



# Federal Air Surgeon's Medical Bulletin






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

U.S. Department of Transportation  
**Federal Aviation Administration**

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## Quick Fix

### AOPA's 'TurboMedical' Is NOT Approved as a Substitute for Form 8500-8

By Richard 'Dick' Jones, MD

#### PROBLEM

The Aircraft Owners and Pilots' Association (AOPA) has developed an on-line tool for their members to assist them in completing their FAA medical examination form (Form 8500-8). The tool, TurboMedical, is a PDF version of our Form 8500-8 and even includes a dummy "FF" (medical certificate number). Airmen are completing the form on-line, printing a copy, and asking aviation medical examiners to accept them in lieu of completing one of the AME's forms.

#### RESULT

One of our AMEs accepted this form and successfully transmitted an examination into the Aerospace Medical Certification Subsystem, using the dummy "FF" number. The system accepted the number, since there were no duplicates already in the database. A second AME also accepted a TurboMedical form with the same dummy "FF" number and attempted to enter it into the AMCS, but this form was rejected by the system. Since most AME offices do data entry after the airman applicant has left the

*Continued on page 3*

### Seasonal Allergies or Sinus Infection?

*Aviators Who Spend Significant Time in the Air Should Keep Allergies Under Control*

By Christopher Blair, DO, MBA

**A**H, SPRING. Ah-*Chew!* that is. As one of my pharmaceutical reps once told me, spring can be summed up in one catchy phrase, "*Tis the season to be sneezing.*" Such is springtime in Texas.

Spring brings wonderful, warmer weather. And along with the seasonal changes, all manner of allergens take flight. Pets shed their winter coats. Trees and flowers pollinate. Dust and particulate matter from winter air ducts and air filters long overdue for a change add to the problems. Sneezing, itchy eyes, and sore throats drive patients into medical offices in spring droves.

An upper respiratory infection can present with symptoms similar to those of allergies, but infection can often be suspected if additional symptoms such as body aches, fatigue, or fever are present. Antibiotics can be helpful to treat an infection, but won't help in the case of allergies.

Still, untreated allergies may result in the eventual need for antibiotics.

*Continued on page 3*



## Audit of Designee Program Favorable to Aerospace Medicine

AME System Foundation of Airman Medical Certification Program

**I**N OCTOBER 2004, the General Accounting Office (GAO) issued a report on aviation safety that focused on the designee systems within the Federal Aviation Administration (FAA). As you may not be aware, in addition to the Office of Aerospace Medicine (OAM), the FAA's Flight Standards Service and the Aircraft Certification Service manage comprehensive and critical designee systems.

The GAO report identified inconsistent oversight and application of program policies as key weaknesses of the designee programs. The report also noted a lack of designee compliance with

### The Federal Air Surgeon's Column



By Jon L. Jordan, MD, JD

FAA policy and an inability of the FAA to ensure that designees are in compliance. The report pointed to workload demands of FAA staff, insufficient training of staff with oversight responsibilities, and the limited usefulness of some FAA designee databases as three factors hindering designee oversight.

While there are a number of criticisms in the GAO report with which the FAA does not agree, FAA agrees with the recommendations contained in the report for improving designee systems. These recommendations include establishing a program to evaluate all designee programs, develop mechanisms to improve compliance with existing designee oversight policies, and upgrade databases to provide complete and consistent information on all designee programs and the extent to which oversight is occurring.

The good news for us is that the report is minimally critical of our management of the aviation medical examiner system. The report identified our practice of maintaining information on AME performance and activity levels and using that information, in conjunction with designee oversight, as an opportunity for FAA to address weakness in other designee programs and provide more consistent designee oversight.

When I first started performing FAA airman medical certification examinations in 1968, I quickly recognized the importance of AMEs to aviation safety and to the efficiency of FAA's airman medical certification

system. This recognition was further enhanced when I joined the Medical Standards Division in 1969.

I must admit, my early impressions of the AME system were not all that favorable, and I believed that there was a lot of room for improvement, both in the management of the system as well as the quality of our designees. However, a lot has changed in the passing of years, and I am pleased to report that my confidence in the AME system has taken a dramatic turn for the better. This is not to say that we have reached our goal of ultimate excellence of the system. I believe we have much work yet to be done.

Because OAM's designee system appeared to receive general approval by the GAO, Nick Sabatini, Associate Administrator for Aviation Safety, who has overall responsibility for FAA's designee systems, asked OAM to take the lead in an initiative to strengthen FAA's designee systems. This initiative is underway and I look forward to sharing with the other FAA Services our tools and philosophies for administration of the AME system. I also anticipate learning from these other Services methods that we could use to improve the AME system.

The bottom line is that I want to let you know how dependent the FAA is on designee systems and to express my appreciation to all AMEs who take their work seriously and conscientiously. The AME system is the foundation of our airman medical program, and without AMEs we simply would not be able to carry out our responsibilities for maintaining aviation safety. I am aware that for most AMEs, their motivation for performing FAA examinations and making medical certification decisions is to serve the public—not to make a profit.

Thanks for your service to the Federal Aviation Administration and to the flying public!

JLJ

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## Quick Fix from page 1

office, a major problem results when it becomes obvious the airman must return to the AME's office to complete a "legal" form.

### SOLUTION

Require the airman to complete and sign a valid FAA Form 8500-8 in your presence or witnessed by your staff. The applicant may use the TurboMedical document to assist in this process, but the document itself is not to be used in lieu of the FAA form.

*Dr. Jones manages the Civil Aerospace Medical Institute's Aerospace Medical Education Division.*



## Allergies from page 1

Much like a swimming pool that goes uncleaned, the congestion and stagnation that go along with allergies can actually be a fertile breeding ground for infection.

In the flying public, this can be an especially problematic phenomenon. Due in large part to the pressure changes of ascent and descent, bacteria that might otherwise be harmless can be forced into swollen sinus passages or ear canals and there trapped, becoming seeds for a nasty infection. Therefore, any person complaining of ear pain, sinus pressure, or an inability to equalize during or after a flight should be seen by a physician trained in the special needs of flying professionals *before* taking off again.

Pilots, flight attendants, and any other professional who spends significant time in the air should be particularly vigilant to keep allergies at bay—and quick to visit a qualified aeromedical doctor to get allergies under control. Early detection and treatment can help to avoid possible infection, eardrum rupture, or even more serious problems.

*Dr. Blair is an FAA aviation medical examiner and the medical director for MedComm Neighborhood Medical Care, Coppell, Texas.*



## 2004 AME Survey Results Published

*'Mostly Positive' Findings, Room for Improvement*

By Dana Broach, PhD, Melanie Dennis, and David Schroeder, PhD

*The Office of Aerospace Medicine (OAM) has many customers. Among these are the flying public who depend on a safe and efficient air transportation system, airmen, and air traffic controllers who operate within the system, and Federal Aviation Administration (FAA) employees who provide oversight of the system. Sometimes overlooked are the designees who provide an essential interface between the FAA and the people we serve. I believe that Aviation Medical Examiners (AMEs) are also customers of OAM and that providing AMEs with good customer service translates into better customer service for users of the aviation system. To achieve an understanding of the quality of service that we provide AMEs, I asked the people in the Human Factors Research Division at the Civil Aerospace Medical Institute to survey AMEs regarding their experiences in obtaining the support and information from FAA that enables them to effectively and efficiently carry out their AME responsibilities. The following are the results of that survey.*

—Jon L. Jordan, MD, JD  
Federal Air Surgeon

THE RESULTS OF the 2004 survey of Aviation Medical Examiners (AMEs) were briefed to the Federal Air Surgeon and his management team in mid-April. With 1,643 participants, the results of the 2004 survey are broadly representative of the domestic AME community. Highlights include:

- 88% of the AMEs were **satisfied** or **very satisfied** with their interactions with the Aeromedical Certification Division (AMCD)
- 88% were **satisfied** or **very satisfied** with their interactions with their Regional Flight Surgeon (RFS)
- 89% felt that their RFS provided **overall quality service**
- 86% felt that the AMCD provided overall quality service to a **considerable** or **great extent**
- 70% were satisfied to a **considerable** or **great extent** with the overall performance of the Document Imaging and Workflow System

The view of the Internet-based system for submitting airman medical examinations is more positive in the 2004 survey than in 2000. For example, in 2004, 41% of participating AMEs felt that the Internet-based system performed according to their expectations to a **great extent**, compared to 16% in the 2000 survey. About 31% of AMEs in 2004 felt that the Internet-based system made their workload easier to a **great extent**, compared to 10% in 2000. And the proportion of AMEs who felt that the Internet-based system simplified the processing of examinations to a **great extent** nearly tripled in the 2004 survey to 33%, compared to 12% in 2000.

