



**Weatherhead P.E.T. Center for Preventing and Reversing Atherosclerosis  
The University of Texas-Houston Medical School and Memorial Hermann Hospital**



## Heart News

### What is the difference between a Heart Scan and a PET Scan?

A growing number of hospitals and outpatient clinics are advertising their Fast CT machine or “electron-beam computed tomography” (EBCT) as the ideal fast and inexpensive screening test for the heart and other body parts. Although CT (computed tomography) is not a new technology, this heavily advertised test has been used to attract patients because of its simplicity and speed. Many patients come to us with a positive test result wondering what it really means. This article will explain the ultra fast CT test and its limitations, its differences from the PET scan, and give examples of when it can be useful for the heart and other body parts in specific clinical situations.

Atherosclerotic plaques in the coronary arteries are composed of various amounts of differing substances including cholesterol deposits, inflammation in the artery wall caused by the cholesterol, scar tissue in response to the inflammation and calcium deposition as a result of the inflammation and also as a part of the natural aging process. The extent of coronary calcifications approximately parallels the extent of atherosclerosis in the coronary arteries. However, some coronary calcification is usually present with progressive aging in most people even without clinically significant coronary artery disease. As currently used clinically, the fast CT scanner detects only the calcium deposits in the walls of the coronary arteries, not blood flow in or narrowing of the arteries.

Initially in its clinical application, the extent of coronary calcification by CT scanning was thought to indicate the severity of coronary artery narrowing or blockages. However, extensive accumulating data now demonstrate that coronary calcification is an approximate risk factor for coronary artery disease, like a high blood cholesterol level, but does not specifically indicate coronary artery narrowing.

Continued on page 2 . . .

### Valued Staff Member Retires and New Executive Assistant Starts

After 13 years of hard work and dedication, Sr. Executive Assistant Patsy Kleypas has left the Weatherhead PET Imaging Center to take early retirement. Although many of you never met Patsy, her helpfulness and cheerful voice will surely be missed. Good Luck to Patsy!!!

Join us in welcoming our new Sr. Executive Assistant, Susan Hood. Susan brings with her a bright cheery attitude and years of experience in office management and business. She started on April 12 and will become a valuable member of the PET Imaging Center team.



Susan will be the contact person for new patient appointments and to schedule first or second PET follow-up appointments. For routine follow-up appointments with Dr. Gould, please continue to call the Center for Cardiovascular Medicine at 713-704-0900.

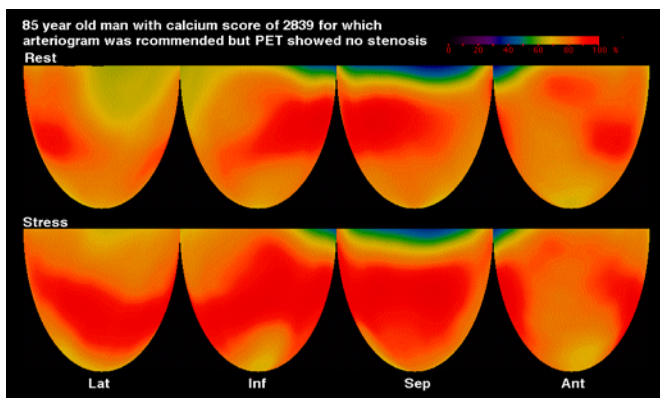


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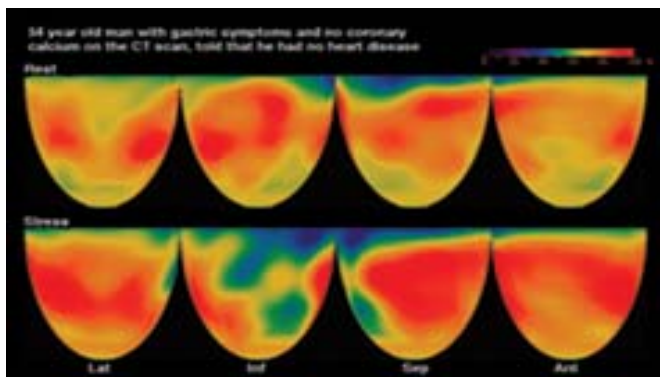


