

## Just For the Health of Pilots



### Know Your 5 Critical Numbers

*You're Far More Liable to Die from Dangerous Cholesterol Levels Than Dangerous Airspeeds*

By Glenn R. Stoutt, Jr., M.D, Senior FAA Aviation Medical Examiner

**Pilots know all the** critical airspeed numbers for their aircraft; but, unfortunately, most of them do not know the few (*only five*) critical numbers for blood fats (lipids). Cholesterol is the one most people hear about. But, you are far more liable to die from dangerous cholesterol levels than dangerous airspeeds. Here is all you need to know about blood lipids:

Cholesterol is a substance found in foods of animal origin, such as beef, lamb, cheese, eggs, poultry, and dairy products. Everyone has and needs cholesterol for such things as building cells, making hormones, and making vitamin D. Young children especially need it for development of the nervous system.

Problems begin only when the level of cholesterol becomes too high. Cholesterol—in the form of the "bad" low density lipoprotein cholesterol or **LDL**—can become deposited in the walls of arteries, narrowing them — "clogged arteries"—and reducing or even shutting off the blood supply to vital organs and tissues. Think of it as "rusting your pipes." If the artery is one of the coronary (heart) arteries, insufficient blood supply to the heart muscle may result in a heart attack.

*Elevations in cholesterol are directly related to the risk of having a heart attack. **Good news:** For every 1% that high levels of cholesterol are reduced, your risk of heart disease is lowered by 2%.*

**HDL** (high-density lipoprotein) cholesterol is called the "good" cholesterol because it acts as a scavenger and removes the bad cholesterol from the blood. Think of it as a "Pac Man" if you are old enough to remember this computer game where the Pac Man gobbled up his victims.

Really, all you need to do initially is to get your total cholesterol (TC), HDL cholesterol, and triglycerides measured. The LDL is then calculated from these numbers. Triglycerides are the chemical form in which most fats exist in food as well as in the body. High levels are associated with heart disease.

The American Heart Association would like everyone *ideally* to have a total cholesterol of about 160 mg/dl and an HDL of over 35 mg/dl (mg/dl means milligrams per deciliter). The higher the HDL the better. I would like to see it over 50. A high HDL is great news.

Here are the important numbers you should know:

### **Total Blood Cholesterol**

Less than 200 mg/dl = desirable blood cholesterol  
200-239 mg/dl = borderline-high blood cholesterol  
240 mg/dl or more = high blood cholesterol

### **Triglycerides**

Under 200 mg/dl

### **LDL cholesterol**

Under 130 mg/dl

### **HDL cholesterol**

Over 35 mg/dl

### **Total cholesterol to HDL cholesterol ratio**

Not over 5 to 1; ideally, 3.5 to 1

Your body gets cholesterol in one of two ways: in your diet or from cholesterol manufactured by your liver. Your liver makes about 80% of your cholesterol and heredity plays a big role in how much it produces and how much is removed from your bloodstream. Even if you eat no cholesterol or saturated fat, your liver will still make as much cholesterol as your body needs, often way too much if you are genetically predisposed.

Dietary cholesterol (eggs, liver, shrimp) plays a significant part, but dietary fat (especially saturated fat) is the bigger culprit. (Fortunately, there is no cholesterol in plant foods like fruits, vegetables, and cereals.) Saturated fat is the "building block" of cholesterol. If you want to look at saturated fat, just look at the marbling on red meat.

The American Heart Association recommends a maximum of 30% of our daily calories from fat. I would like to see it at about 20%. Dietary fat comes in three varieties— limit each to a *maximum* of 10% of your diet.

**Saturated fat:** Mostly from animal sources such as meats (lamb, pork, beef) and dairy foods such as cheese, whole milk, and ice cream. A few vegetable products (coconut oil, palm oil, palm kernel oil, and vegetable shortening) are high in saturated fats. All are bad news for your arteries.

**Polyunsaturated fat:** Cold-water fish oils (tuna, cod, halibut) and vegetable oils such as safflower, corn, sunflower seed, and soybean. Much better for you, and will actually lower your cholesterol, but will still put on the pounds.

**Monounsaturated fats:** Olive oil and peanut oil are good examples. Olive oil (plus a modest amount of red wine) may be a reason the Mediterranean people have fewer heart attacks. Monounsaturates are the best of all the dietary fats.

What about **trans fats**? Newspaper and magazine articles have been inundating us with information about these "bad" fats. Essentially, they are polyunsaturated fats that have been artificially hydrogenated by food manufacturers and processors. This "hardening" also makes them almost as bad for us as saturated fats. Essentially, these *hardened* fats *harden* your arteries.

These trans fats were designed for two purposes. The first is that they extend the shelf life of the products by reducing oxidative spoilage. But, the main reason is that they make the product firm. This is desirable for stick margarine, cookies, doughnuts, pastries, and dessert buns. Right up there with the hot dog as nutritional poison is the glazed doughnut (a favorite with pilots and police officers)—loaded with trans fat. This doughnut comes out of the oven dripping oil and is so floppy it has to be eaten with two hands. But when it cools to room temperature, it is firm and dry.

Stick margarine is almost as bad as butter. Soft (tub) margarine—used sparingly—is a better choice. Best of all is no-fat margarine. Unfortunately, about five to ten percent of our processed foods, mostly bakery goods, contain these trans fats, and the labels at this date do not tell you this.

With diet and exercise you can reduce your cholesterol level at least by 20%, not much more because of the large amount of cholesterol the liver is genetically programmed to make.

If you cannot get your cholesterol below 240, medication may be indicated, and it is usually effective. Try to get maximum results from diet and regular, vigorous exercise before seeking medication. Remember also that soluble fiber, especially oat bran, reduces the absorption of cholesterol. A researcher at the University of Kentucky thinks that several helpings of oatmeal a day may be almost as good as medication to reduce your cholesterol. (Even if he's wrong, oatmeal is good for you.)

**Conclusion:** *Get a lipid profile.* Know what the numbers mean, and if any are out of line consult your physician. In any case, exercise, a low fat diet, and maintaining ideal body weight may not only be life prolonging but lifesaving. (Keep checking your airspeed numbers too.)

Yours for good health and safe flying,

**Glenn Stoutt**

## Factoids

- Only 0.7% of all airmen are denied certification. This is reduced to 0.1% when airmen follow up and provide the requested information. Far better than the figures for life-insurance applicants.
- We need about 25-30 grams of fiber a day. For example, one serving of All-Bran Extra Fiber provides half of your daily needs. All-Bran tastes like shredded cardboard, so add another flavored cereal or some fruit to mask the taste. Alternate with oatmeal for breakfast. Go slowly when adding fiber to your diet. Add a few

grams a day to your diet to avoid bloating and intestinal gas.

- About 70% of health problems are caused by faulty lifestyle— smoking, obesity, drug and alcohol abuse, fatty-salty-sugary diet, and lack of exercise being prime examples.

*Dr. Glenn R. Stout, Jr., is a partner in the Springs Pediatrics and Aviation Medicine clinic, Louisville, Ky., and has been an active AME for 37 years. No longer an active pilot, he once held a commercial pilot's license with instrument, multiengine, and CFI ratings.*

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***Note: The views and recommendations made in this article are those of the author and not necessarily those of the Federal Aviation Administration.***

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