But there is always room for improvement, as the survey results demonstrate. For example:

- 34% of Senior AMEs were pleased to a **moderate extent** (or less) with the digital ECG system
- 32% of AMEs experienced delays **at least occasionally** or **more often** when trying to contact the AMCS Hotline
- 41% of AMEs felt that long hold times hampered their ability to reach the AMCD **to a moderate extent** or **more**
- 35% felt that the lack of toll-free numbers also hampered their ability to reach the AMCD

Overall, the survey results indicate that the services provided to AMEs are viewed positively. The perception of the Internet-based system for submitting airman medical examinations is much more positive in 2004 than in 2000. The survey also shows that AMEs clearly understand the importance of the medical certification process to safety in the National Airspace System.

The complete briefing on the results of the 2004 AME survey is available for download at:

[www.faa.gov/other\\_visit/aviation\\_industry/designees\\_delegations/designee\\_types/ame/](http://www.faa.gov/other_visit/aviation_industry/designees_delegations/designee_types/ame/)

*Dr. Dana Broach is a Personnel Research Psychologist and Ms. Melanie Dennis is a Psychology Technician; both work in the Civil Aerospace Medical Institute's Aerospace Human Factors Research Division, which is managed by Dr. David Schroeder.*



## International AMEs To Get Fast Online Service

*Requested Enhancements Will Also Help U.S. AMEs*

By Richard Carter, DO, MPH

**M**ANY AVIATION MEDICAL Examiners (AMEs) have challenged the FAA to create a faster, more user-friendly version of the on-line Airman Medical Certification System (AMCS). International AMEs have been particularly hampered by lengthy mail delays and limited Internet service.

Looking for a solution to this issue, Dr. **Warren S. Silberman**, Aerospace Medical Certification Division (AMCD) manager, responded by organizing an intensive, one-day certification conference at the Civil Aerospace Medical Institute on March 14, 2005.

Leading the international effort to generate new initiatives was the Saudi Arabian Airlines Medical Services Department (SAAMSD), represented by Dr. **Osama A.H. Zahran**. Conference members included Aerospace Medical Certification Division medical officers and support staff members.

*The key to faster certification*, is a faster Airman Medical Certification System. A new, enhanced version of AMCS is coming on line (exact date not yet determined). This new system is particularly important to many international AMEs who are now enjoying improved service by their Internet providers. The new Internet-based AMCS will not require any additional effort by the user.

A major feature of the new system, dubbed "Fast AMCS," is *enhanced validation*. Validation minimizes errors and unnecessary delays. For example, when distant vision readings submitted are out of range, Fast AMCS will generate the warning: *Vision Does Not Meet Standards*. The user will have the opportunity to correct the error or make

*Dr. Carter is a medical officer in the Civil Aerospace Medical Institute's Aerospace Medical Certification Division.*

### The Saudi Arabian Airlines Medical Services Department



Dr. Mohammed Bafakeeh  
General Manager



Dr. Osama Bahannan  
Assistant General Manager

The SAAMSD has six aviation medical examiners that provide aeromedical consultation and examination services for approximately 1,450 pilots.

comments in Block 60 explaining the situation. Required fields that are omitted will generate a prompt when the user reaches the SUBMIT icon. Final submission will not be allowed until the omissions are corrected.

Other Fast AMCS features provide:

- Links to the online AME Guide
- Access to view previously transmitted exams
- Simplicity—3 pages rather than 7
- Time-saving validation and propagation
- More options to query airman information
- User-friendliness

First Class medical certificates also require electronic EKG transmission, vital for fast medical certification of airline pilots. EKG systems have been a particularly challenging problem for international AMEs. Saudi Arabian Airlines, the largest airline in the Middle East, is developing a system that will link directly to AMCD EKG program analysts.

This new system will be available in time to complement the new version of AMCS. According to SAAMSD's general manager, Dr. **M. Bafakeeh**, "In our Aviation Medicine Department, we have a very advanced Internet service that we anticipate will be quite compatible with the new online version of AMCS."

*Continued on page 5*

### Try It; You'll Like It!

WE HOPE OUR INTERNATIONAL AMEs will seriously consider transmitting examinations to us through the Internet. Transmitting examinations can actually be more efficient than typing the back of the form. Internet submission will definitely eliminate the uncertainty many of you experience in wondering when an examination is going to be received by the Aerospace Medical Certification Division so that they may begin processing.

So far, only 24% of you are transmitting, and we continue to have about 20% of our examinations arriving more than 60 days late—usually in the mail. If the FAA does not take action on an issued certificate within 60 days of issuance, reversal or revocation can be difficult, even if there is a significant medical condition requiring further evaluation.

Therefore, 20% of International examinations arriving after 60 days are UNACCEPTABLE!

We strongly suggest you request a username and password by E-mail at:

9-amc-aam-certification@faa.gov.

We will be emphasizing this request by letter shortly and advise you to act now to avoid the rush. Of course, we will clarify a process of requesting an exception to Internet use by those International AMEs whose individual circumstances do not permit electronic transmission, but we sincerely believe electronic transmission is preferable to "snail mail."

—Richard F. Jones, MD  
Manager, Aerospace Medical Education Division

## Sport Pilot: 'Tremendous Opportunity'

Dear Editor,

I noted some concern in the forum over the ability for pilots to exercise Sport Pilot privileges with a valid driver's license and a willingness to honestly self-certify; this in lieu of a formal exam by an AME.

I, for one, am all for this decision, and I see it as a very positive thing for medical examiners and U.S. aviation in general. I have a fairly large practice as an AME and I find that most if not all the pilots that I query value their medical; among the few who intend to exercise Sport Pilot privileges, none of them discuss the 'advantage' of avoiding the AME as a positive.

Sport Pilot has the potential to really stimulate the growth of aviation in the U.S.; growth that was nearly wiped out by liability [law]suits against manufacturers and the ridiculously high costs associated with flight training. If Sport Pilot is successfully implemented and the industry is properly stimulated, we will likely see a huge increase in flight students, the vast majority of which will learn to fly in Sport-Class airplanes and then move on to larger and more complex aircraft.

AMEs have the tremendous opportunity to participate in this revitalization of general aviation in the USA through efforts pointed at education in forums like Experimental Aircraft Association meetings and even helping their local Flight Standards District Offices out by being available for assisting in FAA seminars.

As a Senior AME, Commercial Pilot, and lover of all things that fly, I have not been as excited about the future of aviation in the USA since I was a young boy watching **Neil Armstrong** place his foot on the moon. The Sport Pilot initiative is a very good thing indeed.

*Todd Fredricks, DO  
FAA Senior AME  
U.S. Army SFS, Amesville, Ohio*



## Pre-Diabetes Certification

Dear Editor,

I read with interest your article ["Pre-Diabetes," by Dr. Douglas Files, *FASMB* Vol. 43, No. 1, p. 4] concerning pre-diabetes in which you allow someone with a fasting blood sugar of less than 126 to fly even though they may have a hemoglobin A1c [of] 8.9%. This suggests their average blood sugar over the last three months is 207. A person with a hemoglobin A1c of 8.9% is clearly diabetic. Why then, would you avoid treating this patient, much less allow him to fly?

