portion, left eye, from sinus surgery (1995), well healed, no symptoms.
- Kidney stone history (follow up KUB film indicated no retained stone).
- Medications: tamsulosin (Flomax) for BPH, amlodipine (Norvasc) for hypertension, pravastatin (Pravachol) for cholesterol control.

The AME did issue. The *AME Guide* allows you to issue initially for hypertension with favorable reports. A phone call to AMCD or RFS is not always required, but in this case, it was a good idea due to the coronary artery disease. We did request that the airman provide a current cardiac report, including stress test. After review of the updated cardiac reports, we will consider AASI for mild CAD.

Any cath report showing a 50% lesion or greater and no intervention has been done **MUST** be deferred. Do not call. Send in the information to AMCD. If a cath shows 30-49% lesion, please call for guidance.

**Team effort.** We need you to help us limit unnecessary deferrals. Many complex medical conditions do eventually get a waiver (special issuance, or SODA), and we will help you with the certification process. Together we can expedite the timely medical certification of pilots. Special thanks to Dr. **Mark Ivey** for reviewing the obstructive sleep apnea guidelines and case examples.

**Stay tuned.** In Part 3 of this series, we will discuss more complex conditions and what information you should help your airman collect to expedite a medical certification decision.



*Dr. Carter is a Medical Review Officer in the Aerospace Medical Certification Division.*

## Sometimes, Despite Our Best Efforts, We Are Misunderstood

By Dominick Zito, MD

**T**HE EASTERN REGION'S Aerospace Medicine Division recently hosted a telephone conference call about MedXPress, the FAA's system for paperless medical exams. Aviation medical examiners and their staffs were invited to listen in to the discussion and then to ask questions about MedXPress, before the October 1st deadline for its mandatory use.

This outreach effort was part of a program of "Fireside" chats organized by Eastern Regional Flight Surgeon, Dr. **Harriet Lester**, my boss. Other telecons hosted by her region have discussed diabetes, atrial fibrillation, and substance abuse, among other issues, and are intended as informal education experiences for aviation medical examiners. The aim of the chats is to help explain how and why the FAA does things a certain way. With the deadline for switching to a completely paperless approach looming, MedXPress seemed to be a timely topic.

The conference calls are organized around single topics. Speakers have included in-house experts from the Civil Aerospace Medicine Institute, such as Drs. **Bill Mills** and **Brian Johnson**, and consultants/lecturers used at AME seminars, such as Dr. **Richard Carlson**. The typical pattern is to have an introductory talk from the speaker describing the issue and explaining how the FAA would approach it and then to allow the audience to ask questions for up to an hour. The strength of this format is that the questions can be explored in depth, especially when they open unexpected aspects of the topic.

This time the talk was being given by **Jana Weems**, one of Aerospace Medicine's program analysts. Most AMEs know Jana from the AME seminars. Since 2007, she has traveled across the country introducing and explaining MedXPress to AMEs. She also collected their comments and questions so she could go back and help improve the program until it was more effective and easy to use. When she's not on the road, Jana is the one who answers the CAMI Aerospace Medical Certification Subsystem Support line, along with her coworker **Matt Brooks**. And now that the Pilot's Bill of Rights has entered the picture, Jana is answering quite a few more calls. In August, it was felt that one good conference call could address a lot of those questions all at once.

*Continued* →

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So Jana explained how MedXPress had been in use as a paperless medical exam for more than five years, that it was very user friendly, that the airman could enter the data at home or in the doctor's office, and that the airman must have an email address to receive the confirmation number. She also talked about how certificates can be printed on plain paper and don't have to be on card stock and to be careful because a certificate can be printed only once, otherwise the AME has to call CAMI or the regional offices for support. *[Editor's note: The program now allows three printings before you transmit, then just one printing once the exam is transmitted.]*

She was very easy to follow and seemed to address all aspects that could cause confusion. After all, she had been answering questions about AMCS and MedXPress for five years! She mentioned how it was expected that a button would be added that would automatically bring up the Pilot's Bill of Rights Acknowledgment Form (PBRAF) before each exam, but until that happened, the AME had to issue the paper PBRAF for the pilot to sign and return to CAMI. (By the time this article comes out the automatic button will have been already added.)

