Federal Air Surgeon's
Federal Aviation Administration
MEDICAL BULLETIN
Aviation Safety Through Aerospace Medicine
Vol. 54, No. 3

In This Issue

Federal Air Surgeon's Medical Bulletin

From the Office of Aerospace Medicine

Library of Congress ISSN 1545-1518

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Cover art courtesy of
CAMI IZone Team

The *Federal Air Surgeon's Medical Bulletin* is published for aviation medical examiners and others interested in aviation safety and aviation medicine. The Bulletin is prepared by FAA's Civil Aerospace Medical Institute with policy guidance and support from the Office of Aerospace Medicine. Authors may submit articles and photos for publication to:

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From the Federal Air Surgeon's perspective...

It Has Been an Honor and a Privilege

By James R. Fraser, MD, MPH

This is my last editorial as I will be retiring at the end of the year. After thirty years as a Navy physician and Flight Surgeon, then thirteen years in the FAA Office of Aerospace Medicine (OAM), it is time to move on. The FAA has been an awesome second career and it has been an honor and a privilege to serve (two years as Manager Medical Specialties, eight years as Deputy Federal Air Surgeon, and three years as Federal Air Surgeon). As they say in the Navy, after two to three years at the helm, it is time to move on. You have had your chance to implement your best ideas for improving the organization and it is time for someone else with fresh ideas to take the helm.

Thanks to all of you, we have accomplished a great deal during my tenure. There are many achievements in which I am proud to have played a small part. However, I am most proud of two things. First, I am proud of our enduring philosophy regarding medical certification, i.e., even though our primary mission is to keep the National Air Space (NAS) safe, our secondary mission is to get every airman up that we think can safely fly. As evidence of our commitment to this philosophy, in FY 16 we ultimately final denied only 0.06% of all airmen that were willing to work with us when they did not meet the FAA medical standards contained in 14 CFR Part 67.

Unfortunately, this willingness to work with every airman with a potentially disqualifying medical condition significantly increased the complexity of medical certification and the workload of everyone in OAM. The resolution of this issue leads me to the second accomplishment of which I am proud to have played a small part.

Historically, about ninety percent of all airmen walked out of their AMEs office with a new medical certificate. Not surprisingly, they were the ones that were most happy with our medical certification system. Unfortunately, the ten percent of airmen that were deferred were not always quite so happy because of the delay that was sometimes associated with the special issuance process.

Thanks to the hard work of my colleagues in OAM, we have made interfacing with our medical certification system far more efficient and airman friendly by leveraging the incredible knowledge and experi-

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(Dr. Fraser's Farewell—continued from page 1)

ence of you, our AMEs. We have developed and increased the number of Conditions Aviation Medical Examiners Can Issue (CACIs) and Aviation Medical Examiner Assisted Special Issuances (AASIs). We have improved guidance throughout our Aviation Medical Examiner Guide. We have encouraged you at basic and refresher seminars to follow the new guidance and issue rather than defer whenever possible.

In my first editorial as Federal Air Surgeon, I told you that I would like to cut that ten percent of deferred airmen, who have to take a longer path to certification, down to eight or even five percent. However, thanks to you, the FY16 data show that 97.7 percent of first– and second -class airmen were able to walk out of your offices with an airman medical certificate in hand!

None of this would have been possible without you. As AMEs you have stepped up to the plate and issued whenever possible. You have followed the evolving AME guidance, AASIs, and CACI worksheets. You have done your part to help build the safest and most efficient airman medical certification system in the world. Thank you!

It has been an honor and a privilege to serve as your Federal Air Surgeon.

-Jim

FAA Photo by Rick Butler

Dr. Fraser was recently honored with a retirement party and reception at CAMI in Oklahoma City

FAA Photo by Rick Butler

Dr. Antuñano (L) and Dr. Fraser prepare to cut the

FAA Photo by Rick Butler

Dr. Fraser thanks CAMI personnel for all their hard work and support during his time as Federal Air Surgeon

CACI and Documentation Update

BY JUDITH FRAZIER, MD, MBA

The Federal Air Surgeon (FAS) has resolved to make interface with the medical certification system more efficient and airman-friendly. In his Vol. 52, No. 3 FASMB article, Dr. Fraser discussed tools that could be used to increase the number of certificates issued by AMEs and how CACI (Conditions AMEs Can Issue) would serve as the first tool that would help us become more efficient.

One of his many goals was to increase the number of airmen leaving their AME's office with a valid certificate from 90% to 92%, 94%, and finally 96% percent. In order to do this, it was necessary to decrease the number of exams that had to be deferred and give AMEs more tools to be able to issue on the front end. We are going to discuss some of those changes and what the AME can look for in the future.

CACI Program

The first change was the development of the CACI program. This program was released in April 2013 with a total of 11 conditions. Other than hypertension (HTN), the 10 initial conditions usually required a special issuance (SI). Prior to the CACI program, AMEs had to defer the exam or stop their busy clinic to make a phone call to the Aerospace Medical Certification Division (AMCD) or their Regional Flight Surgeon (RFS) for a verbal authorization for one of these conditions. With the rollout of the CACI program, AMEs were given more ability to make those decisions from the field, increasing the number of airmen that could receive a same day certificate.