*Benjamin J. Henderson, DO, AME  
Mobridge, S.D.*

Dear Dr. Henderson,

An FAA medical examination is not a preventive-type medical examination. As long as the applicant is not prone to hypoglycemia or hyperosmolar nonketotic coma, the Federal Aviation Administration will allow a medical certificate. An airman can have a hemoglobin A1c level as high as 9.0 if the conditions are as Dr. Files mentioned. We will not usually allow these airmen to participate in the AME-Assisted Authorization for Special Issuance program but, instead, follow them here at the AMCD. We generally leave it up to the treating physician to initiate treatment.

I hope this answered your concern and thanks very much to take the time to ask great question.

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



## Inexact Dates

*The following letter is from Dr. William A. Blank, an AME from La Crosse, Wis., in which he asks several excellent questions. We have room in this issue for only one of these questions; stay tuned for more. —Ed.*

Dear Editor,

How does an AME handle a date when the airman can't remember it exactly?

**We allow the AME to approximate the date. For example, use '01' for day and '01' for month if airman is not sure, with best estimate by airman as to the year of the visit. If the airman only remembers the year, 2004 for example, the correct entry would be 01/01/2004. If he can also remember the month, such as April, it would be 04/01/2004.**

—Aerospace Medical Certification Division



## INTERNATIONAL from page 4

This AMCD team effort with SAAMSD has created solutions for significant mission and safety concerns for Saudi Airlines. The key team objective was high-quality, expedited service for the airman.

Dr. **O. Bahannan**, assistant manager of the Aviation Medicine Department, applauded the team's outcomes: "I am particularly pleased that the new AMCS will allow us 'real time' transmission, essentially an instant record of our examinations to Oklahoma City."

Federal Air Surgeon, Dr. **Jon Jordan**, says he, too, was pleased with the team's results. The tasks accomplished during the daylong program were a "significant" contribution to the Office of Aerospace Medicine's efforts to support the international AME Program.

All AMEs are encouraged to look at the on-line support page, and view the upgrade details when accessible. You may also contact the AMCS unit staff:

(405) 954-3238

E-mail:

9-amc-aam-certification@faa.gov



## THE DREADED MEDICAL

*Just mentioning the Regional Flight Surgeon normally sends shivers up a pilot's spine.*

By Bill Cuccinello

**W**E ALL KNOW THE FEELING. *Sheer fright.* That time of year when we take the physical to renew our medical to prove that we are still fit to fly. And with the physical comes all the stress and anxiety that we bring to the aviation medical examiner's (AME's) office.

*Why are we so concerned, and what do we do about it?*

Well, for some pilots who fly for a living, it means their careers. For others, it may simply mean getting their wings clipped.

To answer the many questions surrounding the dreaded physical and to get more information as to what to do should something go wrong during the physical, we decided to go directly to the FAA Regional Flight Surgeons, Dr. **Paul Clark**, located at the FAA Regional Office in Burlington, Mass.

Just mentioning the Regional Flight Surgeon normally sends shivers up a pilot's spine. Somehow, we think of the Flight Surgeon as a huge ogre who sits high above in an ivory tower, much like the Grand Oracle of Delphi, and dispenses simple yes's or no's, and mostly no's on your medical. How surprised we were! No way, no how is this true.

After meeting Dr. Clark, you realize how wrong we have been. We found him to not only be exceptionally knowledgeable regarding aviation physicals but very compassionate regarding pilot problems.

But it's understandable. He comes from a "flying family." His father was a top executive with a regional airline.



He had two brothers who flew— one retired from Delta Airlines — and a sister who recently retired number-one in seniority as a flight attendant for Air Canada.

Dr. Clark, originally from Prince Edward Island, served with the Canadian Air Force. He moved to Portland, Maine, in 1978, where he practiced medicine and later, in 1982, became an aviation medical examiner for the FAA. In 1989, he moved to Nashua, N.H., as Flight Surgeon at the Boston Center.

There are nine regional flight surgeons in the country, each responsible for the review of questionable medicals in their respective region. The medical certification review program in the regions was recently increased by the Federal Air Surgeon to help alleviate the tremendous workload handled by the medical division in Oklahoma City.

A major step was recently established by the Federal Air Surgeon, **Jon Jordan**, M.D., in an additional effort to reduce the delay in medical certification. Entitled Aviation Medical Examiner-Assisted Special Issuance (AASI), AMEs are now allowed to issue and reissue Special Issuance medicals for about 20 medical conditions after initial approval from FAA officials. This should help

reduce the backlog in Oklahoma City and allow pilots with relatively simple Special Issuance problems be approved on the spot in the AME's office.

Recently, Dr. Clark was among seven medical officers that underwent 28 hours of intensive work in Oklahoma City, generating 724 medical review decisions for airmen pending needed medical authorization to fly. This "Tiger Team," as it is called, is an elite group of highly qualified experts that tackle time-sensitive problems. The Medical Certification Division Manager, Dr. **Warren Silberman**, initiated the program to improve customer satisfaction by reducing a backlog of cases. The intensive effort highlights another step in the FAA's commitment to service medical certification.

When asked what pilots could do to expedite their physical, Dr. Clark replied, "If you feel you have any medical problems such as high blood pressure, eyesight, or other problems, it's normally a good idea to see your own doctor first to assess your condition, and if necessary, resolve the condition before you meet with the AME. Oftentimes, your doctor can write a letter, which will explain the situation. It'll certainly facilitate any paperwork with the FAA you might have to encounter."

"Some people become anxious about the examination, and this, too, tends to raise blood pressure. It's the 'white coat syndrome.' In some individuals, anxiety can raise the pressure substantially. Pilots who tend to become apprehensive should tell the AME promptly. It allows the doctor to take multiple measurements for a more accurate reading. This is especially important when visiting a new doctor."

"Many pilots face this problem each year as their medical expiration date rolls near. The problem is twofold. First, aviation is one of the few professions that require medical certification on an annual basis to perform the job. Lose your medical and you lose your livelihood. That, in itself, creates a lot of pressure.

*Continued* ➤

*This article is reprinted with permission from the spring-winter issue of the Hanscom Beacon, a quarterly newsletter for "pilots, mechanics, and anyone connected with aviation" in and around Hanscom Field. Located about 20 miles northwest of Boston, Mass., Hanscom Field is part of the towns of Bedford, Concord, Lexington, and Lincoln, world-renowned for their rich colonial history and tradition. On its south side, the airfield is bordered by one of the Commonwealth's most important sites, Minute Man National Historic Park. The author is a pilot and editor of the Hanscom Beacon.*

Second, pilots tend to be controllers. Pilot personalities reveal that pilots are strong-willed leaders who like to be in charge. They like to be in control of day-to-day situations, and that trait is denied when a pilot walks into the doctor's office. Now someone else is in control, not only of the exam but of his or her future as well."

Dr. Clark continues, "If you have questions, you can always go to our Web site, <http://www.cami.jccbi.gov/index.html>. That's the main site for the FAA Office of Aerospace Medicine, Civil Aerospace Medical Institute (CAMI). There's a wealth of information available there in addition to other FAA Web sites."

The AOPA site also has a section on drugs or pharmaceuticals that are allowed while flying. Oftentimes, AMEs may not be able to answer medically related flying questions of pilots. As Dr. Clark says, "If your AME is not able to answer your question, feel free to call your Regional Flight Surgeon direct. There are always modifications or changes being made, and usually the flight surgeon is kept abreast of them."

One important aspect pilots should appreciate: Regional Flight Surgeons don't like to "clip the wings" of pilots. They realize many pilots depend on their physicals for their livelihood, while others simply enjoy the excitement of flying in the wild blue.

"If your medical is denied," suggests Dr. Clark, "don't just automatically call it quits if you're intent on flying. Pursue it. Check to see what must be done to rectify the situation."