When she finished and the telecon was opened up to questions, there was a slight hesitation as the audience felt out how to not talk all at once on a conference call with almost 70 lines. Some started to talk and then stopped themselves when they heard other people. About four seconds of awkward sounds passed. Then, loud and clear, there was the very first question.

The very first question was, "Why are you making the pilots use Med-Express? Can't they use just any urgent care center?"

After a stunned silence, it was immediately obvious that this conference call was serving a real purpose. Despite all the training, all the notices in the *Federal Air Surgeon's Medical Bulletin*, all the emails, and the entire lecture just given by Jana Weems, this AME thought the Federal Air Surgeon's order to use MedXPress was about an outpatient medical office

in his area. It was swiftly, and gently, explained to him that MedXPress is a computer program that must be used after October 1<sup>st</sup> and that the mandatory order to use MedXPress was not about using the clinic with a similar name.

The rest of the conference call was filled with really good questions, and a couple that went way off topic, such as one about color vision testing equipment. The off-topic questions were good but needed to be addressed at another time.

This Fireside chat was a little different from others that

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*One staffer persisted in her questions, asking one after another. When it was suggested she should let another person ask a question, she said, "We do well over 500 exams a year and I want to do them right!"*

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had been done because AME staff members were also invited, since the topic was not strictly medical. Their questions were much more process oriented: "where's the button?", "whom do I call?", etc. One staffer persisted in her questions, asking one after another. When it was suggested she should let another person ask a question, she said, "We do well over 500 exams a year and I want to do them right!" All I can say is, who can fight with such earnestness?

Overall, the conference call was very successful, MedXPress is now the law of the land, and we all learned a valuable lesson about not assuming that people know what you're talking about.



*Dr. Zito is the Eastern Deputy Regional Flight Surgeon.  
Email: [Dominick.Zito@faa.gov](mailto:Dominick.Zito@faa.gov)*

## The Doctor Is In: Can My Friend Fly if...?

By AVS Flyer

**T**HE OFFICE OF Aerospace Medicine staffed a medical booth July 23-29, 2012, at AirVenture in Oshkosh, Wis. A team of five doctors received more than 870 visitors during the week and helped answer questions about medical certification. They especially enjoyed the *'I have this friend who has this medical condition'* questions.

The medical team was happy to help. They were asked, for example, if an airman could be certified after being treated for prostate cancer. The answer is *yes*, with a current status report confirming the airman is doing well. There were many questions about heart conditions, ranging from arrhythmias to coronary bypass surgery, to heart valve replacements. All of these conditions can be certified if the airman has a favorable status report. Another hot topic was Lasik eye surgery, which can also be certified pending a satisfactory result. There were also questions about DUIs.

"There is a process for an airman who receives a DUI," said Dr. **David Schall**, FAA Great Lakes Regional Flight Surgeon. "If you have multiple DUIs, you can't fly. But if you had one then, assuming you have completed the court-required education and training, we allow people to fly without further alcohol abuse."

The team fielded a lot of questions about medications, and which medications are safe to fly with. "That's an ever changing issue," Dr. Schall noted. "For example, there's a medicine we use for pituitary tumors called Parlodel. There have been a number of adverse effect reports on it with people suddenly falling asleep, which is called narcolepsy. Obviously,



**WORKING THE OSHKOSH PILOTS.** L to R: Dr. Courtney Scott, Mr. Cliff Heart, Dr. David Schall, Ms. Kathleen Rogers, and Dr. Matt Dumstorf (partially obscured by monitor).

that's a very undesirable side effect for a pilot, so the FAA did a review of all airmen who were on that medication and sent them letters saying that it is no longer acceptable to use that medicine. Their certificates were withdrawn until they changed to something safer."

Head injuries—often from auto accidents—generate many questions. "The concern is that a head injury with bleed puts you at risk for seizures," Dr. Schall said. "We classify head injuries as mild if the patient is unconscious for less than an hour; moderate is less than 24 hours, and severe is more than 24 hours. There is a mandatory waiting period with a severe head injury before you are allowed to fly."

The team also answered questions about MedXPress, the online system to complete FAA medical applications. Effective October 1, 2012, this is the only way to apply for an FAA medical certificate. "About 95 percent of our airmen are using it now," Dr. Schall said. "Soon it will be 100 percent. We explained the process, that there is a MedXPress User Guide, and a 24/7 help line at 1-877-287-6731. That alleviated a lot of their fears."