As you may be aware, changes happened with the implementation of the CACI process. The first was to allow AMEs to perform the initial evaluation of the airman's condition and issue a medical certificate for a condition if certain parameters are met that would otherwise require a deferral or a special issuance.

The second piece was to get the airmen involved with the documentation requirements needed by their AME. The CACI program requires that the airman bring the supporting documents to the AME at the time of the exam for the review instead of mailing them directly to AMCD or RFS. The airmen can obtain the CACI worksheets from the online *AME Guide* and use them to help collect the correct information for their condition. It gives the airman AND their treating provider, who may not know anything about aviation medicine, a guide as to what information needs to be reported. Remember to **Inform** your airmen that they will need to provide documentation at subsequent exams.

As we approach the four year mark of the CACI program, does the program still fulfill its goal to safely increase the number of airmen walking out of an AME's office with a valid certificate? Are AMEs following the CACI program correctly? What are the common errors and how to avoid them? Here are some of those answers.

Isn't That a CACI?

If your airman asks you this question and you answer, "I have no idea what a CACI is," please feel free to contact your Managing Specialist, Surveillance Program Analyst, RFS, the Aerospace Medical Education Divison (AAM-400), or see the AAM-400 video series on the CACI program. If your answer is, "I am not sure if that is a CACI condition yet, let me check the *AME Guide*," you are on the right track.

In three years, the CACI conditions have grown from the original 11 to the current 16 conditions, along with other changes. In fiscal year 2016, four additional CACI conditions (with their release dates) were implemented:

- Bladder cancer (8/2015)
- Retained kidney stones (9/2015)
- Chronic kidney disease (11/2015)
- Mitral valve repair (at least 5 years after the procedure) (2/2016)

That is now a total of 16 conditions the AME needs to know and keep up with in order to expedite a medical certificate for a qualified airman.

So, what have we found out from the CACI experience? For the most part, AMEs get the concept and perform correctly. In fact, the most recent report by the Safety Risk Management (SRM) team at CAMI in 2014 that assessed AMEs and the CACI program showed that after 2 years on the CACI program, over 91% of AMEs were issuing the CACI exams correctly.

If the AMEs are getting 91% of the exams correct, where are the errors and how can we do better?

What are the Most Common AME Errors?

Correct documentation.

The initial CACI program required the AME to put a specific sentence in block 60 letting the FAA know that the airman brought in all the required information, the AME followed the CACI worksheet, and the airman met all the criteria. At the urging of busy

(CACI Continued on page 4)

(CACI Continued from page 3)

AMEs, the FAS determined on April 29, 2015, that the AME could simply write in block 60 "CACI qualified *name condition*" if all criteria were met.

The 2014 safety report from CAMI's SRM team showed that after 2 years on the CACI program, AMEs appropriately documented CACI findings in 46.5% of cases. This is improved from 22.3% in 2013. The SRM team recently reviewed how AMEs are doing on the four newest CACI conditions, and they found that documentation was the biggest error. Sixty-one percent of the time, the AME correctly issued or deferred an exam under the CACI process but failed to appropriately cite "CACI qualified *name condition*" in Box 60. Of these exams, 27.8% were issued a non-time limited certificate by the AME, while the remaining cases were issued a special issuance or initially deferred by the AME.

Follow-up research by the SRM team shows that, as expected, the newer CACI conditions have a higher error percentage. This illustrates not just a learning curve but an awareness curve of the additional conditions on the CACI program. While most AMEs now understand HOW to do a CACI, the next problem is to identify if a CACI is available for that condition and to document what they did.

Missed Opportunities to CACI

In the 2016 study of the four newest CACI conditions, in 6.8% of the cases reviewed the AME did not issue free and clear even though the Office of Aerospace Medicine (OAM) determined the airman was CACI-eligible for a non-time limited certificate. There could be multiple reasons why this happened; one possible explanation is that the AME did not realize that condition was now part of the CACI program. An AME in a busy practice may have a hard time keeping up with all of the recent changes in the *AME Guide*, including the implementation of new CACIs. The guide is changing at an increased rate to keep up with changes in medical practice.

Keeping up with new CACIs is paramount. So, what is the easiest way to determine if a condition is a CACI condition, and how can an AME in a busy practice keep up with the continued changes? The first is to look on the main CACI page. The second is to verify that the condition has a worksheet in the *AME Guide*. If the answer to either of these questions is "no"—it's not a CACI. This is actually a bigger issue as it is not just the CACIs that are changing, but the entire guide as well. Specifically, we have scheduled updates for the last Wednesday of each month as noted below. This is where you will find the new changes to the disposition tables, new CACIs, or updates to the existing ones.

Scheduled Changes to the *AME Guide* occur the last Wednesday of every month.

2017 Projected Release Date *AME Guide* Updates	
January 25	July 26
February 22	August 30
March 29	September 27
April 26	October 25
May 31	November 29
June 28	December 27 (optional)

CACI Reversed

Since the introduction of the CACI program, there have been AME errors assigned for the inappropriate issuance with a CACI condition. In these cases, the AME's decision to CACI is reversed and the airman is either denied, asked to provide more information, or placed on an SI.