"Only 0.7% of all airmen are denied certification. This is reduced to less than one-half of one percent when airmen follow up and provide the requested information, certainly far better than the figures for life-insurance applicants. With approximately 450,000 pilot exams per year, that's a pretty good record."

"However," as Dr. Clark explains, "there may be a time when we have to call it quits. If, at any time, you feel

your reflexes are not up to par or you experience any type of dizzy spells or strange feelings, perhaps it's time to reassess your health. Safe flying demands a pilot with good, proficient skills and a healthy condition."

"Remember," he continued, "only you know how you physically feel. If you're tired or stressed out, or if you've been taking 'meds' that are disqualifying, don't fly. Use your good pilot judgment to decide if you're safe to fly that day."

Dr. Clark went on to say, "If you have some specific medical problems and need more information, start with your AME. A list of AMEs can be found on our CAMI Web site." In addition, the Aviation Counselors of New England list the regional AMEs on their Web site.

Many pilots question eyesight surgery. Any vision corrective surgery must be reported if it has potentially adverse effects with flying duties. That also includes lens implants. A report of your eye evaluation should be presented to your AME. If you were to seek a Commercial rating, in the past there were certain vision standards for a class-II medical, but now there are no uncorrected limits, providing your eyesight is correctible to 20-20.

Many other cases require [that] you discuss medical issues with your AME, such as benign positional vertigo, prostate cancer, diabetes mellitus. In short, discuss any questions you might have with your AME prior to the physical. If in doubt, you can always call the Regional Flight Surgeon.

Recently, the Sport Pilot ruling came into effect, stating that only a driver's license is needed for a medical. But if you have [had] a denial, the Sport Pilot rule states that if an individual's most recent application for an FAA medical certificate has been denied, suspended, or revoked, that person may not use a driver's license as a medical certificate until the denial is cleared from the record.

Many conditions causing denial in the past are no longer cause for denial. An estimated 80% of all denials are simply

caused by the applicant not correctly providing all the paperwork or medical tests requested. These can be corrected simply by providing the missing information. Once the record is cleared by the issuance of a medical certificate, the applicant never need go through this again but can use the valid driver's license in lieu of a medical certificate.

And as we are all aware, gliders (including motorgliders) and balloon Sport Pilot licenses do not require a medical or driver's license. So if you lose your medical, it may not necessarily mean that you must give up flying. Remember, if your medical is denied, you have the right to appeal. But a denial by the AME is *not* a denial by the Administrator, whereas a denial by the Federal Air Surgeon, the Manager of the Certification Division in Oklahoma City, or the Regional Flight Surgeon *is* considered a denial by the Administrator. Incidentally, if you are denied, you must (apply) request reconsideration of the denial within 30 days; otherwise, it is considered you accept the denial and are withdrawing the application. Further information can be found in Part 67 of the Federal Aviation Regulations, which outline the appeal process for applicants who are denied medical certification.

So as we mentioned, the dreaded physical doesn't really have to be dreaded after all. There are many ways to fare better during the AME's examination. If you have a problem, contact your regular doctor first to rectify the situation or have him write a letter to the AME describing your plight. If in doubt, present the question to the Regional Flight Surgeon's office.

As one pilot recently said to me as we flew along, "We are the luckiest people in the world. Here we are, at our age, doing exactly what we want to do—enjoying the freedom of the skies, the scenery below—and still on our way to that one hundred dollar cup of coffee. What a wonderful life!"



## Aviation Medical Examiner Profile: Robert Frayser, DO

You may remember Dr. Robert L. Frayser as the Hoisington, Kan., pilot who enjoyed the ultimate “hands-off” landing in 1989 (“An Unconscious Landing,” by Doug Burnett, *Federal Air Surgeon's Medical Bulletin*, 99-1, p.1) when he had become incapacitated by carbon monoxide fumes in the cockpit while on a cross-country flight. Thanks to some “divine guidance” and a good autopilot, Dr. Frayser was able to walk away when his aircraft crash-landed in a Missouri hay field after running out of fuel.

Dr. Frayser became an aviation medical examiner after the accident and has moved his family practice to Payson, Ariz.

The purpose of resurrecting the details of the accident is to highlight a new Federal Aviation Administration pilot safety brochure on the topic of carbon monoxide poisoning. The upcoming brochure, *Carbon Monoxide: A Deadly Menace*, was written by Dr. Bill Salazar, Southwest Regional Flight Surgeon, and will be available soon.

As Dr. Salazar points out, “Carbon monoxide poisoning is a safety issue that pilots tend to ignore, even though it is the most common industrial poisoning accident in the United States. When carbon monoxide poisoning occurs, it can have significant and fatal consequences for aircraft occupants.”

When asked recently about how things went after the accident, Dr. Frayser provided the following information: “Of course I purchased a new

airplane, and of course it was another Comanche 400, tail number N8477P. It is equipped like [its predecessor] with the inclusion of a carbon monoxide monitor...I have closed my practice in Hoisington, Kan., and moved to Payson, Ariz., where I went into practice with my daughter, Dr. Karen Frayser Evans. Our new company is Mountain View Family Medicine. It is exciting



**FAMILY AMEs. Dr. Robert Frayser, daughter Dr. Karen Frayser Evans, and her triplet daughters (future AMEs?) and replacement aircraft.**

to practice with my daughter. My son, Michael, is currently a second-year family practice resident in nearby Phoenix, and after residency and a three-year tour with the USAF, I hope he too will join our practice.”

Dr. Frayser says he is kept busy with triplet-grandchildren, born in October 2004. His wife, Donna, is a Registered Nurse and works in the practice with Drs. Frayser and Evans.

Dr. Frayser says he does “a lot of flight physicals as an aviation medical examiner,” and he enjoys working with pilots, many of whom “want to know about my experience with carbon monoxide.” Lesson learned? “Of course. I explain the importance of good preventive maintenance and a good CO detector.”

Watch for an announcement in the *Bulletin* about when the new brochure will be available for ordering.



## Resources For AMEs

### New Pilot Safety Brochure Available, Others Planned

By Mike Wayda

#### Publication No. AM-400-05/1

*Sunglasses for Pilots: Beyond the Image*

This is a new pilot safety brochure describing what to look for when purchasing sunglasses for aviation use.

- Selecting the right lenses for flying
- Radiation
- Glare
- New materials
- Frames
- Tints

*Sunglasses for Pilots: Beyond the Image* is now available. To order, write:

FAA Civil Aerospace Medical Institute  
Shipping Clerk, AAM-400  
P.O. Box 25082  
Oklahoma City, OK 73125  
E-mail: Gail.Gentry@faa.gov  
Telephone: (405) 954-4831

#### Future Pilot Safety Brochures

*Carbon Monoxide: A Deadly Menace*

- Why CO poisoning should concern pilots
- Toxicity mechanism
- Symptoms
- Protection

*Pilot Medical Certification*

- Frequently asked questions about certification issues
- Appeal rights
- Duplicate certificates
- Full review procedure
- Contacting Regional Flight Surgeons

*Medications and Flying*

- Prescriptions
- Over-the-counter drugs
- Adverse reactions
- Side effects of frequently used meds

An announcement will be made in the *Bulletin* about when new brochures will be available.







## Certification Update

*Information About Current Issues*

By Warren S. Silberman, DO, MPH

# SSRI Policy Reminder

*AMEs Try Ad Hoc Policy Decisions*

We recently learned that some aviation medicine examiners are changing medical certification policy themselves. Here are some examples...

Rock Deblasi was a 45 y/o 2<sup>nd</sup>-class Airman flying corporate jets for a fractional ownership company. Back in September of 2000, he lost half of his retirement funds to risky investments. His teenage daughters were costing him a great deal of money to support. One was in private school and the other was just starting college. What with paying her house rent, school, and books, well—those of you with daughters know... Deblasi developed the typical symptoms of depression. He had no suicidal ideation but was down in the dumps, did not sleep well, lost his appetite—and his initiative. His treating physician placed him on a selective serotonin reuptake inhibitor (SSRI), and Deblasi began to improve. He continued to fly despite all this. When he went to his AME for a routine FAA physical exam, he was truthful and reported that he was taking Zoloft. The AME issued him a certificate anyway!