## New Deputy RFS in Central Region

By Barbara Stoker

Dr. **Daniel Berry**, Regional Flight Surgeon in Central Region, announced that **James R. Elliott**, MD, was welcomed to the Central Region as the new Deputy Regional Flight Surgeon on September 23, 2012. As Deputy, Dr. Elliott manages the Air Traffic Control Specialist medical program and supports all Aerospace Medicine safety programs in the Region.



Dr. Elliott

Dr. Elliott served for 24 years in the U.S. Air Force and has an extensive background in aerospace medicine facilitating the collabora-

tion of 80 personnel to provide aviation and air traffic control medical certification, special duty examinations, and primary care to assigned aircrew and their family members.

He has extensive experience as an aviation medical examiner and flight surgeon. His assignments include serving at the Air Force Human System Program Office and four years as the Chief of Flight Medicine at the Air Force Flight Test Center, Edwards AFB, Calif.

As the Chief of Aerospace Medicine, Dr. Elliott also was a clinical instructor for both the Wright State University and the USAF School of Aerospace Medicine Residencies in Aerospace Medicine. He also served as a clinical mentor for the University of Toledo College of Nursing. He retired as the Chief of Aerospace Medicine.

He received his medical degree from Mayo Medical School, has a Master's in Public Health from Johns Hopkins University, and completed a Residency in Aerospace Medicine at the USAF School of Aerospace Medicine. He is board certified in Aerospace Medicine and Preventive Medicine.

Dr. Elliott is an Associate Fellow of the Aerospace Medical Association, and he chairs the Military Aviation Safety Subcommittee. He has authored and presented more than a dozen scientific papers on aerospace medicine topics.

Dr. Elliott is a private pilot with 1,000-plus hours of flying time and owns an aircraft. He and his wife, **Evelyn**, enjoy hiking, kayaking, and reading about history, physics, economics, and "conflict resolution"—keeping things sorted out with their two dogs and cat.



Email Dr. Elliott at: [James.R.Elliott@faa.gov](mailto:James.R.Elliott@faa.gov)

*Ms. Stoker is the Central Region Senior Medical Program Analyst.*



### Love That Airplane!

**A**ND WHY not love it? **Erdinc Ercan**, an exchange physician from Eskisehir, Turkey, had just flown it all by himself, soaring over a big hurdle in his pursuit of the major goal of his lifetime: learning how to fly. He had just completed his first solo flight on June 5, 2012, and was well on the way to earning his private pilot license.

Capt. Ercan, an Aerospace Medicine Specialist at the Turkish Air Force Fliers' Health, Research, and Training Center, arrived at the Civil Aerospace Medical Institute (CAMI) in December 2011 and began planning to start flying lessons, despite having a full work schedule.

After studying late nights on his own time and dollar, he took his first flying lesson on March 15, 2012. He was determined to see this venture through to successful completion, with no excuses, because "if you start something, you have to finish it," he said.

Finish it he did. He soloed in 14 hours in June and successfully completed his checkride in 50 hours on August 5. In so doing, Dr. Erdinc became the first exchange physician to learn to fly while working full time at CAMI.

When he returns to Turkey in December, Dr. Erdinc will need to pass nine examinations and a flight check ride to become a Turkish licensed (JAA) pilot: The goal of a lifetime.

When asked what he learned about FAA safety standards and flying in this country, he replied, "You need lots of discipline because pilots must learn many things and know how to apply this knowledge appropriately."

During his time at CAMI, Dr. Ercan has studied the FAA medical certification standards, taken courses to become certified as an AME, and followed his professional interests in human factors research. He has also translated two pilot safety brochures into the Turkish language and is working on an original brochure in English (see the FAA website):

[www.faa.gov/go/pilotsafetybrochures](http://www.faa.gov/go/pilotsafetybrochures)

The Office of Aerospace Medicine's International Exchange Visitor program allows qualified foreign specialists to enter the U.S. for up to three years to conduct studies and exchange information at FAA facilities.



# Civil Aerospace Medical Institute Observes 50th Anniversary

By Mike Wayda

**T**HE CIVIL AEROSPACE Medical Institute (CAMI) observed the 50<sup>th</sup> anniversary of its dedication on October 21, 2012. The official 1962 dedication, a gala outdoors ceremony complete with a brass band and tour of the facilities, attracted a Senator, three Congressmen, and the FAA administrator to the new research facility to join in the celebration.

