



# 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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## The Medical Certification of Civilian Pilots Fitted With Multifocal Contact Lenses

By Van B. Nakagawara, OD  
Kathryn J. Wood, CPOT



**N**EARLY 50,000 AMERICANS become presbyopic (i.e., lose their ability to focus at near distances) each day,<sup>11</sup> and most must then rely on an ophthalmic appliance (spectacles or contact lenses) to see small print at close distances. This condition normally occurs when the individual reaches 40 years of age.

Civilian pilots in the United States are required to have a medical certificate issued by the Federal Aviation Administration (FAA) to legally pilot an aircraft. Medical certificates are issued for first-, second-, and third-class, depending on the type of flying being done by the pilot. The medical standards for these certificates are found in Title 14 of the Code of Federal

Regulations (CFR) Part 67 of the Federal Aviation Regulations (see Table 1).

Prior to 1976, civilian pilots were allowed to wear contact lenses to correct for their distant vision while flying if the FAA had issued a waiver (SODA) authorizing their use. Since December 21, 1976, Amendment 67-10 to the CFR has permitted the routine use of contact lenses to satisfy their distant visual acuity without issuance of a SODA. The prohibition against the use of bifocal or near-correcting contact lenses, however, has remained in effect for almost three decades. In December 2005, the Federal Air Surgeon approved a policy change

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Table 1. Vision Standards

	First-class	Second-class	Third-class
Distant vision	Distant visual acuity of 20/20 or better in each eye separately, with or without corrective lenses. If corrective lenses (spectacles or contact lenses) are necessary for 20/20 vision, the person may be eligible only on the condition that corrective lenses are worn while exercising the privileges of an airman certificate.		Distant visual acuity of 20/40 or better in each eye separately, with or without corrective lenses. If correctives lenses (spectacles or contact lenses) are necessary for 20/40 vision, the person may be eligible only on the condition that corrective lenses are worn while exercising the privileges of an airman certificate.
Near vision	Near vision of 20/40 or better, Snellen equivalent, at 16 inches in each eye separately, with or without corrective lenses.		
Intermediate vision	If ≥ 50 years of age, vision of 20/40 or better, Snellen equivalent, at 32 inches in each eye separately, with or without corrective lenses.		No standard.

## An Ounce of ...

**H**ELLO, EVERYONE. I HOPE that 2007 has been good to you and that 2008 will be even better. It is with that thought in mind that I would like to “talk” to you for a few minutes about some things you should consider doing for your airmen.

September was National Prostate Cancer Awareness Month, October was National Breast Cancer Awareness Month, November is National Lung Cancer Awareness Month, and there are other months throughout the year that are associated with other life-threatening conditions.

It is wonderful that our society has stepped up the heat in preventing, detecting, and curing these diseases, and these month-long campaigns have



certainly helped to raise everyone’s awareness. But, unfortunately, the diseases do not confine themselves to their assigned month, and they are all capable of “striking” at any time.

While the diseases themselves are more than enough for anyone to have to cope with, our airmen have to deal with another issue: their flying status. Some of them love flying so much that they ignore or deny symptoms because they are afraid that reporting these problems could lead to their being grounded.

This reluctance could have serious health consequences. For example, if prostate cancer is discovered early, it can be treated, and an airman can be back to flying in as little as six weeks.

Other cancers can also be treated, and while it may take longer than six weeks to get back to flying, the ultimate outcome can still be a cure and return to flying. However, if a cancer is not discovered and treated early, and if it is allowed to grow and spread, the treatment will have to be much more radical — and the results are much more likely to be disastrous.

Many airmen regularly see a primary care physician, and they come to you only for their Federal Aviation Administration (FAA) flight physical. In other cases, you are both

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“Discuss ‘prevention’ with pilots. Just a couple of minutes have the potential to completely change a person’s life and, quite possibly, affect aviation safety as well.”

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their primary care provider and their aviation medical examiner.

A third group of individuals do not see a doctor on a regular basis except for their required FAA examination, and they do not expect their AME to do anything more than the minimum required to secure their medical certificate.

I worry about the airmen in this third category because they are the ones who are most likely to be walking around with an undiagnosed illness.

Besides the individual problems an airman would suffer associated with such an illness, the safety of the national airspace, and the safety of the airman and his or her passengers could be directly affected if a particular illness or condition were to result in an aircraft mishap.

Regardless of which category your airmen fall into, please take some time to discuss prevention with them. Just a couple of minutes have the potential to completely change a person’s life and, quite possibly, affect aviation safety as well.

Think about the wonderful service you will be providing, and think how good you will feel when an airman tells you that, based on your discussion, he or she took the extra steps that led to an early detection and cure!

I wish you all a very safe and happy holiday season, and I look forward to reaping the “pounds” in 2008.

— Fred

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## Certification Update

*Information About Current Issues*

By Warren S. Silberman, DO, MPH

### 4,000 'New' Medications Revealed

**O**UR SOFTWARE CONTRACTOR, Northrop Grumman, updated the Aerospace Medical Certification Subsystem and FAAMedXPress in October, which helped us to cope with the amazing amount of creativity your keyboarders demonstrated in spelling medications in use by airmen (in Box 17.a). We “discovered” more than 4,000 new medications—all of which were incorrect, misspelled, or did not make sense.

Those of you who work with AMCS know that there is an icon that allows one to add a medication that could not be located in the FA Davis System we use. I didn't know how many incorrect spellings of some medications that one could have! I did not know that “yes” was a medication or that “angiotensin converting enzyme inhibitor” was another. I had the horrendous task of reviewing this list of misspellings and correcting them. Then, our software people had to develop a program to correct these errors. We spent a great deal of effort and money to modify the way AMEs and, ultimately, airmen using FAAMedXPress can place a medication into the system. As one can see, you now get a “drop-down box” after you type several letters in and can highlight and then add the medication to the airman's list.