Felicity Jones, a 35 y/o avid private pilot, had a recent back problem and was taking a hydrocodone derivative. She also was diagnosed by her family practitioner with Adult Attention Deficit Disorder. This was accomplished based on history without any corroborating testing. He gave her the medication Adderall for this condition. She also had recently lost her boyfriend of three years to her best friend. This caused her to become depressed, but she had no suicidal thoughts. When she went to her AME and truthfully reported in block #17 that she was taking Lortab, Adderall, and Prozac, this AME also issued her a medical certificate without calling the Regional Medical Office or the Aerospace Medical Certification Division.

Judge Roy Brown was a well-known Superior Court judge and a private pilot. He had become depressed four years earlier when his mother passed away from alcohol abuse. He was prescribed an effective SSRI. When he went to his AME he also reported in block #17 that he was on the medication. This AME also issued him an unrestricted medical certificate that time, as he had after the previous examination!

I cannot recall how many times I have written in this newsletter, lectured at the Basic Aviation Medical Examiner Seminars and Theme Seminars on this subject: The current FAA policy is that the medical condition of depression is disqualifying as well as *every* medication that is used for the condition. Well, the alternative drug, *St. Johns Wort*, is acceptable—but if, upon questioning (which you have been informed

to do), you discover that the airman is taking this drug for self-diagnosed depression, then you are to defer the medical certification.

The FAA's chief psychiatrist, along with some chosen individuals, is studying the feasibility of granting medical certification to individuals that have been stable on SSRIs for the treatment of depression without suicidal thoughts. I am not sure that you all know this but the AME Order (8520.2E) informs AMEs that they can be de-designated for not acting within FAA policy guidelines. To quote from this order:

*(3)Basis for Termination or Nonrenewal of Designation.*

(c) Disregard of, or failure to demonstrate knowledge of FAA rules, regulations, policies, and procedures.

For the benefit of those international AMEs who might be unfamiliar with the trade names and those U.S. AMEs who have had a temporary lapse of memory, here is a current list of all the selective serotonin reuptake inhibitors:

- Citalopram hydrobromide: Celexa
- Duloxetine HCL (an SNRI, selective serotonin and norepinephrine reuptake inhibitor): Cymbalta
- Escitalopram oxalate: Lexapro
- Fluoxetine HCL: Prozac, Sarafem
- Fluvoxamine Maleate: Luvox
- Paroxetine: Apotex, Paxil, Pevexa
- Sertraline HCL: Zoloft
- Venlafaxine: Effexor

To reiterate:

**All SSRIs and SNRIs are unacceptable for medical certification at the current time!**



*Dr. Silberman manages the Civil Aerospace Medical Institute's Aerospace Medical Certification Division.*

## Smallpox — Inappropriate Vaccination Site

*This case reviews the current literature concerning smallpox and the smallpox vaccination program. Site placement of the vaccine had the unexpected effect of grounding an airman for an extended period of time.*

By Johann S. Westphall, MD, MPH, Maj USAF, MC, SFS

### Abstract

*Smallpox was eradicated in 1980 as the result of a successful public health vaccination campaign (1). However, with the threat of bioterrorism, increasing concerns about smallpox are resurfacing along with concerns regarding the smallpox vaccination (2). This is a case of a 36-year-old reserve military and civilian pilot, who while undergoing his FAA Class 1 physical prior to deploying to Iraq, presented to his aviation medical examiner with a debilitating vaccinia cellulitis on his lower right leg as a result of the primary smallpox vaccination given at this site. Vaccinia cellulitis is a known complication of the smallpox vaccination, and given this unique case presentation, emphasizes the need for U.S. healthcare providers to revisit the historic literature concerning proper site placement of the smallpox vaccine on the human body.*

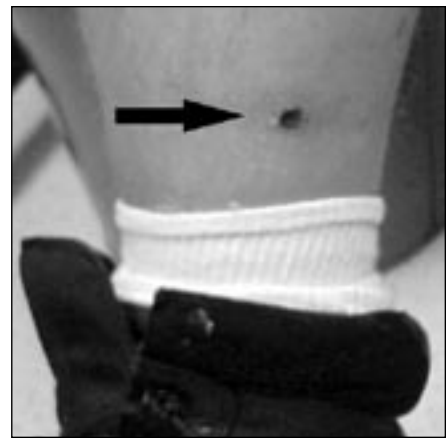


**Figure 1 – Primary smallpox vaccination site on patient's right calf.**

### Case Report

**A 36-YEAR-OLD ATP-RATED** pilot presented to his AME for his Class 1 physical with the chief complaint of severe right lower-leg and groin pain, a low-grade fever of 39.2 C, and a circumferential rash on his right calf. After obtaining a careful travel and past medical history, the physical examination revealed a well-demarcated 1.2 cm raised lesion with depressed center and surrounding intense tissue erythema, located just above the airman's right boot. The airman also presented with a painful, shotty right inguinal lymphadenopathy that made walking and use of the right leg difficult. A review of the patient's shot records indicated that the smallpox vaccination had been given five days earlier, but upon physical examination no evidence of an appropriate "take" was noted in the familiar posterior or lateral aspects of the upper arm, deltoid, back of the neck, or the posterior buttocks (as has sometimes

been anecdotally reported). The airman then admitted to receiving his vaccination in his right calf so as to avoid any unsightly scars or "pox" marks that would mar his tattooed arms. A complete physical examination revealed no further significant findings, and the patient was diagnosed with superficial vaccinia cellulitis, a known complication of the smallpox vaccination (3). He was treated conservatively with ibuprofen to control pain, dry gauze dressings twice daily for three days, and was subsequently grounded until the airman could demonstrate pain-free egress from his primary aircraft. Aeromedical disposition for this condition effectively grounded this aircrew member for the entire treatment period, rendering his operational mission status as ineffective. The patient recovered appropriately and was placed back on flying status to resume his duties in support of air evacuation operations in Iraq.



**Figure 2 – Healing smallpox eschar showing relation of site to patient's boot line.**

### Lessons Learned and Forgotten

Throughout written history, smallpox has influenced mankind during times of peace and war. Athens was defeated by Sparta in the Peloponnesian War, partly as a result of a smallpox epidemic that killed one-third of the population. Spain's Conquistadors conquered the Aztec Empire with the unintentional and indiscriminate aid of smallpox, which killed half the population. In Colonial North America, the use of smallpox as a biological weapon was intentionally used during the French and Indian Wars by distributing blankets infected by smallpox patients to initiate outbreaks among American Indians.



**Figure 3 – Initial presentation of patient with aggressive vaccinia cellulitis on right calf.**

Continued ➤

Prior to the discovery in 1798 of a rudimentary vaccine by Edward Jenner, the ancient practice of variolation, or inoculation, was utilized by both Eastern and Western civilizations (1,4). Inoculation is the artificial infection, or transplantation of the variola (smallpox) virus by means of cutaneous engrafting of material from smallpox pustules in the skin by means of a needle or lancet.

In 10<sup>th</sup> century China, a unique form of variolation was achieved by insufflations of dried, ground smallpox scabs, however, most cultures developed cutaneous dermal routes for infection. Specific sites for inoculation were developed primarily for visualization and minimizing known side effects (4). These sites included the upper and lower arms, back, and forehead. One of the major disadvantages of inoculation was that it was not attenuated and could easily spread to susceptible contacts to produce outbreaks of severe, natural smallpox.

Variolation, therefore, would never have been adopted so widely if it had not caused a lesser form of the dreaded pox. So severe was the threat that in 1777, another U.S. President, **George Washington**, ordered the Continental Army to be variolated against smallpox (1). Other countries were also to follow this prudent practice, but America's fledgling Army was the first to be smallpox-free by command order.