Local Oklahoma business leaders and officials participated, including one of the most famous military and civilian flight surgeons, **Randolph Lovelace, II, MD**. On the previous day, a scientific seminar had been held, and that night, the immortal **Jimmy Doolittle** gave a banquet talk in downtown Oklahoma City in honor of the Institute.

The FAA's medical and scientific staff from other locations would now be located in the new 22,000 square foot facility.

In the 50 years since the inauguration of the new facilities, CAMI has achieved numerous milestones in aviation safety and is perhaps best known to aviation medical examiners (most of whom have toured the facilities) as the place where the Aerospace Medical Certification Division and the Aerospace Medical Education Division staffs reside. These and the other activities will be described for your information.

**Aerospace Medical Certification.** Approximately 400,000 airman medical certification applications are received each year by the AMCD; of that number, 20-25% require further review by legal instrument examiners and staff physicians. Their extensive databases help them evaluate the remaining 80% of applications received. Medical standards are being evaluated for commercial space travelers, unmanned aerial vehicles, and crewmembers of the not-too distant future.

**Aerospace Medical Education.** The Education Division helps to promote aviation safety through educational programs that:

- Train and evaluate aviation medical examiners, now about 3,400 physicians.
- Train civil aviation pilots and FAA aircrews in aviation physiology and global survival skills.
- Provide safety of flight information to aviators and the flying public.

The CAMI research organization includes:

- **Human Resources** researchers study the behavior and performance of people at work in aviation: human factors—especially for safety-critical jobs like those of aircrew members and air traffic controllers. Because aviation is a demanding work environment, CAMI researchers look for ways to achieve harmony between individuals and their tasks—to improve performance, efficiency, and aviation safety.



• The **Aerospace Medical Research Division** investigates specific issues applicable to improving safety, health, security, mediation of injury, and enhancing survivability of passengers and crew in civilian aerospace operations. The two major research areas are: Bioaeronautical Sciences (Forensic Toxicology, Biochemistry, Functional Genomics, Radiobiology, and Bioinformatics) and Protection and Survival Biodynamics Research (Cabin Safety, Aviation Physiology, Medical, Vision, and the Autopsy Program).

CAMI's **Occupational Health Services Division's** professional medical staff offers emergency medical care, preventive medicine, and health awareness programs for Mike Monroney Aeronautical Center employees and students. These programs also touch the health and safety needs of airmen, as well as the flying public—whether they are in airports or aboard air carrier aircraft.

## Rededication

The CAMI building has recently been renovated to update the facilities, and a rededication ceremony will be held on December 12, 2012, to roughly correspond with the 50th anniversary date. Just like in 1962, many are invited to participate—distinguished friends, current and former colleagues, Senators, Congressmen, the FAA Administrator, local officials....

Best wishes to CAMI for its second 50 years of service to the American people.



### HOW MUCH THINGS COST

Average Cost of new house \$12,500

**1962**

Average Annual Income \$5,556

Average monthly rent \$110.00 per month

Average Cost of a new car \$3,125

Eggs per dozen 32 cents

Gas per Gallon 28 cents

President Kennedy set a goal of landing a man on the moon before the end of the decade.

The new hit on TV for that year was "The Beverly Hillbillies"

The first of the James Bond movies "Dr No" was a huge hit

—Source: Thepeoplehistory.com

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# Cervical Total Disc Replacement in a Military Helicopter and General Aviation Pilot

Case Report, by John Reaume, MD, MHSA, FS

*Cervical total disc replacement is a novel approach to treating cervical radiculopathy and myelopathy. The purpose of the procedure is to provide adequate decompression of the affected neural structures while preserving motion and, theoretically, preventing adjacent segment degeneration, which is a known risk in standard discectomy and fusion procedures. Federal Aviation Administration medical standards do not provide clear guidance on the use of these implants. The U.S. Army currently will grant waivers for the procedure on a case-by-case basis; however, the airworthiness of the cervical total disc replacement procedure requires further evaluation.*

## History

WHILE TRAINING ON night vision goggles during brown-out conditions in Iraq in July 2009, an otherwise healthy 34-year-old female Army reserve Blackhawk helicopter pilot experienced a hard landing and subsequently developed significant neck pain and right-hand numbness. Her symptoms worsened over the next several days and eventually triggered a visit to her flight surgeon. She had nine years of experience as a helicopter pilot, with 1,000 hours of flight time, holds a third-class FAA medical certificate, and flies a Cessna 172 recreationally.