When the program first launched, there were a higher number of errors. However, early studies showed that errors due to inappropriate issuances declined not only from 2013 to 2014, but also throughout the 3-month period in 2014 (from 14.9% in July to 10.2% in August, and 5.3% in September 2014), which coincided with a July 2014 article by the FAS on the use of CACI tools. In the 2016 study of the most recent four CACI conditions, 12 cases (6.8%), OAM determined an SI was needed instead of a CACI.

This implies that the airman actually did not meet all of the CACI worksheet criteria, but the AME issued free and clear or the AME did not provide proper documentation in block 60 to justify the airman's CACI issuance. To avoid this type of error, **Address** each horizontal row item on the CACI worksheet, verify they meet each CACI criteria, and **Communicate** your findings to the FAA through documentation in block 60. After reviewing the required information on a CACI condition, don't forget to document the work you performed. Make sure you let the FAA know if your airman was CACI qualified (or not).

Expansion of Disposition Tables

Talking about tools, the disposition tables are the nuts and bolts section of the *AME Guide*, and they are being expanded. This is the first place you should start your search. In many cases, the question is not, "is this a CACI?" but rather, "is a CACI even needed?"

We have recently given more direction in the *AME Guide* allowing you to stop following certain conditions

(CACI Continued on page 5)

(CACI Continued from page 4)

after a documented period of stability. Let's start with prostate cancer. It was one of the original CACI conditions. In fact, it was one of the two that did not have a worksheet; the information was previously only wording in the disposition tables. That changed in August 2015 when a Prostate Cancer Worksheet was added, and now all CACIs have a worksheet. If you **Consult** the disposition tables of the *AME Guide*, you will see that for non-metastatic prostate cancer with treatment completed five or more years ago, the AME can ISSUE and summarize this history in Block 60. A CACI is not even required.

You will also notice when you link to the main CACI page and select a CACI condition such as asthma or renal cancer, the link takes you directly to the disposition tables for that condition, not the CACI worksheet.

The disposition tables are scheduled to be updated in sections to give the AMEs even more information regarding different conditions. This is in conjunction with the development of new CACI conditions. While we are always looking for new CACI conditions, Public Law 114-190 Part 2307 passed July 15, 2016, requires the identification of additional medical conditions for the CACI program, so there will be more CACI conditions in the future.

Where we are Going Next

As we build new CACIs, we are also building new AASIs to go with them. This helps to keep the process consistent. It also allows the AME and the airman to see that if they are NOT CACI qualified, all is not lost; they could still qualify for a medical certificate through the SI process.

If an airman is found NOT CACI qualified, the AME needs to **Communicate** with the FAA via block 60 documentation and submit all of the required information to the FAA for review. In order to help both you and your airman, the disposition tables now have a checklist format of what information will be required for a Special Issuance evaluation.

Since the biggest issue with CACIs is not the CACI itself, but the documentation, remember to get credit for what you have done. The CACI program is only one tool in your AME toolkit.

So, have these changes worked? It appears so. To date, there are now 96% of all airmen leaving their AME office with a certificate. That is certainly a step in the right direction. More importantly, it has been done without a negative impact on aviation safety. The CACI program simply shifted the review of the documents to the AME instead of AMCD or the RFS to make the process more time efficient.

Federal Air Surgeon, Dr. Fraser, said in a previous FAS article, "CACI is one way that the FAA can leverage the skills of our AMEs to safely improve the efficiency of airman medical certification."

The FAA and the flying public rely on your experience, your thorough review of an applicant for a medical certificate, and your knowledge of aerospace medicine requirements to keep the National Air Space safe. With your continued help, we can keep every qualified airman flying for as long as they are medically qualified to do so and, with your help, on any given day 96% of them can walk out of your office with a medical certificate.

Dr. Frazier is a Medical Officer in the Office of Aerospace Medicine Aeromedical Standards and Policy Branch.

It's as easy as C-A-C-I

1) **Consult the *AME guide*. See if a CACI exists for the condition AND if a CACI is even needed.**
2) **Address each item on the CACI worksheet, [every CACI condition will have a worksheet---no worksheet? It's NOT a CACI condition] verify that the documentation the airman has provided meets each of the stated requirements on each horizontal row.**
3) **Communicate your findings to the FAA in block 60. The updated simplified CACI wording is, "CACI qualified (list name of condition, ex CACI qualified HTN)".**
4) **Inform the airman that he or she is CACI qualified and that on future exams, they should bring the necessary documents to their exam so they can get a same day certificate if otherwise qualified.**

Workup Requirements for Common Electrocardiographic Conditions, Part 2

By Warren S. Silberman, DO, MPH

This is a continuation of my article on the required evaluations for electrocardiographic (EKG) abnormalities that you see in airmen, especially those findings on yearly first-class graphs. Please don't forget to compare the airman's current EKG with any of those in prior years. Sometimes it is necessary to go back several years before you see similar changes.

To reinforce things for you, if you have an abnormality on your airman's EKG, send it for an evaluation and annotate this in Block 60 of the 8500-8. You should defer issuance unless you receive negative results from the evaluation prior to your 14-day transmission requirement. If you happen to certify the airman, make note of that in Block 60, then you can send the documents into AMCD at that time.