For airmen that participate in FAAMedXPress, we will now allow their

AMEs to obtain a one-page history of their responses to questions and conditions. Folks, this is the medical history that you have asked for since the beginning of AMCS! In this first iteration, we made it so only those airmen who participate in FAAMedXPress would allow their AMEs to obtain the medical history report. If we did this any other way (with this new version), it would have allowed *any* AME to pull up the medical history on any airman, even without the airman's permission. We may change this in the future.

Finally, some good news: You will soon have the capability to print the airman's medical certificate! What it means is that you will be able to print the medical certificate directly from your computer, rather than a typewriter, as has been the case before this new modification.

We'll now continue with the case reports from the last issue about our management of malignancies.

## Issues and Answers—Case Presentations in Malignancies

### Malignancies Case Reports

**1** A 52-year-old airman diagnosed with acute myelogenous leukemia has been treated with aggressive chemotherapy, and he has been in remission for six months. He presents to the aviation medical examiner's office and is examined for a third-class medical certificate. The pilot presents the results of a recent complete blood count that showed a WBC 4,000, HgB 11, and platelet count of 140K. Would this airman be able to obtain an authorization for special issuance?

**A**nswer. No, the FAA does not generally grant medical certification to an airman with acute leukemia.

**2** What if this same airman comes in with a two-year history of remission of acute myelogenous leukemia, but in this case he waited for two years. He did not receive bone marrow transplantation at this time. Would he be eligible for a third-class medical certificate?

**A**nswer. Well, an airman (and this was an actual Aerospace Medical Certification Division airman case) with just this history presented to his AME and was rightfully deferred. We sent the case to a consultant, and the consultant recommended granting an issuance because there would be little chance of sudden incapacitation. Since this case exceeded the decision-making abilities of the Civil Aerospace Medical Institute in Oklahoma City, we referred the case to Medical Specialties Division in Washington, D.C. Medical Specialties considered the case and recommended that we grant an Authorization for Special Issuance.

**3** A 40-year-old airman presents to his AME with a history of a malignant melanoma removal. The Breslow depth of the lesion was 0.5 mm. The AME issued the medical certificate. Was this correct?

**A**nswer. The AME should not have issued the medical! Even though the likelihood of metastasis is low in this particular group, this still requires an Authorization for Special Issuance. This particular case will likely result in airman receiving a AME-Assisted Authorization for Special Issuance (AASI).

**4** Now, in the next case, a 40-year-old airman presents with a history of malignant melanoma. This airman's Breslow depth was 1.5 mm. The lesion was on the dorsum of the right hand and there was a positive lymph node for tumor in the antecubital area of the same extremity. The airman received immunotherapy, waited for six months, and then requested a second-class medical certificate. The AME issued the certificate. Was this correct?

*Continued on page 4*

*Dr. Silberman manages the Aerospace Medical Certification Division.*

## ISSUES from page 3

**A**nswer. No, it was not. The main issue with malignant melanoma is metastasis to the brain, resulting in a seizure as a presenting feature. Melanoma with a Breslow depth greater than or equal to 0.75 mm, along with a local node, is considered under one grouping for the purposes of medical certification. Generally, the FAA will not consider granting issuance until one year *after* treatment. The airman in this particular case will require a status report and, for each year of observation, a brain MRI. The physicians who provided policy advice to the Federal Air Surgeon believed that an MRI of the brain could give us sufficient time to locate a lesion prior to its causing a seizure. If this airman's brain MRI is negative, then she will receive an authorization.

**5** An airman with HIV illness, who also happened to be taking antiviral treatment, presented to an AME requesting a first-class medical certificate. The AME thought the airman was doing well because he had a note from his treating physician reporting that the airman had no cognitive defects. The airman did not have any AIDS-defining illnesses, so he issued the medical certificate. Was this proper certification?

**A**nswer. No it was not. This most definitely is a case where an authorization for special issuance is required. In this type case, the airman must provide a letter from a physician trained in the treatment of HIV, CD4+ lymphocyte count, HIV Viral Load by polymerase chain reaction, complete blood count, liver function studies, and COGSCREEN or neuropsychological testing. For the initial certification, if the CD4+ count is greater than 350 (or at least two levels are greater than 200), the viral load is less than 1,000, and the psychological testing is negative, the airman can be granted an authorization for special issuance.



## SODA – The Other Medical Certificate

*Always verify whether or not an airman has a Statement of Demonstrated Ability to preclude issuing an incorrect class of medical certificate not authorized by the SODA.*

By Guillermo J. Salazar, MD

**F**ROM TIME TO TIME, an aviation medical examiner (AME) will be confronted with circumstances that require an FAA Form 8500-15 (Statement of Demonstrated Ability, SODA) certificate be reviewed or be issued to an airman. Unfortunately, this is not a regular occurrence, so AMEs tend to remember the unusual name of this important medical certificate—but not necessarily what to do with it.

AMEs must fully understand the process, because issuance of a medical certificate<sup>1</sup> to select airmen is directly tied to the requirements of the SODA certificate. Authority and guidance for issuing a SODA is contained in Title 14 Code of Federal Regulations (CFR) Part 67, section 67.401, *Special issuance of medical certificates*, and is further explained in the *Guide for Aviation Medical Examiners*.

Most AMEs are intimately familiar with the Authorization for Special Issuance process, either because they process AME-assisted special issuances on a fairly regular basis or, as airmen, they may have been issued one. Authorizations are granted for conditions that may change and, therefore, require periodic monitoring. These conditions include, but are not limited to, diabetes mellitus, coronary artery disease, other heart conditions, kidney stones, neuropathies, asthma, and cancer.