Her symptoms were primarily unrelenting neck pain with numbness of her right thumb and forefinger. She was placed on a limited-duty and treated with physical therapy, non-steroidal anti-inflammatory medications, and finally an epidural steroid injection without significant relief of her symptoms. She received a complete radiological work-up, including plain films and an MRI, which revealed cervical spondylosis of multiple levels, most pronounced at C5-C6, as well as a herniated nucleus pulposus with right neuroforaminal encroachment at C5-C6. There was some concern about whether she had carpal tunnel syndrome, but electrodiagnostic studies ruled this out. She underwent a C5-C6 total disc replacement in September 2009 and had an uncomplicated post-operative course.

## Aeromedical concerns

The main aeromedical concerns with the above cervical syndromes are their potential impact on mission availability, functional limitations, task distraction, and treatment side effects. There are also concerns for disease progression from G-Forces, ejections, hard-landings, prolonged sitting, frequent awkward postures, wearing of heavy equipment and career-long exposures to vibration.<sup>1</sup>

Regarding the use of cervical disc replacement, the U.S. Army waiver guide has stated that “Cervical disc implants show promise for future options, but have not undergone the requested and required airworthiness evaluation at this time.” FAA guidelines have not specifically addressed the issue of cervical total disc replacement but do allow a range of

surgical options as long as the outcome from the procedures are good and that there is no significant complications that would impact the ability to safely fly.

To date, there have been only been a handful of 2-year outcome studies comparing cervical total disc replacement with standard cervical fusion procedures. These studies have shown similar good results in both groups of procedures, with maintenance of cervical motion noted in the disc replacement group.<sup>2</sup>

## Role of AME

The main role of the Aeromedical examiner in evaluating a patient who has had a cervical total disc replacement is to perform a thorough physical exam with emphasis on upper and lower extremity range of motion, strength, sensation and function. The evaluation should be performed in the context of the physical and functional demands required to safely control the specific airframe and/or work tasks required. Gaining copies of the spine surgeon’s operative and clinical notes to obtain evidence of spinal stability, good outcome, and opinion of airworthiness is imperative.

## Outcome

The patient had a C5-C6 total disc replacement with an uncomplicated post-operative course and resolution of her radicular symptoms. Following a 6-month period of recovery and periodic post-operative surgical appointments, including clinical and radiographic examinations, she returned to her military flight surgeon for flight clearance. Given stable implant fixation and normal neurological function, she successfully returned to her reserve duties as a Blackhawk pilot. Her FAA medical exam followed a similar course, and she was granted a third-class medical certificate. Her favorable outcome from this procedure provides some support for cervical disc replacement becoming a viable treatment option for cervical radiculopathy and myelopathy. As experience with the implants increase, their place in treatment options for aviation personnel will become further defined.

*Continued* →

## Etiology

Cervical spondylosis refers to age-related degenerative changes occurring in the cervical spine. There is a high prevalence of this condition in the general population, with radiographic changes noted in 25% in those less than age 40, 50% in the 40 to 60 year-old age group, and 85% in those older than 60.<sup>3</sup> Rotary wing pilots may be especially susceptible to cervical derangements due to factors such as helmet weight and airframe vibration.<sup>4</sup>

Regarding cervical pain and cervical disk disease, there are three main clinical entities of concern. These include axial neck pain, cervical radiculopathy, and cervical myelopathy. Axial neck pain is most often due to muscular and ligamentous factors related to improper posture, work requirements requiring excessive cervical strain, and muscle fatigue. Prior neck injury is an independent risk factor. Degenerative changes at the cervical disc and facet joints can cause symptoms. Nerve fibers and nociceptive nerve endings are present in the peripheral portions of the disc and the facet joints.<sup>5</sup> Discography and provocative injections of the facet joint have supported the role of these structures in causing pain.<sup>6</sup>

Cervical radiculopathy refers to spinal nerve root compression that results from biochemical and biomechanical changes occurring with aging, as a consequence of a degenerative cascade. With loss of intervertebral disc height, posterior portions of the disc bulge into the spinal canal and neuroforamina, the ligamentum flavum and facet joint capsule infold and osteophytes form.<sup>7</sup> All of this leads to narrowing of the spinal canal and neuroforamina. Common symptoms include neck pain, coupled with cervical dermatome specific sensory and motor symptoms.