If your airman is current military or prior active duty, they have routine EKGs as part of their exam process. If you see an abnormality on their graph, obtain copies of their military graphs and compare. They may have even been evaluated for the same situation. Make note of these facts in block 60. If you obtain copies of previously performed military EKGs, send those in to AMCD.

So now let's review some other common EKG abnormalities and what we require.

Atrial Flutter or Fibrillation: This is one of the more common arrhythmias that we see here. Many times it first presents as an abnormal EKG unbeknownst to the airman. You should not issue the airman a medical certificate. Have the airman seen by your cardiologist. Generally, they will be treated. In the meantime, obtain an echocardiogram to rule out heart valve disease or cardiomyopathy, maximal Bruce protocol nuclear stress testing to rule out coronary disease, and thyroid function studies. Once the airman has been treated, you will need a 24-hour Holter monitor and a cardiovascular evaluation (CVE). Recall, if the airman is medically treated, they must be observed for 30 days prior to requesting certification. DC Cardioversion also requires a 30 day period of grounding. Radiofrequency ablation is a 90-day observation period.

Wolf Parkinson White (WPW) Pattern: You perform an EKG and see a WPW pattern. Recall it is a "pattern" unless the airman is having symptoms of supraventricular arrhythmias, in which case it is now called WPW syndrome. You must rule out that this is not the syndrome. Please obtain a CVE, maximal Bruce protocol stress test, and 24-hour Holter monitor. If there isn't any supraventricular tachyarrhythmia, you may issue the medical certificate.

Left Ventricular Hypertrophy (LVH): Recall from our list of "normal variants" that LVH by voltage criteria alone does not require an evaluation. It would be appropriate to annotate that you recognize that situation in Block 60.

LVH, usually with a strain pattern (prolongation of the QRS complex and T wave inversions), should elicit an evaluation. At a minimum, you should obtain an echocardiogram.

Right Ventricular Hypertrophy (RVH): This situation will usually occur in someone with pulmonary or some other cardiac condition. In those cases, the condition may already be determined and no evaluation would be necessary. The airman should have a cardiovascular evaluation and echocardiogram at a minimum.

Q Waves in Limb Leads III and AVF: Limb Lead III is the most variable lead! Many times there will be a Q wave in that lead with absolutely no other changes seen on the graph. Look back at prior graphs and see if it was there previously. A footnote here to remind you that in order for a Q wave to be significant (indicative of prior death of tissue) it should be 0.04 sec (one block in width) in duration and take up 25% in amplitude of the entire QRS complex.

How about if you have Q waves in Leads III and AVF? These two leads can be affected by respiration. So, first you should rule that out before you conclude that these changes suggest an old inferior wall infarction. How do you check this out? I would have your airman take a deep inspiration and hold while you perform another EKG. Annotate that you performed the EKG on "inspiration." Then, have the airman perform an exhalation and repeat the graph. If the Q waves disappear, then these waves are not pathological and you can clear the airman. Please send us all the graphs.

T Wave Inversions: To recall, these type changes can imply several things, but you need to rule out ischemia as the cause. This is difficult to discern unless you have prior EKGs for comparison. If you do have previous EKGs and there are changes, then request a maximal Bruce protocol nuclear stress test. If you don't have anything to compare to, you will still need to request maximal nuclear stress testing.

There are other less common and subtle changes that you can see on EKGs, but the ones I discussed in these last 2 bulletins cover the most common ones.

Dr. Silberman is a Medical Officer for the Aerospace Medical Education Division, AAM-400.

Federation of State Medical Boards Information Requirement for AMEs

By Stephen Véronneau, MD, MS

All AMEs are being asked to provide the following information to your Managing Specialist (MS, known also as AME Program Analyst). You will soon be contacted by your regional flight surgeon's office via email or by phone; the information we will ask of you is as follows:

- Full Name as shown on your medical license
- Medical License Number
- State of Licensure
- Medical School Name
- Year of Graduation from Medical School
- National Provider Identifier (NPI) if you have an NPI number

We need this information to meet new requirements set forth by the Federation of State Medical Boards regarding license verification. We do not collect the last 4 of SSN, which the FSMB uses with other identifying information. We will use the information listed above, with or without NPI, to create an accurate match when performing licensing verifications.

Some of this information is collected for those AMEs appointed using DMS. For most AMEs, though, we do not have the information in DMS. When you receive our request for the information, please send the information to your Managing Specialist for your Region.

Thank you for assisting us in this effort.

Aviation Medical Examiner Seminars

February 10-12, 2017	St. Petersburg, Florida	Refresher (1)
March 20-24, 2017	Oklahoma City, Oklahoma	Basic (2)
May 1-4, 2017	Denver, Colorado	AsMA (3)
June 19-23, 2017	Oklahoma City, Oklahoma	Basic (2)
August 11-13, 2017	Washington, D.C.	Refresher (1)
September 14-16, 2017	Greensboro, North Carolina	CAMA (4)
September 22-24, 2017	Denver, Colorado	Refresher (1)
October 23-27, 2017	Oklahoma City, Oklahoma	Basic (2)
December 1-3, 2017	Portland, Oregon	Refresher (1)

NOTES

(1) A 2 ½-day Aviation Medical Examiner (AME) refresher seminar consisting of updates in aerospace medicine and FAA policies. Registration must be made through the Designee Registration System on the AME seminar Web page.