Fortunately, with the discovery of Jenner's cowpox vaccination and the new science of immunology, vaccines have replaced variolation and have proved to be far safer and efficacious (1, 7). By 1967, most countries had adopted similar procedures and techniques, including vaccine site placement (1,4,7). The most commonly used site for primary vaccine and revaccination was on the extensor surface of the upper arm and over the deltoid muscle (1,4,5). In India, revaccination was accomplished over the flexor surface of the forearm for differentiating from the primary site. Site placement was perfected during the early years of vaccination and was driven largely by practical necessity, ease of access to care, and to minimize such predictable complications as lymphadenopathy (4).

### Historical Perspective

In 1966, the World Health Organization Assembly decided to establish an intensified smallpox eradication program and declared a goal of global smallpox eradication within ten years. The result was the complete eradication of smallpox by December 9, 1979 (1). Furthermore, the Thirty-third World Health Assembly adopted an additional 19 recommendations covering all aspects of the post-smallpox eradication era, including cessation of vaccination of the public and of international travelers. Since that time, no case of endemic smallpox has been detected anywhere in the world since the last documented case in Somalia in October 1977.

The majority of medical graduates since the 1980s have been taught to relegate this deadly disease to a distant history. All that changed, however, when it became apparent that smallpox could be used as a bioterrorism agent (2,3). On December 13, 2002, armed forces personnel and selected federal employees began receiving the smallpox vaccine, reaching a high number of 50,000 per week at the peak of the vaccination program (3). Expected and historical vaccinia complications occurred and included systemic symptoms such as fever, malaise, myalgia, local lymphadenopathy, and intense erythema ringing the vaccination site.

In this report, something as innocuous as vaccine site placement proved problematic to a deploying airman during *Operation Iraqi Freedom*. A review of the historical smallpox literature reveals that both the current smallpox vaccine and its predecessor practice, variolation, vaccination placement on the individual was more than just a personal choice, but rather a matter of both identification and practicability (1,4,5,6).

### Discussion

Both civilian and military personnel have been receiving smallpox vaccinations since December 2002, when the Departments of Defense and Homeland Security re-introduced smallpox vaccination for those U.S. citizens most at risk from a potential bioterrorist attack. The importance of such a decision cannot be underestimated and has had many intentional as well as unintentional medical consequences. Modern epidemiologists believe that smallpox was responsible for the death of more than one billion people during just the last 130 years (4).

Prior to the eradication of smallpox, physicians were trained to diagnose and treat this highly infectious disease primarily by means of preventive public health measures such as vaccinations, quarantine, and education (1,5). Not since the early 1980s, however, have healthcare providers been trained to recognize, treat, or vaccinate against smallpox. What was once known as the scourge of mankind for the past three thousand years, smallpox had

been relegated to the medical history books as a disease eradicated by man's medical genius (1,6).

With smallpox as a potential bioterrorist agent, however, today's healthcare providers must once again be prepared to recognize, treat, and prevent smallpox in its many clinical forms. New studies, such as Talbot's description of folliculitis following smallpox vaccination, are much needed to help both educate the medical community and reduce the fears of a new generation of vaccinia vaccine patients (8).

### Aeromedical Disposition

While this case presented little medical challenge to the examining AME, it did highlight the need to review the current literature concerning smallpox and the smallpox vaccination program (9). Due to the ignorance of both the healthcare provider and airman, site placement of the vaccine had the unexpected effect of grounding the airman for an extended period of time. This rendered the airman mission ineffective and

*Continued on page 12*

certainly had a ripple-like effect to other deployed crews. This could have been avoided if proper preventive measures and education had been reviewed and delivered prior to the airman receiving the immunization. A new and naïve generation of healthcare providers and patients will need to learn and revisit the literature concerning smallpox and how a robust vaccinia immunization program can help to prevent disease and outbreaks.

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*Major (Dr.) Westphall is a U.S. Air Force flight surgeon at the USAF School of Aerospace Medicine, Brooks City-Base, Texas. He was a resident in aerospace medicine at the Civil Aerospace Medical Institute when he wrote this article.*



## Posner-Schlossman Syndrome and Medical Certification

### Case Report

By Stacey L. Branch, DO, MPH

#### Abstract

*Posner-Schlossman syndrome is a rare eye condition involving mild anterior chamber inflammation and extreme intermittent intraocular pressure elevations. Symptoms are mild and not incapacitating, but aviators need proper diagnosis and treatment to ensure that visual acuity and visual fields are not affected.*

#### History

A 40-YEAR-OLD male pilot recently retired from the military presented for renewal of his first-class medical certificate in June 2003. His application was deferred to the Aerospace Medical Certification Division (AMCD) for further evaluation. His history is significant for Posner-Schlossman syndrome first reported to the FAA in the history part of his 2003 application for airman medical certification. In February 2002, the airman had presented to an Air Force eye clinic with a complaint of mild photophobia and discomfort in his left eye. The discomfort had slowly increased over a 24-hour period and the airman wanted it checked out. The airman experienced a second attack of discomfort in his left eye in November of 2002 and reported to the eye clinic to have it evaluated. The airman had no history of any ocular disease and had not been taking any medications prior to developing these left eye symptoms. He was diagnosed with Posner-Schlossman Syndrome.

#### Physical Exam

During his eye exam in February 2002, the airman was found to have visual acuities of 20/20 OD and 20/30 OS. His intraocular pressures were 12 and 14 mmHg OD and 50 and 54 mmHg OS. Mild flair and a few cells were found in the anterior chamber of the left eye; there were no posterior pole changes. The airman presented again for left eye discomfort in November 2002 and was found to have 20/20 visual acuity OU and intraocular pressures of 20 and 20 mmHg OD, and 45 and 47 mmHg OS. Lab tests and x-rays done after the first attack did not reveal any systemic pathogens.

#### Treatment

The airman was treated with Prednisolone Forte 1%, Timolol 0.5% BID and oral acetazolamide tablets during both episodes of eye symptoms. His intraocular pressures returned to normal range (16–21 mmHg) within 24 hours of starting treatment. The airman made a full recovery within two weeks of evaluation and treatment. The medications were tapered and then discontinued within a month after each attack.

#### Aeromedical Disposition

Posner-Schlossman syndrome is a rare condition and is not specifically referred to in the *Guide for Aviation Medical Examiners* or in most general medicine references. However, it does exhibit significant, although intermittent, elevated intraocular pressures and would therefore fall under the category of glaucoma in the *Guide*. Per FAA medical guidance, class-one pilots with newly diagnosed intraocular hypertension or glaucoma should not be issued a medical certificate by the aviation medical examiner. These cases should

*Continued* ➤

*Dr. Branch is a resident in aerospace medicine at the USAF School of Aerospace Medicine, Brooks City Base, Texas. He wrote this case report while rotating at the Civil Aerospace Medical Institute.*

be deferred to the AMCD for review and may be given authorization for a special issuance on an individual basis, per 14 CFR 67.401 (1).

Loss of visual acuity or visual fields in the affected eye due to elevated intraocular pressures may be unrecognized in the early stages by the aviator and is therefore of aeromedical concern.

#### Case Outcome

An FAA ophthalmology consultant reviewed the case. He agreed with the diagnosis and determined that, due to the gradual onset and mild symptomatology, this airman's Posner-Schlossman syndrome attacks would not be likely to be incapacitating and would not be expected to degrade in his ability to fly. The aviator had also gone one year without any attacks. Therefore, he recommended certification—with the caveat that the aviator not fly if he becomes symptomatic. Update evaluations, IOP measurements, and visual fields would be at the discretion of the FAA. The aviator was given an unlimited class-one medical certificate.

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### POSNER-SCHLOSSMAN SYNDROME

**Clinical presentation.** The age of individuals with Posner-Schlossman syndrome is generally between 20 to 50 years. The presenting symptoms may be vague but usually involve discomfort in the affected eye (with or without blurred vision) and/or photophobia, and an elevated intraocular pressure. However, the individual may be pain-free, despite an intraocular pressure that is quite high. Halo vision may also be reported (2).