Cervical myelopathy results from spinal cord compression due to the same processes that occur in cervical radiculopathy. It is distinguished by upper motor neuron symptoms, including hand incoordination, gait ataxia, and abnormal reflexes.<sup>8</sup> Patients with myelopathy will often notice emerging difficulty with fastening buttons and handwriting, in addition to their neck symptoms.

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## About the author

*John Reaume, MD, MHSA, FS, is an active duty Major in the U.S. Army and is currently the brigade surgeon for the First Armored Division's Combat Aviation Brigade, Ft. Bliss, Texas. He is board certified in aerospace medicine and is board eligible in occupational medicine. He has attended the Aeromedical Examiner Basic Course at the Federal Aviation Administration Civil Aerospace Medical Institute (CAMI) in Oklahoma City and wrote this report while on rotation as a Resident in Aerospace Medicine at CAMI.*

# Radiofrequency Ablation for an Airman With Paroxysmal Atrial Fibrillation

Case Report, by Todd A. Gardner, MD, MPH

*Atrial fibrillation is the most common cardiac arrhythmia. It impairs hemodynamic function and increases the risk of stroke and is, therefore, of significant aeromedical concern. Rate control is the preferred management strategy, but restoration of sinus rhythm is important in patients in whom rate control cannot be adequately achieved and in those who have persistent symptoms despite rate control. Antiarrhythmic drug therapy often fails to maintain long-term restoration of sinus rhythm and is often not well tolerated. Radiofrequency catheter ablation has gained acceptance as a treatment option for restoring sinus rhythm in patients with normal left atrial size who have failed antiarrhythmic drug therapy. With careful cardiovascular evaluation and follow-up, current practice has been to allow for Special Issuance of a medical certificate to airmen of any class that have been treated with radiofrequency ablation for atrial fibrillation.*

## Case Presentation

A 52-year-old commercial pilot with a history of paroxysmal atrial fibrillation presented to his aviation medical examiner for a first-class medical certificate. He had a total of 7,500 flight hours, with 100 hours flown in the preceding six months. He complained of having palpitations during previous episodes of atrial fibrillation but denied any history of chest pain, shortness of breath, or syncope and specifically noted that he had never been incapacitated by his symptoms. He had no evidence of underlying coronary artery disease, hypertension, valvular disease, or thyroid dysfunction. His cardiologist had prescribed atenolol and flecainide, and anticoagulation therapy with warfarin had been initiated. After experiencing recurrent episodes of symptomatic atrial fibrillation over the subsequent months while on antiarrhythmic drug therapy, the decision was made to perform radiofrequency catheter ablation with pulmonary vein isolation in an attempt to restore sinus rhythm.

## Case Discussion

Paroxysmal atrial fibrillation presents a significant aeromedical concern because of its sudden and unpredictable onset and associated hemodynamic symptoms that may impair flight safety. A sudden change from normal sinus rhythm to a rapid supraventricular rhythm may cause a drop in the arterial blood pressure, while left ventricular diastolic pressure and pulmonary artery pressure increase. Loss of the atrial contribution to cardiac output and a rapid ventricular rate response may impair cardiac performance and exercise capacity. These changes are partly reversed by reflex autonomic mechanisms but are sometimes pronounced enough to induce syncope or near-syncope. These hemodynamic effects are less marked in chronic atrial fibrillation, which is mostly well-tolerated, although poor cardiac response to stress and reduced exercise tolerance may be present. Both paroxysmal and chronic atrial fibrillation, treated by rate or rhythm control, generally require long-term oral anticoagulation, unless the risk of anticoagulation therapy exceeds the benefits (1).

Until the mid-1990s, paroxysmal and chronic atrial fibrillation had been widely regarded as incompatible with aviation duties, and airman presenting with these conditions were often unconditionally and permanently grounded (2).

Only those airmen with a single, isolated episode of atrial fibrillation precipitated by a reversible underlying cause and with complete recovery (i.e., “holiday heart syndrome”) were typically considered for flying duties and only after a six-month grounding period and complete and normal cardiac evaluation. The primary concern with paroxysmal and chronic atrial fibrillation was the considerable risk of thromboembolic complications, even in the absence of underlying cardiac disease, coupled with the guidance at the time that warfarin was not compatible with flying duties.