(2) A 4½-day basic AME seminar focused on preparing physicians to be designated as aviation medical examiners. Call your Regional Flight Surgeon.

(3) A 3½-day refresher AME seminar held in conjunction with the Aerospace Medical Association (AsMA). This seminar is a Medical Certification refresher with aeromedical certification lectures presented by FAA medical review officers, in addition to other medical specialty topics. Registration must be made through AsMA at (703) 739-2240. A registration fee will be charged by AsMA to cover their overhead costs. Registrants have full access to the AsMA meeting. CME credit for the FAA seminar is free.

(4) This seminar is being sponsored by the Civil Aviation Medical Association (CAMA) and is sanctioned by the FAA as fulfilling the FAA recertification training requirement. Registration will be through the CAMA Website: www.civilavmed.org

AME I.Q.

By Carty Wilson, AME-QA Surveillance Program Analyst

In this issue, we will review some of the things the AME Surveillance Program Analyst (SPA) will look for during a site visit. There are 9 AME SPA's that cover 9 regions; CAMI handles the Military, Federal and International AMEs. SPA's are responsible for quality assurance and verify AMEs are preforming to the standards outlined in FAA order 8000.95. The SPA is responsible to verify and review exams conducted by the AME ensuring medical certificates issued were issued appropriately. The office visit consists of a verification you have the required equipment. The SPA also helps you to better understand the rules and regulations of the FAA, and provide assistance to you by answering any questions you and your staff may have.

Site evaluations are routinely done once every five years, and newly designated AMEs are visited within one year of designation and as needed. Some of you have already been visited at least once by a SPA from your Regional Flight Surgeons office. Because every AME is part of the Surveillance Program it is important the AME understand what the Surveillance Program entails. When the SPA contacts you to setup a site visit, we do not want you to feel singled out. This is all part of our congressionally mandated QA measures, and our goal is to establish a good working rapport with you so you can be the best AME possible.

During the site visit the areas we concentrate on are equipment and FAA resources. The SPA will also ensure the AME is using the *AME Guide* as reference. Verifying that you have all FAA required equipment is a top priority. The SPA will document you have; vision measuring device to include phoria measure, color vision testing (ensuring plates are not faded), urine dip stick test (expiration date), and other basic equipment needed to conduct the pilot exam. The AME Employee Examiners need to have their audiometric machine calibrated to ANSI standards (required annually). Finally, we will verify you are able to navigate on your computer; the *AME Guide*, CACI worksheets, DMS, etc.

Let's test your AME IQ:

Example 1:

You have more than one employee transmitting exams under your AMCS user ID and password.

A. It is ok as long as the exam gets transmitted.

B. I know it's incorrect but the FAA cannot verify who transmits my exams.

C. I need to contact the AMCS helpdesk at (405) 954-3238 so that each user has their own user ID and password.

Correct answer: C For security purposes the FAA does not allow for shared user IDs and passwords. If you have an employee who is no longer employed in your office, remember to call the AMCS helpdesk to cancel that account.

Example 2:

Your hospital sets up an office for you in the neighboring county and is transferring you there. What do you do?

A. Contact your Regional Flight Surgeons office and speak to the Managing Specialist and inform them of your new location.

B. Log in to DMS and initiate an Expand Authority Request.

C. Move offices and then contact the FAA with your new information.

D. A & B only

Correct answer: D All moves must be approved by your Regional Flight Surgeon prior to moving.

Example 3:

Your office is really busy and you send in the PA (Physician Assistant) to complete the physical exam. This is:

A. Fine, my PA (Physician Assistant) is very thorough.

B. Fine, I completed the bulk of the exam and my PA is just finishing up.

C. Not allowed, I understand that as the AME I am required to complete the history and physical exam myself.

Correct answer: C The AME is responsible for all physical portions of the exam and history.

Carty Wilson is a Surveillance Program Analyst for the Eastern Regional Medical Office.

Medical Certification of Pilots after Carotid Endarterectomy

CASE REPORT BY PAUL T. DEFLORIO, MD, MPH

Carotid endarterectomy (CEA) is a relatively common surgical procedure to remove atherosclerotic buildup from the carotid artery and an important strategy to prevent embolic stroke. While CEA is a major surgery that is only performed on patients with serious vascular pathology, there is a pathway to certification for those patients that can demonstrate a successful procedure and controlled risk factors.

History

A 73-year-old flight instructor with 2,270 civilian flight hours reported to his AME for a third-class medical recertification. About five years ago, he suffered a minor stroke with no permanent neurological deficits noted. As part of his stroke workup, he had ultrasonographic imaging of his bilateral carotid arteries which found significant atherosclerosis on the left side. Five months after recovering from his stroke, he underwent left-sided CEA. This operation was successful with good post-operative recovery and no complications.

His history is also significant for hyperlipidemia, which is controlled with a statin. He reports being well, is excited to take up flying again, and his general and neurological review of systems is unremarkable.