On the other hand, a SODA is issued by the agency for a static medical condition. Conditions that require

<sup>1</sup>Either FAA 8500-9, *Medical Certificate* (i.e., “the white ticket”) or FAA Form 8420-2, *Medical Certificate and Student Pilot Certificate* (the “yellow ticket”).

a SODA may include loss of an eye, loss of one or more extremities, use of a prosthesis, permanent deformities secondary to trauma, and other static physical defects. A SODA is typically issued for an indefinite period of time, although for some conditions it may be time-limited. It remains valid as issued, provided the underlying circumstances do not change, hence the need for AME review of the medical requirements at the time of the periodic flight physical.

As the name of the certificate implies, the airman has to demonstrate the ability to operate a particular aircraft. Once the airman has done so, the SODA remains in effect, as issued for a **specific class** of medical certificate and, very often, for a specific type of aircraft.

Always remember that the AME is required to ask about a SODA, and write the number on the back of the application in Item 23. Since the SODA is not subject to periodic renewal, AMEs must get into the habit of asking about that certificate and reviewing the requirements with airmen that possess one. In some cases, the airman and the history will be known to the AME.

In the remaining cases, the physical defect most likely will be readily apparent during the physical examination — this should prompt the question, “Do you have a SODA?” If the answer is “no” or “don’t know,” then Regional Medical Office or the Aerospace Medical Certification Division (AMCD) should be contacted before the airman leaves the office. This will result in verification of the airman’s status or ensure the airman is properly referred for SODA issuance.

*Continued on page 11*

## CONTACTS from page 1

allowing the use of bifocal/multifocal contact lenses by civilian pilots while flying.

To receive a medical certificate from their Aviation Medical Examiner, an airman wearing bifocal/multifocal contact lenses, while performing aviation-related duties, must submit the following information<sup>5</sup> (Table 2).

There are now more than 25 bifocal/multifocal contact lenses available, which include both rigid and soft lenses. Therefore, from these many lenses the eyecare specialist can select the lens that will give their patient the greatest probability of fitting success.

### Types of Bifocal/Multifocal Contact Lenses

There are two different types of bifocal/multifocal contact lenses: alternating and simultaneous. Lenses that use the alternating principle are usually rigid and have a line between the distant and near sections similar to bifocal spectacles. They provide the best vision at both distances but are more difficult to fit on a patient's cornea (Figure 1).

Simultaneous vision lenses position both the distance and near portions over the patient's pupil at the same time. The individual's visual system learns to interpret the correct refractive power choice depending on how close or far they are from the object. Patients with this type of lens may experience blurred vision due to interference to the in-focus image, which is produced by

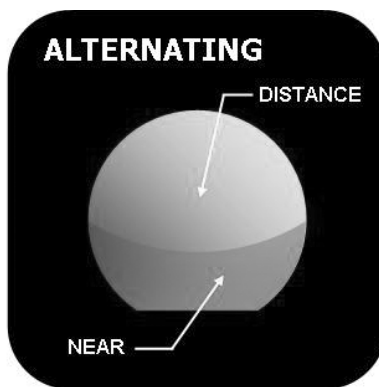


Figure 1. Alternating bifocal lenses have two separate zones: one for distant vision and the other for near.

an out-of-focus image.<sup>2</sup>

There are three types of simultaneous lens designs: concentric, aspheric, and diffractive. Simultaneous lenses can be manufactured from both soft and rigid materials.<sup>1,3</sup>

Concentric designed lenses have the center portion of the lens to correct for distant vision and the peripheral portion to correct for near vision, or vice versa<sup>1</sup> (Figure 2). A blended design, such as an aspheric simultaneous contact lens, changes power gradually from the center to the edge of the lens (Figure 3). Due to the gradual change in power, correction for intermediate distances is possible.<sup>4</sup> This lens reportedly corrects points of aberration in the patient's eyes, thus providing a more natural vision correction.

Diffractive lenses use a series of grooves cut into the back surface of the lens to provide near vision correction (Figure 4). These grooves form a series of concentric rings that divide incoming

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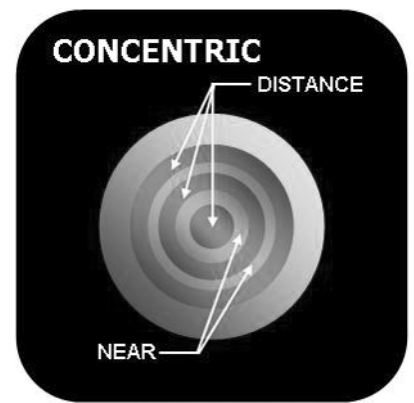


Figure 2. Concentric contact lenses can have the near power in the center zone of the lens with the distant power in the peripheral zone, or vice versa.

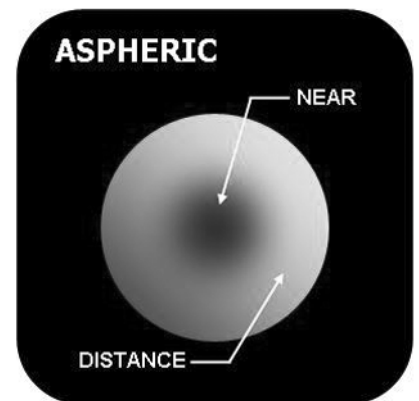


Figure 3. Aspheric contact lenses can have near power in the center of the lens with a continuous change in power from the paracentral area to the mid-periphery for intermediate to distant correction, or vice versa.

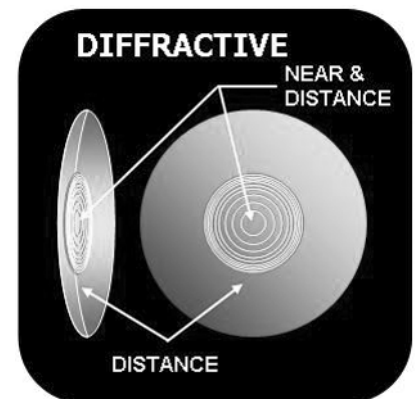


Figure 4. Diffractive contact lenses incorporate concentric circular "saw-tooth grooves" carved into back surface of the optical zone. Light entering the lens is equally divided into refracted (front surface) and diffracted (back surface) light for focusing on distant and near objects. The periphery is optically identical to the center, allowing the entire pupillary aperture to provide both near and distant vision. Generally, image resolution is better with diffractive lenses, and there is less initial blur. Occasionally in dim light, some wearers report seeing a "ghost" image or halo effect in certain light situations.