There is usually a history of attacks of blurred vision that would recur monthly or yearly. Each attack may last from several hours to a few weeks.

**Diagnosis.** Closed angle glaucoma must be ruled out first (2). Posner-Schlossman syndrome is unique in that it differs from most acute inflammatory processes in the eye by causing elevated intraocular pressures instead of decreased pressures. The key to diagnosing Posner-Schlossman syndrome is a low-grade anterior chamber inflammation with disproportionately high intraocular pressure (3). Posner-Schlossman syndrome usually affects one eye but may be bilateral.

**Treatment.** The recommended medical therapy for Posner-Schlossman syndrome is a combined regimen of a topical nonsteroidal anti-inflammatory drug (NSAID) and an antiglaucoma drug. For example, a combination of Diclofenac sodium 0.1%, one drop every 6 or 8 hours and either Timolol 0.25-0.5%, one drop twice a day, or dolzamide 2%, one drop two to three times a day may be used. However, as with any medical condition, treatment should be individualized and topical steroids (Prednisolone acetate 1%, one drop four times a day, followed by a taper), systemic carbonic anhydrase inhibitors (Acetazolamide, 250 mg orally four times a day), and oral NSAIDs (Indomethacin, 75-150 mg orally per day) may be used to treat the acute attacks of Posner-Schlossman syndrome (2).

Miotics and mydriatic agents are not recommended because of deleterious effects on the blood-aqueous barrier. Long-acting, periocular steroids are also not recommended because of possible lingering intraocular pressure effects.

Well-educated patients are often able to sense impending attacks based on symptomatology and can institute self-therapy using an aqueous suppressant and topical NSAID to limit the intraocular pressure elevations associated with treatment delays.

People with Posner-Schlossman syndrome need to be followed by an eye care specialist for recurrent attacks and to detect any development of primary open angle glaucoma (POAG) (2).

**Prognosis.** Most individuals have an uncomplicated course. They may only experience one or two attacks in their lifetime. Others may experience monthly or annual attacks for years. For most who are properly diagnosed and treated, vision remains uncompromised, but glaucomatous optic nerve atrophy is possible and irreversible (2).

It was found that the duration of Posner-Schlossman syndrome appeared to be the major determinant in the occurrence of primary open-angle glaucoma in a Chinese population. Therefore, it is recommended that all individuals with Posner-Schlossman syndrome have their visual acuities, visual fields, and intraocular pressures evaluated regularly by an ophthalmologist (4).

## Polycythemia in the Aviator

*A potentially serious medical condition was identified by evaluation of an apparently benign elevation in red blood cell count. Although most cases of polycythemia are benign, a thorough evaluation of the cause and manifestations of the disorder is recommended before issuing a medical certificate to any airman with polycythemia.*

### Case Report

By James R. Elliott, MD, MPH

**A** 55-YEAR-OLD AIRLINE transport pilot presented to his aviation medical examiner for his 1<sup>st</sup>-class physical. He had a history of hypertension that was well-controlled with diltiazem and valsartan. A CBC ordered by his primary physician had an incidental finding of increased hemoglobin of 17.8 and a hematocrit of 56%. Red cell indices, WBC, and platelet counts were within normal limits.

**Medical History.** The pilot's medical history was benign, except for episodic gout, for which he takes colchicine prn. He smoked one pack of cigarettes per day for 12 years, but he quit 20 years ago. He indicated that he consumes two to three alcoholic beverages per week. Family history was remarkable only for HTN in his father.

**Examination.** The airman had a normal cardiovascular and pulmonary exam with a BP 130/86, and pulse 72. He had no cyanosis, clubbing, or hepatosplenomegaly. His saturation on room air was 96%. The remainder of his exam was normal except that he requires corrective lenses for near vision.

**Lab Tests.** The results of his other lab tests were obtained from his primary physician. He was found to have a BUN of 38 (9-26) and creatinine of 2.8 (0.7-1.4). While elevated, these values were stable over the past two years. Urinalysis was negative; a renal ultrasound indicated polycystic kidney disease.

**Discussion.** This airman's hypertension and abnormal lab tests are likely the result of his polycystic kidney disease. The point of this case, however, is that a potentially serious medical condition was identified by evaluation of an apparently benign elevation in his red blood cell count.

### Polycythemia

Polycythemia is an increase in red blood cell (RBC) concentration defined as a hematocrit (Hct) > 55% (>52% in women) or a hemoglobin concentration > 18 g/dl (>16 g/dl in women). Also known as erythrocytosis, polycythemia does not describe a specific disorder but is a manifestation of multiple disease processes.<sup>1</sup> By itself, mild polycythemia is of limited aeromedical significance. However, it may be a marker for other conditions that are of aeromedical concern. Severe polycythemia (Hct >60) can produce vascular stasis due to increased blood viscosity. This may result in thromboembolic or hemorrhagic events, and is not compatible with flying duty.<sup>2</sup> Polycythemia is caused by an increased production of RBCs, rather than by prolonged RBC survival. The condition is often divided into primary polycythemia, secondary polycythemia, and relative polycythemia based on the underlying cause of RBC overproduction.<sup>1</sup> This classification has important diagnostic and prognostic implications.

**Primary polycythemia**, or polycythemia vera (p. vera), is a myeloproliferative disorder of the pluripotent stem cell. Although the erythroid precursor dominates, there is also overproduction of white blood cells and platelets in p. vera. Unlike other forms of polycythemia, circulating erythropoietin levels are typically low in primary polycythemia. The clonal proliferation of RBCs is insensitive to erythropoietin and suppresses its production.<sup>1,3</sup> Splenomegaly is observed in more than 75% of people

with p. vera.<sup>4,5</sup> Hyperuricemia due to the rapid cell turnover may cause symptomatic gout or renal lithiasis in up to 10% of patients.<sup>3</sup> Intense pruritus, especially post bathing, is common and is thought to be due to excess histamine release from basophils. The increased blood viscosity may result in vascular stasis producing stroke, heart attack, DVT, or infarction of the spleen, kidneys, liver, or mesentery.<sup>6</sup> Hemorrhage, especially in the GI tract and CNS, is a common complication.<sup>1,3,5</sup> Peptic ulcer disease is observed with increased frequency.<sup>5</sup> If a normal hematocrit is maintained by phlebotomy or myelosuppressive drugs, the median survival is 10 years.<sup>3</sup> Without treatment, survival is 6 to 18 months.<sup>4</sup>

**Secondary polycythemia** occurs when an increase in erythropoietin is responsible for the overproduction of red blood cells. Chronic hypoxia produces polycythemia through a compensatory increase in erythropoietin. Typical causes include prolonged exposure to altitude, COPD or other chronic pulmonary diseases, obstructive sleep apnea, or cardiac defects. Compensatory erythropoietin production may also result from any process that interferes with the ability of hemoglobin to transport oxygen or transfer it to the cells. Abnormal hemoglobin variants, methemoglobin, or carboxyhemoglobin are examples. Smoker's polycythemia results, in part, from high levels of carboxyhemoglobin. Cyanide, cobalt, or other toxins that interfere with cellular oxygen utilization may also induce compensatory erythropoietin production.<sup>1,5</sup>

**Inappropriate or ectopic production of erythropoietin** is another cause of secondary polycythemia. Since erythropoietin is produced by the kidney, renal disease such as hydronephrosis, polycystic kidney disease, renal vascular disease, or renal transplant may cause overproduction of erythropoietin. Renal carcinoma, hepatomas, cerebellar

*Dr. Elliott is a U.S. Air Force flight surgeon and was a resident in aerospace medicine at the Civil Aerospace Medical Institute when he wrote this article.*

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hemangioblastomas, ovarian cancer, and pheochromocytoma have been observed to produce erythropoietin or its mRNA.<sup>6,7</sup> Large uterine fibroids, Cushing's disease, androgen secreting tumors, or exogenous administration of erythropoietin or androgens may also result in an elevated erythropoietin level and secondary polycythemia.<sup>1,5,7</sup>