These policy guidelines relaxed slightly over the following decade. The military services began to grant waivers (limited to low-performance, dual-control aircraft) to designated aviators with paroxysmal or chronic atrial fibrillation without hemodynamic symptoms (3). For civil aviation, the FAA began granting special issuance to airmen with paroxysmal and chronic atrial fibrillation on antiarrhythmic therapy and on oral anticoagulation, with careful follow-up and monitoring of the International Normalized Ratio (INR). Waivers also were granted in the military and by the FAA for radiofrequency ablation performed for pre-excitation syndromes and supraventricular tachyarrhythmias.

Unfortunately, radiofrequency ablation for atrial fibrillation is not curative. Unlike radiofrequency ablation for supraventricular tachyarrhythmias and for atrial flutter (both with success rates approaching 100%), the recurrence rate in the setting of ablation for atrial fibrillation is not insignificant. Experience has shown that recurrence rates range between 30 and 50 percent and are higher in patients who had persistent atrial fibrillation, compared to those with single-episode or paroxysmal atrial fibrillation (4). In the longest follow-up study to date, 29% of patients remained arrhythmia-free at five years following a single ablation procedure. One-half of patients required repeat ablation. Most recurrences occurred during the first six to 12 months, but some did not occur

*Continued* →

### Atrial Fibrillation

Atrial fibrillation (AF) is the most common cardiac arrhythmia with an estimated prevalence of 0.5 to 1 percent in the general population. It is characterized by uncoordinated atrial depolarization with consequent deterioration of mechanical atrial function. This can result in hemodynamic symptoms with reduced exercise capacity and impaired +Gz tolerance (7). Furthermore, thrombus formation in the left atria due to stasis can result in systemic embolization, resulting in cerebrovascular accidents or transient ischemic attacks. Lone atrial fibrillation refers to atrial fibrillation in the absence of underlying cardiac pathology (e.g. valvular disease and hypertension) and is commonly classified as paroxysmal, persistent, or permanent. Paroxysmal atrial fibrillation is intermittent and self-terminating within 7 days. Persistent atrial fibrillation lasts longer but may be terminated by pharmacological or electrical cardioversion. Permanent atrial fibrillation implies either that cardioversion has failed or that the decision has been made to allow atrial fibrillation to continue without further efforts to restore sinus rhythm (7, 8).

Current therapy for atrial fibrillation involves ventricular rate control using AV-nodal blocking medication and antithrombotic therapy to prevent systemic embolism and stroke. Antiarrhythmic drug therapy may be beneficial in patients with symptoms attributable to atrial fibrillation despite adequate rate control. However, antiarrhythmic drug therapy maintains sinus rhythm in no more than 50% of patients on average after 1 year and is frequently discontinued due to side effects or adverse drug interactions (8).

Radiofrequency ablation (RFA) has gained acceptance as a nonpharmacological therapy and appears to be more effective than antiarrhythmic drug therapy in preventing recurrent atrial fibrillation. The procedure involves the percutaneous introduction of catheters into the heart and application of thermal energy at targeted proarrhythmic sites within the atrial myocardium (most commonly in or near the pulmonary vein ostia). Circumferential pulmonary vein isolation is the most commonly performed ablation procedure, with a success rate of 50% to 70% (8). Complications of RFA are rare but can include cardiac tamponade and pulmonary vein stenosis. Recurrence of atrial fibrillation following ablation has been shown to occur in 30 to 50 percent of patients, most within the first 6 to 12 months. Few long-term follow-up studies have been done, but one study has shown recurrence of atrial fibrillation even after 3 or more years of apparent arrhythmia control (5). Current guidelines of the Heart Rhythm Society/European Heart Rhythm Association/ European Cardiac Arrhythmia Society assign a class IIa recommendation to RFA as an alternative to antiarrhythmic drug therapy for prevention of recurrent atrial fibrillation in symptomatic patients with little to no left atrial enlargement (9).

until three years or longer after apparent arrhythmia control following ablation (5).