Table 2. Required Information

<p>Lenses must be FDA approved;            Must have had an adaptation period of at least 1 month;            Provide completed FAA Form 8500-7 "Report of Eye Evaluation," which must state that airman has:</p> <ol style="list-style-type: none"> <li>Stable visual acuity,</li> <li>No significant side effects/complication,</li> <li>No problems with glare or flares,</li> <li>No other visual phenomena adversely affecting airman's visual performance.</li> </ol> <p>Meet visual standard, as required for each class, in each eye.</p>
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# New Aviation Medical Examiner Order Effective

By Richard F. Jones, MD

**T**HE AVIATION MEDICAL EXAMINER SYSTEM order, Federal Aviation Administration Order 8520.2E, has been replaced by a massively revised FAA Order 8520.2F. The 1999 version was long-overdue for revision, and the recent publication of the new Aviation Safety Directorate Order VS1100.2, Managing AVS Delegation Programs, made the rewrite imperative to be in compliance.

The highlights of changes found in the new FAA Order 8520.2F are reprinted (verbatim) below from Paragraph 5 of the order (Explanation of Policy Changes). We hope you find the new order to be more clear and practical than its predecessor.

All aviation medical examiners are required to be familiar

with the contents of the revised order, 8520.2F. The order can be view online at:

[www.faa.gov/about/office\\_org/headquarters\\_offices/avs/offices/aam/policy\\_guidance/policy\\_guidance/media/8520.2F%20Aviation%20Medical%20Examiner%20system.pdf](http://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/policy_guidance/policy_guidance/media/8520.2F%20Aviation%20Medical%20Examiner%20system.pdf)

The VS1100.2 Order can be found online at:

[https://employees.faa.gov/tools\\_resources/orders\\_notices/index.cfm?fuseAction=c.dspDocumentInformation&documentID=14615](https://employees.faa.gov/tools_resources/orders_notices/index.cfm?fuseAction=c.dspDocumentInformation&documentID=14615).

Please familiarize yourselves with both orders as soon as possible to ensure you understand how these changes may affect you and your practice.

## Federal Aviation Administration Order 8520.2F Aviation Medical Examiner System

**Explanation of Policy Changes.** The following policy changes apply to this order.

- a. Defines vision and principles in compliance with Federal Aviation Administration (FAA) Order VS1100.2.
- b. The Aerospace Medical Education Division (AMED) Manager is given discretionary authority to specify content of Basic and Refresher AME Training.
- c. Defines RFSs (Regional Flight Surgeons) as Selecting/Appointing Officials, as Designee Specialists, as defined in FAA Order VS1100.2.
- d. The Aviation Medical Examiner Identification Card (AME ID Card) validity period is now defined as the date listed on the AME ID Card, rather than one year.
- e. Discontinues the AMED requirement to return AMEs ID Card and Certificate of Designation, upon termination of designation.
- f. Discontinues the requirement for three letters of reference from the AME applicants.
- g. Conditions are defined under which AMEs may not be required to electronically transmit FAA Forms 8500-8.
- h. Requires AMEs to sign a statement, on initial designation and redesignation, indicating understanding that designation is a privilege not a right, and that they may be terminated at any time, for any reason.
- i. Changes the definition of multiple site designations to permit as many sites as the RFS determines to be appropriate for a given AME.
- j. Modifies the conditions of designation, to include a requirement for completion of Medical Certification Standards and Procedures Training (MCSPT) and Clinical Aerospace Physiology for AMEs (CAPAME) by a prospective AME prior to attending a Basic AME Seminar.
- k. MCSPT is no longer required for AME staff members. If staff members transmit examinations to the Aerospace Medical Certification Division (AMCD), MCSPT is available for their training and its use is encouraged.
- l. Clarifies that a score of at least 70% must be attained on seminar examinations for an attendee to be given credit for seminar attendance and successful completion.
- m. Defines conditions for obtaining AME Theme Seminar credit.
- n. Clarifies that the designation of AMEs who fail to comply with training requirements must be immediately terminated or the RFS must justify an exception.
- o. Gives the RFSs the authority to extend an AMEs training due date by up to 6 months, one time only, on a case by case basis.
- p. Requires physicians that have not been redesignated to cease performing FAA examinations until they have been officially redesignated.
- q. Establishes a minimum of 10 examinations per year for an AME to be considered proficient.
- r. Establishes the official category of AME, which does not require a minimum number of examinations to be performed. However, training requirements must be met.
- s. Reduces the period of time within which a new AME must perform examinations or risk termination from 24 months to 12 months.
- t. RFS notifications of termination actions must now be made within 14 days of the decision, instead of 15 days, and any AME whose termination is being proposed must be promptly instructed to curtail examination activities.
- u. Removes appeal rights for AMEs being terminated or not redesignated due to loss of a required credential, failure to attend training, or lack of need at the geographic location of their medical practice.
- v. Establishes a three-person appeal panel to review requests for reversal of AME terminations, and requires AME notification of a decision to be made within 15 days.