On examination, his vitals are normal. There is a well-healed left neck surgical scar, with normal carotid pulses without bruits bilaterally. The neurological exam and the remainder of his physical exam are normal.

He presents his latest carotid duplex report, which shows no disease in the bilateral carotid arteries. Routine laboratory reports show normal blood counts, basic metabolic panel, and lipid panel. In addition, he has notes from both his vascular surgeon and neurologist who each report that the patient has recovered well, has no residual deficits, and should enjoy a favorable near-term prognosis.

Aeromedical Issues

The primary aeromedical concern following CEA is the airman's ability to safely operate the aircraft. Immediate post-operative pain and/or analgesic medications make flying inappropriate. More concerning CEA complications can include stroke, MI, hematoma, and vocal cord paralysis.[1] After the initial recovery phase, a successful surgery should not leave any residual symptoms or impairment.

However, as the sole purpose of CEA is to reduce the risk of thromboembolic stroke, any evaluation to determine aeromedical fitness after CEA must also examine the risk for stroke. While the protean manifestations of stroke can range from cranial nerve impairment to cerebellar dysfunction, any neurologic examination abnormality would be very concerning. Assuming no obvious neurological defects are found, the AME should ensure modifiable stroke risk factors such as lipid profile, hypertension, and diabetes are well controlled. All patients with a history of stroke and/or CEA should have their cases evaluated by the FAA[2] since a stroke is one of the 15 disqualifying medical conditions. Also, since carotid artery disease is a disease of the vasculature, confirm that the airman does not have any other significant vascular condition, i.e. coronary artery disease. An airman requesting consideration should also have a cardiovascular evaluation and maximal stress testing.

(CEA continued on page 11)

ETIOLOGY OF CAROTID ENDARTERECTOMY

Carotid artery stenosis (CAS) is a common disease of ageing. A large population study found that rates of CAS in men increased from 0.2% at age 50 to 7.5% at age 80. An age-matched female cohort found rates that increased from 0% to 5%.[3] The carotid artery becomes stenotic via a biological pathway common to all atherosclerotic disease. Lipoprotein buildup triggers a series of inflammatory mediated changes in the structure of the wall of the artery. This culminates in the narrowing of the arterial lumen and an elevated risk of thromboembolic stroke. [4]

While stroke-related deaths have been declining, the overall number of strokes in the US has remained steady, with carotid disease accounting for perhaps 20-30% of ischemic stroke.[5] With approximately 700,000 strokes a year representing the third leading cause of death, it's difficult to understate the scope and impact of this disease process.[6]

Anyone found to have CAS with or without neurological sequelae should be medically managed to reduce risk.[5] This includes aspirin therapy, smoking cessation, and the management of dyslipidemia, hypertension, and diabetes.[4]

For symptomatic patients found to have over a 70% stenosis, the benefit of surgical removal of the carotid plaque—carotid endarterectomy (CEA)—is well demonstrated. One large US trial showed CEA reduced risk of any major stroke or death from 19.1% to 8.0%.[7] Another European study showed similarly compelling results, showing a total risk of surgical death, surgical stroke, ipsilateral ischemic stroke, or any other stroke at 12.3% for CEA versus 21.9% for medical management.[8]

Despite clear benefits, CEA is not without risks, having a 30-day rate of death or disabling ipsilateral stroke of 2.1%.[7] Attention to medical optimization of risk factors, as well as careful evaluation by a qualified surgeon, will lead to the best results and can pave the way for a special issuance.

Childhood Epilepsy

CASE REPORT BY ANTHONY L. MITCHELL, MD, MPH

Epilepsy is defined as two or more unprovoked seizures. The estimated prevalence of childhood epilepsy from a national cross-sectional survey is 10.2/1000 children or 1%.[1] In this article, a history of childhood epilepsy is reported in a young pilot seeking a medical certificate along with a discussion of this diagnosis and its aeromedical implications.

History

A 19-year-old male presents to his local AME with application for third-class medical certification. He reports in his medical history childhood epilepsy that began at age 2. Between the ages of 2 and 7 he approximately 6 seizures. Per the history from the patient's mother these were not generalized tonic-clonic seizures and the duration of each seizure was very brief. During his initial evaluation an EEG was obtained, which localized a focus to his right occipital lobe. Of note, patient was living outside of the United States when he was placed on an unknown medication with a side effect of bone marrow suppression. No further medical records of this episode are available Additionally, the patient was placed on carbamazepine around the age of 4 with a subsequent episode of idiopathic thrombocytopenic purpura (ITP). His last reported seizure was at age 7, and he has not taken any seizure medication (s) since prior to age 7.

His medical history, in addition to childhood epilepsy and ITP, is noted for childhood asthma/bronchitis. He did report a history of concussions x 2 with the most recent 3 years prior to his application. He experienced no loss of consciousness and has had no post-concussive symptoms or any medications for symptoms in over 2 years. His family history is negative for seizure disorders or psychiatric illness. This patient does not drink alcohol, smoke tobacco, or use illicit drugs.

Brain MRI and recent awake and asleep EEG were normal, as was the physical exam with fully documented neurological exam showing no deficits or abnormalities.

