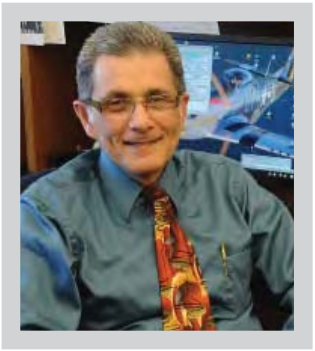
Certification Update

Information About Current Issues



By Warren S. Silberman, DO, MPH

ECG Guidance

Dr. William Fors is our new cardiology consultant hired to interpret first-class electrocardiograms. An Oklahoma City cardiologist, he reads graphs several days each week. (For those of you who are not senior AMEs, a first-class airman must have an ECG at age 35 and then each year, beginning at age 40.)

Of the more than 77,000 electrocardiograms we receive each year, we generally discuss abnormal and interesting electrocardiograms each day. The graphs are initially reviewed by our **Shirley Scott** and her fine employees. I have assumed the responsibility of reviewing the workups that Dr. Fors has requested.

Some senior aviation medical examiners are obviously not reviewing the airman ECGs performed in their offices. If they did, then there would not be as many requested workups, because they would be done prior to our having to request them from here. As an AME, you should not dismiss a first-class airman in whom you perform required yearly ECGs prior to an over-read. In 2006, we published a list of normal variants that do not require an aeromedical workup. Even if you have the graph performed at your local hospital or at a local cardiologist's office, you are responsible for the initial interpretation (see list). I would place this list of normal variants where you perform the electrocardiograms, and give copies to the alternate sites that you may use to have your graphs done.

Common Abnormalities

Let's review common abnormalities and what we expect from applicants with such abnormalities. Some of this information is basic, but I want to be certain we cover all relevant aspects.

First, you always need to compare the current graph with prior ones, even if you need to have applicants get copies from treating physicians or even from their military files. If you provide us with prior graphs that demonstrate similar findings, then there is no reason to have an applicant provide a workup, and you have saved them from much expense, aggravation, fear of loosing their medical, and us from extra work.

Some common abnormalities:

1. A new complete RT Bundle Branch Block (BBB) requires a maximal nuclear stress test. An incomplete RT BBB that becomes a complete does not require an evaluation.
2. Two or more premature ventricular or atrial contractions require a maximal nuclear stress test. Please note that any time you request a stress test for a first- or second-class airman, that test should be a maximal nuclear stress test.
3. If you perform an ECG in the office and the heart rate is less than 50, you should have the airman exercise in place and repeat the graph. If the heart rate is then greater than 50, no workup is required. Note: A bradycardia can also result in a first-degree atrioventricular block (a p-to-R interval greater than or equal to 0.20 sec.). If you exercise

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Dr. Silberman manages the Aerospace Medical Certification Division.

ECG Normal Variant List

These are considered normal ECG variants and not reasons to defer the applicant

- Sinus bradycardia. Age 50 and younger — if the heart rate is 45 or greater; age 50 and older — if the heart rate is 49 or greater
- Wandering atrial pacemaker
- Low atrial rhythm
- Ectopic atrial rhythm
- Indeterminate axis
- First-degree AV (atrioventricular) block with PR interval less than 0.21 in age 50 and younger
- Mobitz Type I second degree AV (atrioventricular) block (Wenckebach phenomenon)
- One premature ventricular contraction or atrial contraction on a 12-lead ECG
- Incomplete RBBB (right bundle branch block)
- Left atrial abnormality
- Short QT
- Intraventricular conduction delay
- Early repolarization
- Left ventricular hypertrophy by voltage criteria only
- Low voltage in limb leads (may be a sign of obesity or hypothyroidism)
- Left axis deviation, less than or equal to -30 degrees
- rSR′ in leads VI or V2, ORS interval less than 0.12 msec R>S wave in VI without other evidence of right ventricular hypertrophy
- Sinus arrhythmia
- Sinus tachycardia: Any age — if the heart rate is less than 110

Note: If a first-class airman does not have a current resting ECG on file but we have any type of stress test (pharmaceutical stress, Bruce stress, nuclear stress, or stress echocardiogram) that was accomplished within the last year, we can