## Primary Cutaneous



alignant

elanoma

Case Report

By Paul S Doan, MD, MPH

*The Aerospace Medical Certification Division reviews over 8,000 special issuance cases per year. There is an increasing number of melanoma cases requiring an increased vigilance in detecting melanoma in airmen and an understanding of the present certification policy for airmen with melanoma.*

**H**ISTORY. A 60-YEAR-OLD male pilot with more than 5,000 hours of flight time presented for a renewal of his first-class medical certificate on 05/15/2003. Because of his history of melanoma, his application was deferred to the Aerospace Medical Certification Division (AMCD). During a flight physical in February 1999, an enlarging mole on the right medial calf had been noted. According to the airman, the mole was enlarging but was not particularly suspicious. However, the lesion was biopsied and was confirmed to be a superficial spreading melanoma with a Breslow thickness of 0.92 mm and a Clark's level 3. The patient had undergone a wider skin excision at the biopsy site and sentinel node biopsies. The wider excision was cleared of any residual melanoma, and the biopsied nodes were negative for metastatic melanoma. He also underwent an adjuvant therapy with interferon. His recent CAT scans for brain, chest, abdomen, and pelvis were negative for any evidence of disease, and a brain MRI in 2003 was negative for metastasis. Presently, the applicant says he feels extremely well and has been quite active—flying and working. He denies any headaches, visual symptoms, cough, shortness of breath, chest pain or pressure, gastrointestinal or genitourinary symptoms. He has no new skin changes, nodularity, masses, or other concerns. Medical history was significant for seasonal allergy treated with loratadine (Claritin™) occasionally and gastroesophageal reflux treated with famotidine (Pepcid™). His only previous surgery was a tonsillectomy. There is no family history of melanoma. He is allergic to aspirin. The airman is a commercial pilot and denies alcohol, tobacco abuse, or illicit drug use.

**P**HYSICAL EXAM. The airman was well appearing, alert, and oriented. Blood pressure was 130/88, pulse 70, weight 230 lbs. HEENT was unremarkable. Lungs were clear bilaterally without rales, rhonchi, or rubs. Heart had normal S1,

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## MALIGNANT MELANOMA

**Epidemiology.** The incidence of melanoma showed substantial variations worldwide with an increased incidence of melanoma in fair skin individuals living near the equator. In the United States, it was estimated that over 53,000 adult Caucasians will develop melanoma in 2002 and 7400 people will die from metastatic disease within 2003.<sup>4,9</sup> The estimated lifetime risk for melanoma in Americans is currently 1 out of 71 and is expected to increase to 1 in 50 by the year 2010.<sup>9</sup> However, the trends in mortality have been slowing.<sup>2</sup> In one study of 10,211 Nordic airline pilots, there was a significant increase in the standardized incidence ratios ("SIRs"—ratios of observed over expected cases, based on national incidence rates) of skin cancers. In this study, the SIR for melanoma in Nordic pilots was 2.3 (95% CI 1.7-3.0).<sup>7</sup>

**Etiology.** The exact mechanism of carcinogenesis in melanocytes is not understood. Melanoma tends to occur in sites of intermittent, intense sun exposure (trunk and legs), rather than areas of cumulative sun damage (head, neck, and arms). Both ultraviolet A and B (UVA and UVB) have been implicated.<sup>9</sup> Risk factors include: 1) changing nevus (noted by 80% of melanoma patients at time of diagnosis), 2) xeroderma pigmentosum (a condition of defective DNA repair post ultraviolet exposure), 3) fair-skin phenotype, 4) excessive sun exposure, 5) familial atypical mole-melanoma (FAMM) syndrome, 6) atypical nevi, 7) prior melanoma, 8) melanoma in a first-degree relative. It also has been documented recently in the U.S. of the increased risk of melanoma with systemic psoralin and ultraviolet A light (PUVA) therapy.<sup>9</sup>

**Clinical Presentation.** Malignant melanoma may arise *de novo* or from a precursor melanotic nevus. In general, the clinical signs can be summarized as the ABCDs of melanoma:

**A**symmetry (e.g., lesion is bisected and halves are not identical)

**B**order irregularity (uneven, ragged border)

**C**olor variegation (presence of various shades of pigmentation)

**D**iameter of lesion (>6mm)

The primary cutaneous melanomas can be further divided into four major clinical subtypes:

**1. Superficial spreading.** Accounts for 70% of all melanoma cases. Presents as a melanotic lesion with an irregular, asymmetric border, color variegation, and a size from 6 to 8 mm on the upper back of both men and women and the lower extremities of women.

**2. Nodular.** Accounts for 15% to 30% of melanoma. Presents as a raised, dark brown to black papule or nodule. Ulceration and bleeding are common. The leg and trunk are the most common sites of involvement.

**3. Lentigo maligna.** Accounts for 4% to 15% of melanoma. Presents as tan or brown macule or patch with variation in pigment or areas of regression. Only 5% to 8% of lentigo malignas evolve into invasive melanoma. They are characterized by nodular development within the previously flat precursor.

**4. Acral lentiginous.** Accounts for 2% to 8% of melanoma in Caucasians and 29% to 72% in dark-complexioned individuals (African Americans, Asians, and Hispanics). It typically occurs on the palms, soles, or beneath the nail plate as an irregular, pigmented lesion.<sup>9</sup>

## Melanoma from page 7

S2 without murmurs. No S3, S4. The abdomen was benign without evidence of organomegaly, masses, or pain. The extremities were negative for edema or cyanosis. Neurologically, the patient was intact. A complete skin exam showed several areas of moles, which all appeared to be slightly atypical but nothing of concern. There was no new suspicious lesion at the incision site on the right calf.

The CAT scans for brain, chest, abdomen, and pelvis were unremarkable. The MRI for brain was unremarkable.