Current FAA policy recommends an observation period of at least three months following radiofrequency ablation before consideration for medical certification. A subsequent physician's narrative report, an exercise stress test, 24-hour Holter monitoring, and a 2-D echocardiogram are required. FAA policy does not require continuation of oral anticoagulation following successful ablation. However, anticoagulation is required for paroxysmal or chronic atrial fibrillation in airmen that have had a transient ischemic attack (TIA), systemic thromboembolism, moderate to severe left ventricular dysfunction (EF <40%), mitral valve disease, coronary artery disease, prosthetic heart valve, and just age >75. Monthly INRs are required and must be reported to the FAA every six months for first-class and every 12 months for second- and third-class airmen. The INR must be maintained between 2.0 and 3.0 at least 80% of the time (6).

### Case Outcome

Four months following his radiofrequency ablation, the airman underwent a complete cardiovascular evaluation. His exercise stress test showed no evidence of ischemia, and 24-hour Holter monitoring on three successive studies showed normal sinus rhythm with no recurrence of atrial fibrillation. Echocardiography revealed no chamber enlargement, wall motion abnormalities, or significant valvular disease. He had been taken off flecainide a few weeks after his ablation, and his anticoagulation had been discontinued. His only current medication was low-dose atenolol. He reported no further symptoms since his ablation. Based on his favorable evaluation with normal studies, Authorization for Special Issuance of a first-class medical certificate was granted. Required follow-up will include annual cardiovascular evaluation, including repeat 24-hour Holter monitoring.



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### About The Author

Todd A. Gardner, MD, MPH, is board certified in Family Medicine and Aerospace Medicine. He currently serves on active duty in the U.S. Navy and is assigned as Senior Medical Officer on the USS THEODORE ROOSEVELT. This report was written while rotating at the Aerospace Medical Certification Division of the FAA Civil Aerospace Medical Institute.

## Aerospace Medical Education Division News

By Brian Pinkston, MD

HOPEFULLY BY NOW you have scanned this issue of the *Federal Air Surgeon's Medical Bulletin* and found the links to useful areas on the FAA website. Mr. **Mike Wayda**, our editor, thought the *Bulletin* could be a great vehicle for aviation medical examiners to access tools being developed at the Civil Aerospace Medical Institute. We are excited about this idea, and we look forward to any recommendations for improvement that you may identify.

There are some particularly interesting new links that you may desire to utilize. First, please take a moment to see the new MedXPress video at

[www.faa.gov/tv/?mediald=554](http://www.faa.gov/tv/?mediald=554)

This 3-minute video targets airmen who have not previously used MedXPress and desire an easy explanation and walkthrough of the process. We also have a brochure that provides details and FAQs regarding MedXPress at

[www.faa.gov/go/pilotsafetybrochures](http://www.faa.gov/go/pilotsafetybrochures)

We have also been working on new educational tools for aviation medical examiners to improve examination quality and efficiency. In addition to some of the improvements that I have discussed in recent issues of the *Bulletin* through utilizing MedXPress and the Aerospace Medical Certification Subsystem, we have produced a video for improving ECG quality. ECG quality and limited AME interpretation remains an ongoing issue that slows down airman certification, and this video will hopefully answer questions for some AMEs and their staff. The video, entitled *ECGII: Aeromedical Management of ECG Abnormalities Detected as Part of an FAA Exam* is online at

[www.faa.gov/tv/?mediald=557](http://www.faa.gov/tv/?mediald=557)



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## Aviation Medical Examiner Seminar Schedule FAA Civil Aerospace Medical Institute

2012 Seminar		
November 16–18	Denver, Colorado	Ophthalmology-Otolaryngology-Endocrinology Theme (1)
2013 Seminars		
January 25–27	Tampa, Florida	Cardiology Theme (1)
February 25–March 1	Oklahoma City, Oklahoma	Basic (2)
March 15–17	Dallas, Texas	Neurology Theme (1)
May 13–16	Chicago, Illinois	AsMA (3)
July 15–19	Oklahoma City, Oklahoma	Basic (2)
August 9–11	Washington, D.C.	Ophthalmology-Otolaryngology-Endocrinology Theme (1)
September 26–28	Orlando, Florida	CAMA (4)
October 28–Nov. 1	Oklahoma City, Oklahoma	Basic (2)
November 15–17	Sacramento, California	Cardiology Theme TENTATIVE (1)

### NOTES

- (1) A 2½-day theme aviation medical examiner (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.
- (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). 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 website: [www.civilavmed.com](http://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.*