**Relative polycythemia** is an increase in hematocrit due to a reduction in plasma volume rather than an increase in red blood cells. Common causes include dehydration from heat exposure, vomiting, diarrhea, excessive diuresis, or water deprivation. Gaisbock's Syndrome, or stress polycythemia, is a relative polycythemia typically described in active, middle-aged men that are often overweight and hypertensive.<sup>1,2,5</sup>

#### Evaluation

Polycythemia is most often identified as an incidental finding on a CBC. A history of headache, dizziness, visual disturbances, fatigue, dyspnea, or pruritus may be the presenting complaint. Alternatively, the first sign may be a thrombotic or hemorrhagic event. The airman's medical history can provide clues to the etiology of the polycythemia. Pruritus, gout, or peptic ulcer disease can occur with p. vera. A history of smoking, lung disease, loud snoring, or prolonged exposure to altitude suggests a secondary cause for the polycythemia. Polycythemia in family members may indicate a hereditary hemoglobinopathy.<sup>1,4,5,6</sup>

On examination, splenomegaly is present in >75% of individuals with p. vera. More than 35% have hepatomegaly.<sup>6,7</sup> Hepatosplenomegaly is not typically found in other causes of polycythemia. White blood cell and platelet count, leukocyte alkaline phosphatase (LAP), and serum vitamin B12 are increased in primary polycythemia but not in secondary or relative polycythemia. In p. vera, the bone marrow is hypercellular with hyperplasia of erythroid and myeloid cell lines, and decreased iron

stores resulting from the prolonged increase in RBC production. However, up to 10% of individuals with p. vera may have normal bone marrow biopsies. Erythropoietin level is decreased in primary polycythemia, increased in secondary polycythemia, and typically normal in relative polycythemia. Elevated levels of erythropoietin require an IVP and/or CT of the abdomen and pelvis to identify tumors known to be ectopic sources of erythropoietin. Cyanosis and decreased oxygen saturation suggest secondary polycythemia resulting from hypoxia.<sup>1,4,5,6</sup>

**Treatment.** Periodic phlebotomy to maintain a hematocrit between 42 and 45% is the treatment of choice for primary polycythemia. Myelosuppressive drugs such as hydroxyurea are used to treat polycythemia vera in individuals who require frequent phlebotomy or are at high risk for thromboembolic disease. Due to the increased risk of leukemia associated with myelosuppressive drugs, they are not often used in patients under the age of 70. In secondary polycythemia, treatment of the underlying disease is the first priority. If the polycythemia persists, periodic phlebotomy may be required.<sup>1,6,7</sup>

#### Aeromedical Significance

Polycythemia is covered under the general medical condition clauses in Title 14 of the Code of Federal Regulations, Parts 67.113, 67.213, and 67.313.<sup>8</sup> Waiver is not normally considered for airmen with a hematocrit >60% or a hemoglobin >18 g/dl because of the risk of sudden incapacitation from thromboembolic disease. A medical certificate may be issued under §67.401 if the polycythemia is controlled with periodic phlebotomy or treatment of the underlying disease and if the underlying disease is not in itself disqualifying. AMEs should ensure that the polycythemia is not the result of another disorder, such as severe COPD or cancer, which would pose a hazard to flying safety or the airman's health if

left untreated.<sup>2</sup> Even mild polycythemia can produce symptoms such as dizziness or visual changes that are hazardous to flight. Although most cases of polycythemia are benign, a thorough evaluation of the cause and manifestations of the disorder is recommended before issuing a medical certificate to any airman with polycythemia.

#### Disposition

The AME deferred certification of the airman and forwarded the exam to the FAA Aeromedical Certification Division. The airman was issued a 1<sup>st</sup>-class certificate with required annual follow-up for his polycystic renal disease and hypertension.

#### References

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3. Cotran RS, Kumar V, Robbins SL. Robbins pathologic basis of disease, 4<sup>th</sup> ed. Philadelphia: Saunders, 1989, pp. 691; 735-6.
4. Ferri FF. Ferri's clinical advisor instant diagnosis and treatment. St. Louis: Mosby, 1999, pp. 380, 635, 747.
5. Braunwald E. Harrison's Principles of Internal Medicine, 12<sup>th</sup> ed. New York: McGraw-Hill, 1991, pp. 225-6; 1563-5.
6. Bennett JC, Plum F. Cecil textbook of medicine, 20<sup>th</sup> ed. Philadelphia: Saunders, 1996.
7. Prakash UBS (Ed.). Mayo internal medicine board review 1996-97. Rochester, MN: Mayo Foundation, 1996, pp. 421-2; 920-2; 1026.
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## OAM NEWS

### DR. WILSON (RE-) RECALLED TO ACTIVE DUTY



Dr. **Larry Wilson**, a medical officer in the Aerospace Medical Certification Division, has been called up a second time for active duty. He has departed for military duty as a Flight Surgeon in Iraq and is expected to return in late August of this year.

Dr. Wilson (above, left) received best wishes for a speedy return by his colleagues, including his division manager, Dr. **Warren Silberman**.

### AME DEPLOYED

Dr. **Mark Ivey**, FAA aviation medical examiner and Michigan Army National Guard flight surgeon, was also called up recently for active military service. He will provide critical medical support for the U.S. Army for the war effort. Dr. Ivey, a critical care specialist and pulmonologist, has been assigned to Landstuhl Army Regional Medical Center in Germany. (Landstuhl receives critical casualties from Iraq and Afghanistan.)



## Aviation Medical Examiner Seminar Schedule 2005

June 13 - 17	Oklahoma City, Okla.	Basic (1)
July 15 - 17	Bellevue, Wash.	N/NP/P (2)
August 5 - 7	Boston, Mass.	Cardio (2)
September 12 - 16	Oklahoma City, Okla.	Basic (1)
November 18 - 20	Savannah, Ga.	AP/HF (2)
December 5 - 9	Oklahoma City, Okla.	Basic (1)
<b>2006</b>		
January 20 - 22	San Diego, Calif.	OOE (2)
March 6 - 10	Oklahoma City, Okla.	Basic (1)
May 15 - 18	Orlando, Fla. (AsMA)	Cardio (3)
June 12 - 16	Oklahoma City, Okla.	Basic (1)
July 14 - 16	Albuquerque, N.M.	N/NP/P (2)
August 4 - 6	Washington, D.C.	AP/HF (2)
September 11 - 15	Oklahoma City, Okla.	Basic (1)
September 22 - 24	Atlanta, Ga.	OOE (2)
December 11 - 15	Oklahoma City, Okla.	Basic (1)

### CODES

AP/HF Aviation Physiology/Human Factors Theme

CAR Cardiology Theme

OOE Ophthalmology - Otolaryngology - Endocrinology Theme

N/NP/P Neurology/Neuro-Psychology/Psychiatry 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 12 hours of aviation medical examiner-specific subjects plus 8 hours of subjects related to a designated theme. Registration must be made through the Oklahoma City AME Programs staff, (405) 954-4830, or -4258.

(3) A 3½-day theme AME seminar held in conjunction with the Aerospace Medical Association (AsMA). Registration must be made through AsMA at (703) 739-2240. A registration fee will be charged by AsMA to cover their overhead costs. Registrants have full access to the AsMA meeting. CME credit for the FAA seminar is free.

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

### AME GUIDE Gets 'Makeover'

The Office of Aerospace Medicine is redesigning the appearance and navigable format of the *Guide for Aviation Medical Examiners*. This "new look" is required by a new Web policy initiative that establishes standards, procedures, and requirements for all Federal agencies to follow. This is an opportunity for us to

provide an even more user-friendly *Guide* with enhanced access to the information you need.

Thank you for your comments and support for the new *Guide*. Please continue to give us feedback. We will keep you posted on the expected delivery date of Version IV of the *Guide*.