**DIAGNOSIS AND PROGNOSIS.** Suspected lesion must be properly biopsied for accurate diagnosis and histologic microstaging. Narrow excisional biopsy with 2 to 3 mm margins around the visible borders of the lesion and into the subcutaneous fat should be performed when possible. Wider margins (>1-2 cm) may disrupt afferent cutaneous lymphatic flow and affect the ability to accurately identify the

sentinel nodes in patients eligible for this procedure. For the same reason, orientation of the excisional biopsy should be parallel to lymphatic drainage, longitudinally on the extremities.<sup>9</sup> In 2001, the American Joint Committee on Cancer (AJCC), after analyzing its previous staging system, revised the cutaneous melanoma staging system. The main changes were:

1) The Breslow depth is the most important prognostic factor in primary cutaneous melanoma, with the new stratification cutoffs of <1, 1.01-2, 2.01-4, and >4 mm instead of previous cutoffs of 0.75, 1.5, and 4 mm;

2) Microscopic ulceration was found to be the next important adverse prognostic factor outside of thickness. It is classified as "a" for no ulceration and "b" for presence of ulceration (Table 2). The presence of ulceration upstages the individuals to the next worst prognostic level;

3) The number of regional lymph nodes involved is a more powerful predictor of survival than the extent of involvement of individual lymph node;

*Text continued on page 9*

**Table 1.** Certification Protocols for Melanoma<sup>8</sup>

Status	First Class, Second Class, Third Class
Breslow <0.75 mm	<ul style="list-style-type: none"> <li>Yearly Authorization for Special Issuance with status report</li> </ul>
Breslow >0.75 mm	<ul style="list-style-type: none"> <li>Special issuance w/ current status &amp; brain MRI</li> <li>Yearly for 1<sup>st</sup> - &amp; 2<sup>nd</sup>-class; every 24 mo for 3<sup>rd</sup>-class</li> <li>Annual evaluation for 5 yr</li> </ul>
Breslow >0.75 mm & local lymph node	<ul style="list-style-type: none"> <li>Special issuance w/ current status &amp; brain MRI</li> <li>Yearly for 1<sup>st</sup> - &amp; 2<sup>nd</sup>-class; every 24 mo for 3<sup>rd</sup>-class</li> <li>Annual evaluation for 5 yr</li> </ul>
Metastatic (without CNS involvement)	<ul style="list-style-type: none"> <li>Denial for 3 yr after treatment</li> <li>Special Issuance w/current status&amp; brain MRI every 6 mo for 5 yr (3<sup>rd</sup>-class requires MRI every 12 mo for 5 yr)</li> </ul>
CNS metastasis	<ul style="list-style-type: none"> <li>Denial for 5 yr after treatment</li> <li>Special Issuance w/ current status&amp; brain MRI every 3 mo for 5 yr. (3<sup>rd</sup>-class requires MRI every 6 mo for 5 yr)</li> <li>Follow-up frequency may be reduced after 5 yr</li> <li>Off anticonvulsant medications for 2 yr, no history of seizures.</li> </ul>

## Sidebar Note From a 47-Year Aviation Medical Examiner

Two pilots told me that years ago, as they got out of the shower, their wife had noted a suspicious spot on their back. Fortunately the pilots consulted a dermatologist. Both these small areas turned out to be melanomas, which were treated by wide excision. Over five years later, all follow-up exams have been normal.

For the past year, I have spent just a few seconds examining the back as the last part of my FAA physical exam. (I know I cannot examine my own back even using a mirror.) So, after doing the Romberg test, I ask the pilot to turn around so I can check the back.

After reading that 8,000 people will die of melanoma each year, I am further convinced that this simple exam is an extremely important—and easy—part of the 8500-8 physical.

If I find anything even slightly suspicious, I tell the pilot that it would be a good idea to see a dermatologist. Three lesions turned out to be the easily treated basal-cell carcinomas.

Glenn Stoutt, MD

P.S. I carry a magnifying glass in my pocket to get a closer look at any spot that is suspicious. Then, if I recommend a referral, I tell the pilot that I hope I am wasting his/her time and money!

I had radiation for acne when I was an adolescent, twice, and since age 25 I have had more than 70 basal-cell carcinomas and two squamous-cell carcinomas. The law of unintended consequences. So, you can see why I can spot a suspicious skin lesion like ugly on a gorilla.

*Dr. Stoutt, an aviation medical examiner since 1960, practices with the Springs Pediatric and Aviation Medicine Clinic in Louisville, Ky. We thank him for these insights. You can read eight of Dr. Stoutt's common-sense articles, Just for the Health of Pilots, on the Federal Aviation Administration Web site: [www.faa.gov/library/reports/](http://www.faa.gov/library/reports/)*



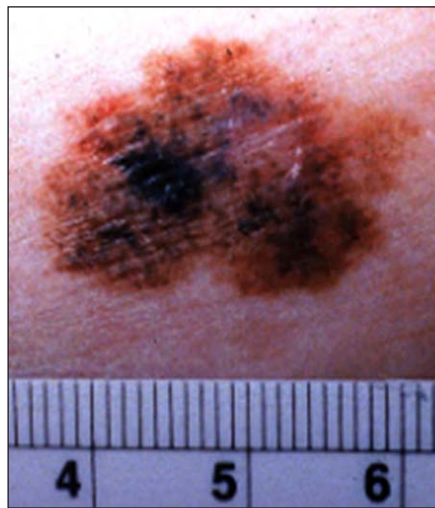
## Melanoma from page 8

4) Sentinel lymph node status is the most important prognostic factor for recurrence and a powerful predictor for survival.<sup>1,5</sup>

**Laboratory testing and diagnostic imaging.** Careful history and examination detect the majority of melanoma recurrences and direct further studies. Routine blood works and chest X-rays have limited value in follow-up of patients except for serum lactate dehydrogenase (LDH), which has been used to follow stage IV (disseminated) disease. Total body computed tomographic scans as well as liver, brain, or bone imaging are not useful in detecting occult melanoma in asymptomatic patients. Whole-body positron emission tomography is currently being evaluated for detection of occult melanoma.<sup>6</sup>

**Prevention.** The best-known preventive measure is sun protection in early childhood and adolescence.

**Treatment.** The melanoma needs to be excised with clear margin. The World Health Organization demonstrated that melanomas up to 2 mm in depth could safely be excised with a 1-cm margin with no detriment to patient survival.<sup>5</sup> Lymph node dissection is recommended in all patients with enlarged lymph nodes. Elective lymph node dissection is still controversial. However, it is indicated with positive sentinel node. It may be considered in those with a primary melanoma that is between 1 and 4 mm thick (especially in patients <60 yr old). Adjuvant therapy



**MALIGNANT MELANOMA.** (Photo credit: James M. Grichnik MD, PhD, Duke Dermatology.)

with interferon alfa-2b (intron A) is considered controversial in patients with metastatic melanoma. It is approved by the FDA for AJCC stages IIb and III melanoma.<sup>3</sup>

**Aeromedical disposition.** According to Federal Aviation Administration medical guidance, malignant melanoma warrants denial or deferral to the AMCD. Table 1 outlines the AMCD certification policy on airmen with melanoma with the use of brain magnetic resonance imaging (MRI) to rule out CNS metastasis.