Aeromedical Considerations/ Outcome

The FAA has determined that any history of epilepsy is disqualifying, due to the potential for sudden incapacitation. The disposition guidance in the *Guide for Aviation Medical Examiners* indicates that any aviator with a history of epilepsy and/or seizure disorder should be deferred by the AME for consideration by the FAA. The sole exception to this guidance is if there is a history of single febrile seizure (which by definition is not epilepsy) that occurred prior to the age of 5 and the patient has not been on any seizure medications for at least 3 years, then the AME may issue a medical certificate. Infrequently, the FAA has granted an Authorization under section 67.309 Neurologic (a) (1) and CFR 67.401 when a seizure disorder was present in childhood, but the individual has been seizure-free for a number of years. Factors that would be considered in determining eligibility in such cases would be age at onset, nature and frequency of seizures, precipitating causes, and duration of stability without medication. Follow up evaluations are usually neces-

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ETIOLOGY OF CHILDHOOD SEIZURES/EPILEPSY

Population-based estimates suggest that every year 25,000-40,000 children in the United States experience a first unprovoked seizure with an estimated lifetime prevalence of childhood epilepsy of about 1%.[1,2] Epilepsy is defined as 2 or more seizures without a proximal cause, such as infection or trauma, for the seizures. A comprehensive list of seizure types and childhood epilepsy syndromes is beyond the scope of this case report. However, there are two seizure types that are useful for the AME and aviation community and specifically mentioned in the waiver guide: Febrile Seizures and Rolandic Epilepsy

The most common cause of first-time seizures in children is the febrile seizure. Febrile seizures are convulsions in infants and children triggered by a fever in absence of central nervous systeminfection. Most febrile seizures will occur in association with a high fever, typically above 38.5°C (101.3°F), although it is postulated that is it the rate of change in body temperature that provokes the seizure moreso than the absolute temperature.[3] It is generally accepted that electroencephalography (EEG) and neuroimaging are not necessary in the evaluation of febrile seizures. However, complex febrile seizures such as seizures that last longer than 15 minutes, occur multiple times in 24 hours, or have focal onset during a febrile illness may prompt further investigation and potentially medications.

Rolandic Epilepsy, also known as Benign Rolandic Epilepsy of childhood (BREC) or benign rolandic epilepsy with centro-temporal spikes (BECTS), is the most common type of epilepsy in children. It derives its name from the rolandic area of the brain that controls movements. This epilepsy syndrome is considered benign because most children outgrow these seizure during adolescence and generally suffer no cognitive impairment.[4] BREC usually affects boys more than girls and can start between ages 3 to 12 and often stops around puberty (ages 14-18). The majority of seizures will occur during sleep or upon waking. There are classic EEG features along with seizure characteristics that help to make this diagnosis.

Carotid Endarterectomy (cont.)

(CEA continued from page 9)

Outcome

This airman was issued a time-limited special issuance, valid for one year. Subsequent evaluations should include letters from the treating neurologist to address stroke status, and the vascular surgeon should comment on post-operative course. These should be supplemented with up to date bilateral carotid ultrasonography reports and labs to include CBC, BMP, and lipid panel.[2]

References

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4. Brott TG, Halperin JL, Abbara S, et al. 2011 ASA/ACCF/AHA/AANN/AANS/ACR/ASNR/CNS/SAIP/SCAI/SIR/SNIS/SVM/SVS guideline on the management of patients with extracranial carotid and vertebral artery disease. *Stroke.* 2011;42:e464-540.
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6. Broderick J, Brott T, Kothari R, et al. The greater Cincinnati/Northern Kentucky stroke study: Preliminary first-ever and total incidence rates of stroke among blacks. *Stroke.* 1998;29:415-421.
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Paul T. DeFlorio, MD, MPH was a resident in aerospace medicine at the Civil Aerospace Medical Institute when he wrote this case report.

Childhood Epilepsy (cont.)

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sary to confirm continued stability of an individual's condition if an Authorization is granted under the special issuance section of CFR 67.401. Based upon the airman's history and physical examination, greater than 10- year period without seizure and off medication, and normal EEG/MRI and neurological evaluation the Aerospace Medical Certification Division (AMCD) granted this airman a third-class special issuance.

References

1. Russ S, Larson K, Halfon N. A National Profile of Childhood Epilepsy and Seizure Disorder. Pediatrics 2012. 129 (2):256-264.
2. Hirtz D, Berg A, Bettis D, et al. Practice parameter: treatment of the child with a first unprovoked seizure: Report of the Quality Standards Subcommittee of the American Academy of Neurology and the Practice Committee of the Child Neurology Society. *Neurology*. 2003 Jan 28. 60 (2):166-75
3. Shinnar S, Glauser TA. Febrile seizures. *J Child Neurol*. Jan 2002. 17Suppl 1:S44-52
4. Freeman, JM, Vining EP. (1997) *Seizures and epilepsy in childhood: a guide for parents* (2nd ed.) Baltimore: The Johns Hopkins University Press.