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the airman in place, this block can also diminish (or the interval shorten to normal range).
4. Type II Second-degree AV Block, or Mobitz Type II occurs when the p ORS complexes are occurring and there is a p wave with dropped QRS. This is a premonitory sign to complete heart block. These applicants should not be granted a medical certificate, and they should be sent to a cardiologist for a complete workup. This may eventually include electrophysiology testing. A 24-hour Holter monitor will also be required.
5. A new complete LT BBB requires that you rule out coronary disease in the airman. The airman should have a cardiovascular evaluation and a maximal nuclear stress test. This is the one definite situation where a pharmacologic nuclear stress test would be the choice. The usual nuclear stress test shows an abnormality in the intraventricular septum. This is distinguished more by the chemical stress.
6. Left anterior or posterior hemiblocks both require one to demonstrate that there is no coronary disease, so a maximal nuclear stress test is required.
7. If an airman has a small r and deep S wave in leads 3 and aVF, suggesting that there may have been an old inferior wall myocardial infarction, you can make a simple determination while the airman is still in the office. ECG leads can be quite inconsistent—they are affected by respiration, so the simple thing to do is to have the airman first inhale and hold their breath, then perform an ECG, and then exhale and repeat. Please provide us with all of these graphs. If the S waves shorten and taller R waves now develop, the electrocardiographic changes are due to respiration, and no workup is required.
8. Please note that glycemia (eating prior to performance of the ECG) can affect electrocardiograms and should ideally be performed fasting.
9. Wolf-Parkinson-White pattern (short P-R interval with the classic delta wave and prolongation of the QRS complex) requires a CVE, Holter monitor, and maximal stress test. If there are no supraventricular arrhythmias, then the airman likely does not have the syndrome and will be cleared to fly.

These are just some of the common electrocardiogram findings that you will encounter, along with the FAA's requirements. ✈

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During his Air Force career, he has held several leadership positions, including Chief of Aerospace Medicine at Hickam AFB, Chief of Aerospace Medicine at the Air National Guard Office of the Air Surgeon, Commander of the 42nd Aeromedical Squadron, and Chief of Aerospace Medicine at the 42nd Medical Group.

He received an undergraduate degree in Biology and Chemistry from Southern Methodist University, a medical degree from the Uniformed Services University of the Health Sciences, a Masters degree in Public Health from the Johns Hopkins Bloomberg School of Public Health, and he graduated from the United States Air Force School of Aerospace Medicine, where he completed his residency in Aerospace Medicine. Dr. Pinkston is board-certified in Aerospace Medicine, Occupational Medicine, and Family Medicine.

Dr. Antuñano stated that, "Dr. Pinkston is an exceptional choice based on the job requirements and the program needs of the Aerospace Medical Education Division."

"I am honored to have been selected to work with such an outstanding group of professionals, both within CAMI as well as the community we serve. Working in Aerospace Medical Education as well as with some of my Aerospace Medicine mentors is a dream come true." said Dr. Pinkston.

Dr. Pinkston will begin his duties at the Civil Aerospace Medical Institute in early July 2010. ✈

Fourth International AME Seminar to Be Held in Wiesbaden, Germany

All physicians interested in aviation medicine welcome

By Melchor Antuñano, MD

The German Academy of Aviation and Travel Medicine will conduct their 4th International aviation medical examiner seminar in Wiesbaden, Germany, August 26-29, 2010. The Academy has invited Drs. **Melchor Antuñano** and **Warren Silberman** from the Federal Aviation Administration to participate to the degree necessary to consider the training equivalent to an FAA aviation medical examiner (AME) refresher seminar.

Credit will be given for FAA AME seminar attendance to those AMEs requesting it, if a passing score is obtained on an FAA test administered after the seminar. Guest lecturers from Germany will provide the clinical lectures normally given at FAA seminars and will also give other presentations in aviation medicine and human factors.

It is expected that participation by physicians representing other civil aviation authorities will engender fruitful discussion of the aeromedical significance of a multitude of medical conditions and contrast the approaches taken by other countries regarding pilot medical certification.

The Academy welcomes all physicians interested in aviation medicine, whether or not they are FAA AMEs. However, we encourage FAA AMEs (particularly those residing in Europe and the Middle-East) to consider attending this seminar as an alternative to our regular AME seminars offered within the U.S. or if you just want a different training experience. ✈

Dr. Antuñano is the Director of the Civil Aerospace Medical Institute.