**Case outcome.** The airman was granted a Special Issuance for one year. The next evaluation for melanoma with the MRI of brain will be the last one since he will have five years of disease-free status.

**Table 2.** Melanoma Thickness and 5-Year Survival<sup>1</sup>

Thickness (mm)	5-Year Survival (%) With Ulceration	5-Year Survival (%) Without Ulceration
<1.0	90.9	95.3
1.01-2.0	77.4	89.0
2.01-4.0	63.0	78.7
>4	45.1	67.4

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## Coming Soon: New Pilot Safety Brochures

Two new brochures are being prepared for distribution to AMEs on the topics of

- Oxygen Equipment in General
- Aviation Aircraft, and
- Circadian Rhythms

When printed, all AMEs on record will receive a quantity of the brochures for distribution to their airmen.

## CONTACTS from page 5

light between near, intermediate, and distant images.<sup>14</sup> As soon as an image is too close for distant vision, the middle focus becomes dominant, remaining in effect until the object is at a reading distance, where near focus becomes dominant.<sup>12</sup> The closer the spacing between the grooves, the higher the add power.

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*Airmen must be aware  
that there are certain  
lenses that are not  
approved for use in  
aviation.*

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Bifocal/multifocal lenses are reported to provide most patients with good visual performance (20/25 or better) at far and near distances. Depending upon the type of contact lens, some users have reported a loss of contrast sensitivity compared to spectacle use, although most individuals do not feel this significantly affects their visual performance.

The use of contact lenses may become increasingly problematic due to normal changes that often occur with age. These can include anatomical and physiological changes (e.g., flaccid eyelids, reduced tears, and diminished corneal sensitivity) and the use of medication that may alter tear production.<sup>10</sup>

It has been found that spectacle correction may limit or prohibit the use of certain equipment, (e.g., night vision goggles, helmet-mounted displays, chemical protection masks).<sup>6</sup> With more than 22% of their aviators requiring some type of correction, the military has performed several studies regarding the effectiveness of contact lenses use in a variety of aviation environments.<sup>7</sup>

Aircrew members who wore contact lenses in the harsh wartime environment of Desert Shield/Storm found them to be operationally superior to spectacles.<sup>8</sup> However, a study that fit senior military aviators with five different types of soft bifocal/multifocal contact lenses found that the best performing contact lens slightly reduced visual performance compared to that of bifocal glasses.<sup>9</sup>

A recent study reported on the successful use of multifocal contact lenses by pilots in the Royal Netherlands Air Force,<sup>3</sup> while another U.S. Army study of Apache helicopter pilots found that multifocal contact lenses met the visual demands required with no loss of visual performance.<sup>15</sup> Airmen must be aware that there are certain lenses that are not approved for use in the aviation environment, such as designer lenses that introduce color (tinted lenses), restrict the field of vision, or significantly diminish transmitted light.<sup>5</sup>

In conclusion, civil airmen may now receive a medical certificate allowing them to use bifocal/multifocal lenses while performing aviation duties. All that is required is to have the proper documentation from their eyecare practitioner of the lenses' performance capabilities prior to seeing their AME. This will facilitate the issuance of a medical certificate with these ophthalmic devices.

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## SODA from page 4

If the answer is “yes,” then the AME should ask a few basic questions: “When was the SODA issued and for what class of medical certificate?”; “For what type of aircraft?”; and “Has anything changed with the condition, the aircraft, or your aircraft type ratings since the SODA was granted?” If anything is significantly different, the Regional Medical Office or the AMCD should be contacted before the airman leaves the office.

If the AME finds the previously static physical condition has become worse, a medical certificate should not be issued, even if the applicant is otherwise qualified. The AME should also defer issuance if it is unclear whether the applicant’s present status represents an adverse change. Furthermore, the AME **must never** issue a higher class certificate than what the SODA was granted for, even if the airman is qualified for a higher class of medical certificate.

As an example, a private pilot minus one arm received a SODA five years ago for a very basic, single-engine, two-passenger aircraft. Since then, the airman won “the Lottery,” went out and bought a prosthesis for her missing arm and a new Gulfstream V jet so she could fly to her new beach house in the Cayman Islands. She got the prerequi-

site training and type rating at a flight school, including the checkride with a designee examiner. Unfortunately, several things have now changed—the static defect is now different because a prosthesis has been added, and the airman now wants to fly a very different aircraft than what she previously demonstrated an ability to fly.

Agency regulations require that a medical flight test (MFT) for a SODA be administered by an FAA operations safety inspector, not a designee. Although a checkride and an MFT may be combined into one flight or Level-D simulator ride, they remain two distinct and separate processes. During this MFT, the inspector will require the airman to demonstrate the ability to handle the new, complex aircraft in a variety of realistic situations, something that may not happen during a routine checkride. If our hypothetical pilot successfully completes the MFT, a new SODA will be granted.

Aviation medical examiners are reminded to always verify whether or not an airman has a SODA. This will preclude issuing an incorrect class of medical certificate not authorized by the SODA. Also, if the AME detects a change in the airman’s SODA requirements by asking a few simple questions and then letting the agency know, this will go a long way toward ensuring the safety of the national airspace.