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Arvind Chaturvedi Colloquium on Postmortem Forensic Toxicology in Aviation

April 4–6, 2017
CAMI, Oklahoma City, Oklahoma

The Federal Aviation Administration's (FAA's) Civil Aerospace Medical Institute (CAMI) is organizing the Arvind Chaturvedi Colloquium on Postmortem Aviation Toxicology. The symposium will be held April 4–6, 2017, at the FAA's Mike Monroney Aeronautical Center in Oklahoma City. This three-day colloquium, named in honor of long-time research toxicologist at CAMI, Dr. Arvind Chaturvedi, will include presentations focusing on recent advances in the field of postmortem aviation toxicology including current research interests at CAMI. Topics will include postmortem sample processing, importance of chain of custody of samples, analyses of samples for combustion gases/ethanol/drugs, interpretation of results, significance of quality control/quality assurance, prevalence of drugs in pilot fatalities, postmortem drug distribution, and litigation/expert testimony issues.

The intended audience for this scientific platform includes medical examiners, pathologists, coroners, forensic toxicologists, academics, students, aerospace medicine scientists/specialists, regional flight surgeons, National Transportation Safety Board personnel, and other accident investigation authorities, including employees of the FAA's Flight Standards District Offices and Office of Accident Investigation and Prevention.

There is no registration fee for attending this colloquium. However, attendees are responsible for all other expenses associated with the colloquium. Individuals interested in attending may contact Kristi Craft by December 16, 2016, to receive additional information (include your name, official title, organization, postal and e-mail addresses, and telephone and fax numbers). Ms. Craft may be contacted via e-mail at kristi.craft@faa.gov or via mail at Bioaeronautical Sciences Research Laboratory (AAM-610), FAA Civil Aerospace Medical Institute, P. O. Box 25082, Oklahoma City, Oklahoma 73125, USA. Physical address of the laboratory is Bioaeronautical Sciences Research Laboratory (AAM-610), FAA Civil Aerospace Medical Institute, 6500 South MacArthur Boulevard, Oklahoma City, Oklahoma 73169, USA (Telephone: 405-954-2302; Fax: 405-954-3705).

The web-link for the colloquium is http://www.faa.gov/go/toxmeeting.

AME I.Q. Correction

In the 2016-3 edition of the FASMB, AME I.Q. presented the following question:

1. You have a pilot you have never seen before. During the exam you discover the pilot had three DUIs: one in 1997, one in 2004, and one in 2015 (still pending court). What do you do?

   a. Search the *AME Guide* for alcohol-related offenses.

   b. Call the Region or CAMI to determine what decision to make.

   c. Defer the pilot and let the FAA figure it out.

   d. Both a and b.

The answer given was d. The best correct answer should have been c. Online AME Guidance (and what is presented to new AMEs at all AME Basic Seminars) is clear on this point: a history of 3 DUIs is an automatic deferral for an AME, especially if the airman is new to the AME. See the excerpt clipped below from pp. 36-37 of the *AME Guide* online:

Deferral Criteria: The Examiner must defer certification for any of the following:

- Inability to obtain and review the court and arrest records within 14 days of the date of the exam
- For the alcohol- or drug-related driving incidents:
  - Any arrest, conviction, and/or administrative action for which the applicant registers a blood alcohol level 0.15 or higher .
  - Any arrest, conviction, and/or administrative action for which the applicant refused blood alcohol testing
  - Any arrest, conviction, and/or administrative action within the preceding 2 years AND IF THERE HAS BEEN ANOTHER arrest, conviction and/or administrative action AT ANY OTHER TIME
  - **Total of 3 arrest(s), conviction(s), and/or administrative action(s) within a lifetime**
  - Total of 2 arrest(s), conviction(s), and/or administrative action(s) within the preceding 10 years

Please accept our sincere apology for this error.

Recent AME Events at CAMI

FAA Photo by Rick Butler

CAMI Basic AME Seminar attendees, October 2016

FAA Photo by Rick Butler

Dr. Véronneau and Dr. Silberman with Colombian RAMs, Dr. Johana Giraldo, Dr. Sebastian Duque, and Dr. Juan Carlos Camacho, in residency from July–December 2016

FAA Photo by Rick Butler

Air Force and Wright State University RAMs, December 2016

Aviation Medical Examiner Information Links

Guide for Aviation Medical Examiners
Register for an AME Seminar
AME Training Information
AMCS Online Support
Regional Flight Surgeon Contact Info
Pilot Safety Brochures
Multimedia Aviation Medical Examiner Refresher Course (MAMERC)
Medical Certification Information
MedXPress Login & Help
MedXPress: The Royal Treatment Video
MedXPress: It's Easy Video
FASMB Archives
CAMI Library Services

Sleep Apnea Information

Frequently Asked Questions
Sleep Apnea Protocol
Quick Start Guide
Specification Sheet A: Information Request
AASM Tables 2 & 3
Specification Sheet B Assessment Request
OSA Information Brochure

AME Guide Updates

2016-17 Scheduled Release Dates

December 28, 2016
January 25, 2017
February 22, 2017
March 29, 2017
April 26, 2017
May 31, 2017
June 28, 2017
July 26, 2017
August 30, 2017
September 27, 2017
October 25, 2017
November 29, 2017
December 27, 2017