



# FLIGHT-WATCH



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**Yak Fighter Taxies at Auburn Celebration of Heroes, 2006**

## **HEARTS ARE THE BEST SUIT**

By: C. Richard Harper, M.D.

As a pilot, your chance of losing your flying career from Cardiovascular Disease (“CVD”) is greater than from any other medical cause. This fact has haunted the professional pilot group for 40 years.

CVD consists of a broad group of disorders. These are divided into two sub-groups:

1. Cardiac – Disease of the heart muscle, nerves, valves and the arteries feeding the heart;
2. Vascular – Disease of the blood vessels, such as stroke or the rupture of the blood vessels. High blood pressure is included in this sub-group.

have significantly decreased in since 1975. This is the result of improved childcare, education of adults, antibiotics, vaccinations, better and safer medications for high blood pressure and surgical techniques. In spite of these advances, CVD remains the number one killer in the nation and the number one cause of medical grounding. CVD still kills over one million Americans a year – twice that of cancer – ten times the death rate from accidents.

The most common thread in the CVD group of disorders is the plugging up or blockage of our arteries – arteriosclerosis. This blockage causes sickness or death in any organ the artery supplies – the most critical organs being our heart and brain. The biochemical process of the arterial blockage process (“ABP”) is very complex. The intricate web of chemical secrets in the ABP is slowly being unwound. What do we know after forty years of study?

The incidence and death rate

We know the ABP begins in childhood and gradually attains its highest-end point rate of stroke, heart attack, kidney failure, etc., in our fifties and sixties. Our genetic personal pattern is a strong factor controlling the rapidity of symptoms developing and/or sudden death. The remaining significant risk factors are diet, exercise, tobacco smoke and body weight. We can't change our genetics yet, but everything else is a personal choice that we can control.

Let's follow the developing artery, starting as an infant. At birth, the inner lining of the artery is soft, smooth and pliable. Blood circulating through it contains, along with oxygen and nutrients, a total cholesterol of about 90 mg% and triglycerides of 50 mg%. Both of these are essential for life.

The usual diet of our children begins as one predominantly of milk, then vegetables, fruit, grains, and small amounts of meat. This diet is what our great-grandparents ate and about six billion adults in the world consume today.

The child's basically healthy diet is soon replaced with one which emphasizes meat, dairy products and many processed foods that contain partially hydrogenated oils. The cereals are artificially sweetened and nutritionally neutered. Candy or cola products soon enter the daily menu. This is a diet that could not have been designed more perfectly to accelerate the ABP and retard their immune system. Our natural process of anti-oxidant protection is insulted on a daily basis.

In elementary school, fast foods are fed them at lunch. The supermarket offers similar pre-packaged lunches for the lunch box. The total cholesterol and triglycerides have now increased by 40% to 60%. The smooth artery now has yellow fatty streaks lining the walls – the ABP is now firmly entrenched. The high physical activity levels of growing children helps to neutralize the dietary insult, but is not an equal match of the sludging of ABP.

By the early teens, most dietary habits are well-established. Enter now the peer status pressures enhanced by tobacco advertisements. Tobacco smoke, via the carbon monoxide content, rapidly accelerates the ABP of any other risk factor present. The reduced

oxygen tension in the bloodstream created by carbon monoxide stimulates the progression of the fatty yellow streaks into a slightly elevated fat pustule, creating turbulence as the blood flows over it.



**A Marine SNJ  
Taxies at the  
Auburn  
Celebration of  
Heroes, 2006**



**Chris Rounds' Lockheed T-33 "Red Knight" at Auburn**

The prolonged latent or 'silent' period of the disease was clearly shown during the Korean U.N. "peace-keeping mission." About 2,000 of the 25,000 healthy U.S. soldiers killed in action were autopsied. The majority of these 19-35 year-olds had 25% to 60% blockage in their coronary (heart) arteries.

By age 55, the end point of death in men due to this ABP has changed from 1 in 10,000 to 1 in 100 per year. What a "gift" we have allowed the food and tobacco industries to give us.

As we age, the youthful physical activity levels decrease and another risk factor arises. The many good effects of exercise include increasing the efficiency of the heart muscle in using oxygen and nutrients. Very physically active children and young adults develop much larger arteries and therefore take longer to become plugged by the ABP. Exercise is very good for us, but if other risk factors aren't modified, then the plugging process will always win.

Stress is often falsely blamed as a significant factor in the equation. The evidence for this is not valid. During World War II, the meat and dairy industries of Norway and Denmark were stolen by the Germans. Both invaded populations had one of the highest rates of CVD, especially the ABP. From 1939 to 1945, their rates dropped significantly. The stress of invasion, bombing, military occupation and other horrors of war did not cause any increase. After 1945 (peacetime and the return of the cows) the rates

promptly went back up.

Dozens of valid population studies with hundreds of thousands of man years clearly show us that high fat intake is the culprit. When native Chinese, Japanese, Korean, Vietnamese, African, Indian and rural South Americans migrate here, their very low incidence of CVD becomes equal to ours in eight to twelve years. This is the time it takes for them to learn to eat the "good American diet."

Let's focus, then, on the risk factors for CVD that you can reduce:

1. Tobacco Use: As true an addiction as cocaine, heroine or alcohol – quit and become one of the increasing population of recovering addicts.
2. High Blood Pressure (Hypertension): 95% of non-alcoholic hypertension is cured quickly with a low-fat diet and a personalized exercise program.
3. Obesity: Same solution as hypertension. Unless you were a chubby teenager, return to your high school

body weight.

4. Abnormal Blood Lipids: (Total cholesterol and triglycerides) The blood lipids are fats attached to proteins that are essential for our bodily and cellular functions.

The balance of amounts makes the difference between a diseased or healthy state:

- A) HDL (High-Density Lipoprotein): These are the good guys and the main ABP player. The higher the level, the better.
- B) LDL (Low-Density Lipoproteins): The major evil ones who facilitate your demise. The lower, the better.
- C) Triglycerides: Necessary transporters of essential fats, but the lower, the better.

The total cholesterol level is not relevant if your total cholesterol/HDL ratio is less than 3.0. Example: Total cholesterol of 180mg% seems pretty good – below the recommended 200 mg% level. If your HDL is 35 mg%, then 180 divided by 35 equals 5.1. This is too high. Approximately 25% of heart attacks occur in people with total cholesterol levels of less than 200 mg%. The key numbers today are a cholesterol/HDL ratio of 3.5 or lower, and an LDL of 125 or lower.

All vegetables have fat. Of the calories in lettuce, 7% are comprised of fat. Of the calories in apples and bananas, 4% of the calories are from fat. The only high-fat plant kingdom items are avocados, coconuts and nuts. Plant oil is good unless more than 20% of total daily calories is exceeded

on a chronic basis. The food industry has made plant oil (fat) extremely dangerous by partially hydrogenating the oil to make it more solid – just read the ingredient labels on the food products you buy. Partially hydrogenated soy or corn oil allows the LDL in blood to enter into the artery lining and wall easier. It is also carcinogenic.

In summary, you can control the health of your cardiovascular system and the numerous organs for which it supplies blood. All it takes is knowledge of your risk factors and the required action.

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Dr. Harper served as Vice President of Medical Services for United Airlines for six years; Chief Accident Investigation Branch; Office of Aviation Medicine, FAA, and U.S. Naval Flight Surgeon. He is a member and fellow

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Dr. Harper is available for pilot consultations/evaluations regarding any aspect of aviation medicine. To contact him, you can call: (770) 457-3532.



**Chris Rounds Beside His T-33  
"Red Knight" at Auburn**

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