*Dr. Salazar is the Southwest Regional Flight Surgeon.*

### Understanding the Codes

Ever wonder what those numbers and letters mean on the SODA certificate – FAA Form 8500-15? Every number or letter represents a code for very important information. If you are uncertain about the meaning of a SODA certificate an airman brings you, contact the Regional Medical Office or the AMCD.

In this example (see Table 1), the SODA was issued on the basis of a medical flight test, authorized by the FAA Southwest Region, for the condition of an amputation, the SODA was issued in 2007, for third class, and the duration is permanent.

Table 1. Deciphered Meanings of SODA Certificate Numbers.

3	3	1	3	07	3	5
						Duration

## Dr. Tilton Receives CAMA’s Bird Award



The Civil Aviation Medical Association recognized Federal Air Surgeon **Fred Tilton, MD**, with its Bird Award for Dr. Tilton’s “exceptional contributions to the safety of civil aviation . . . in the administration of the Office of Aerospace Medicine” and “for his many years of dedicated service to civil aviation medicine.”

The award was presented to Dr. Tilton at the Civil Aviation Medical Association’s annual scientific meeting in San Diego, Calif.

Photo courtesy of CAMA

### Order Forms On Line

Time to order your forms? Don’t mail your list, go online to access an FAA Web site to quickly order these common FAA Forms used in airman medical certification:

- FAA 8065-1 ECG Transmittal
- FAA 8420-2 Student Medical Certificate
- FAA 8500-1 Near Vision Acuity Test Card
- FAA 8500-2 Letter of Denial
- FAA 8500-7 Report of Eye Evaluation
- FAA 8500-8 Application for Airman Medical Certificate
- FAA 8500-9 Medical Certificate
- FAA 8500-14 Ophthalmological Evaluation of Glaucoma
- FAA 8500-19 Cardiovascular Evaluation Specifications
- FAA 1360-57 Aeromedical Certification, Self-Addressed Envelope

The Web site for ordering these forms is: [http://ame.cami.jccbi.gov/form\\_and\\_brochure/medicalform.asp](http://ame.cami.jccbi.gov/form_and_brochure/medicalform.asp)

**Notice: Order Early.** The Aerospace Medical Education Division is working hard to fill orders, but a key vacancy caused by the death of their shipping clerk means that your order may take a little longer to fill. Please order your forms early—well before they are depleted—and expect some delay in your shipment.



## QUICK FIX

### ICAO Suggests Changes to Our AME Program

By Richard F. Jones, MD

**T**HE *Guide for Aviation Medical Examiners* states that all airman medical examination information must be submitted to the Aerospace Medical Certification Division (AMCD) within 2 weeks of the date the examination was done. Furthermore, Title 14 of the Code of Federal Regulations (CFR) 67.407 (c) gives the FAA 60 days to act after a pilot medical certificate is issued by an AME or the certificate is affirmed as issued. The Aerospace Medical Education Division (AMED) monitors each AME's compliance with our examination submission requirements, so Regional Flight Surgeons (RFSs) can take timely action. AME designations have been terminated for failure to transmit within the 60-day limit.

In recognition of the difficulties some countries have experienced with electronic transmission of information and the unpredictable nature of many mail services, International AMEs have been excused from the 2-week requirement of the *AME Guide* and have instead been required to consistently submit examinations within 60 days. The newly revised FAA Order 8520.2F, Aviation Medical Examiner System, includes a provision to require terminations for failure to submit examinations within 60 days [see page 6].

**PROBLEM:** A November 2007 International Civil Aviation Organization (ICAO) audit revealed that 12.2% of all examinations performed by International AMEs during the preceding year were input into the Aerospace Medical Certification Subsystem (AMCS) more than 60 days after the date of the examination. This was clearly not acceptable to the ICAO auditor. He also indicated he had personally seen medical material visible to other patients in AMEs' offices, causing him to question whether or not International AMEs understood the need for patient confidentiality. Additionally, he was critical that we do not make periodic site visits to International AME offices to ensure they have the necessary equipment to do examinations, and that they are properly maintaining their offices and equipment.

The auditor made the following recommendations:

- ▶ The FAA should enforce more timely transmissions of examinations by International AMEs to the AMCD.
- ▶ International AMEs should periodically validate that they possess and maintain equipment required to perform examinations.
- ▶ International AMEs should periodically acknowledge that they are required to ensure the confidentiality of medical records.

**SOLUTION:** We will modify the *AME Guide* section that requires airman medical examinations to be submitted within 2 weeks to make it clear that the section applies equally to all AMEs, including Internationals. All International AMEs will be required to obtain AMCS user names and passwords, and begin transmitting all examinations by June 30, 2008. If an International AME can document extenuating circumstances

that prevent him or her from transmitting exams electronically, I will consider allowing that AME to continue sending them by mail. However, regardless of the method, examinations must arrive here within 2 weeks. We will continue to analyze quarterly AME performance reports to identify AMEs who are not complying with the 2-week limit.

I realize that this is a significant change to our business process, and that it will be difficult for some International AMEs to comply, but I had to make these changes to ensure that we are compliant with the ICAO recommendations. As has always been the case, my staff and I will help you in any way we can as we transition to the new process.

Please be assured we value your efforts to ensure the safety of U.S. certificated pilots.

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



## Aviation Medical Examiner Seminar Schedule

2007		
December 10 – 14	Oklahoma City, Okla.	Basic (1)
2008		
January 18 – 20	Irvine, Calif.	OOE (2)
March 3 – 7	Oklahoma City, Okla.	Basic (1)
April 4 – 6	Minneapolis, Minn.	N/NP/P (2)
May 12 – 15	Boston, Mass.	AP/HF (AsMA; 3)
June 2 – 6	Oklahoma City, Okla.	Basic (1)
August 1 – 3	Washington, D.C.	CAR (2)
November 3 – 7	Oklahoma City, Okla.	Basic (1)
November 14 – 16	Reno, Nev.	N/NP/P (2)

### 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.

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