The PET scan accurately measures the ability of the coronary artery to increase blood flow to maximal levels when needed. Narrowing of the coronary arteries reduces this maximum blood flow capacity. Therefore, PET scans define the significance of a coronary narrowing regardless of whether it is due to calcium deposition, cholesterol build-up, inflammation, scarring or a combination of these factors.

Some people with extensive coronary calcification have no significant narrowing of their coronary arteries and no limitations on blood flow capacity. The upper panel of the figure below illustrates an example of a person with an extremely high calcium score of 2839 for which a coronary arteriogram had been previously recommended. However, the PET scan during stress conditions showed no limitation of blood flow capacity in the coronary arteries and therefore no significant narrowing or stenosis.



Since the extent of coronary calcium deposits are highly dependent on age, other people with severe coronary artery disease at a young age may have no calcium deposits in the coronary arteries. The lower panel of this figure illustrates a patient with a very abnormal PET scan who was having gastric symptoms due to an unrecognized heart attack during his CT scan that demonstrated no significant calcium in the coronary arteries.



Therefore, excess calcium deposits in the coronary arteries identified by a positive CT scan indicate a higher risk of coronary artery disease but are not specific for narrow-

ing of the arteries. The significance of the calcium score has to be interpreted in comparison to age, gender, other risk factors and clinical status; then a definitive test like the PET scan or coronary arteriogram is usually required for making definitive clinical decisions.

New developing applications of cardiac CT are currently in the research phase. These include using CT for obtaining noninvasive coronary arteriograms and for imaging the cholesterol plaque itself even without calcium deposits. We are also developing these newer applications at the Weatherhead PET Center

## Corner Pharmacy

### Beta Blockers



Beta Blockers are a group of medications that have been used for many years in the management of heart disease. Beta-blockers reduce the workload of the heart by lowering heart rate and blood pressure. They are commonly used to treat hypertension, angina, abnormal heart rhythms, mitral valve prolapse, and more recently to treat congestive heart failure.

First used in the 1960s, beta-blockers reduce the workload of the heart by decreasing activity of the adrenergic or “excitement” nervous system. The name “beta blockers” derives from their blocking the tiny “beta receptors” in the heart and body that excite the “fight or flight” nervous system for intense physical activity. Beta-blockers have a proven “track record” for improving survival in heart disease patients. Examples of beta blockers commonly used are atenolol (Tenormin), metoprolol (Toprol XL, Lopressor), propranolol (Inderal), labetalol (Normodyne, Trandate), sotalol (Betapace), and the newest one carvedilol (Coreg).

Occasionally side effects may occur with beta-blockers that include fatigue, low blood pressure, dizziness, slow heart rate, feeling cold or occasionally worsening depression. Since people have markedly varying sensitivity to beta-blockers, the dose has to be adjusted for each person individually. This medication should not be stopped abruptly due to potential rebound excess activation of the “excitement” nervous system that may then occur with fast heart rate, high blood pressure and a disquieting “jitteryiness”. If the beta-blocker needs to be stopped, the medications should be tapered off slowly over 1-2 weeks to prevent this rebound effect of fast heart rate and uncontrolled blood pressure. A dosage adjustment by the doctor can usually relieve the problem.



## Heart Star

The characteristics that made Ray Bearden a hard driving successful businessman also contributed to him getting heart disease and finally helped him take control of that heart disease. He was determined, very goal-oriented, and made a personal commitment to K. Lance Gould M.D. that he would control his lifestyle and do whatever was necessary to reverse his heart disease. The road was not always easy, and occasionally Ray would get off track, but his determination to fulfill that commitment kept bringing him back to better control and helped him survive.

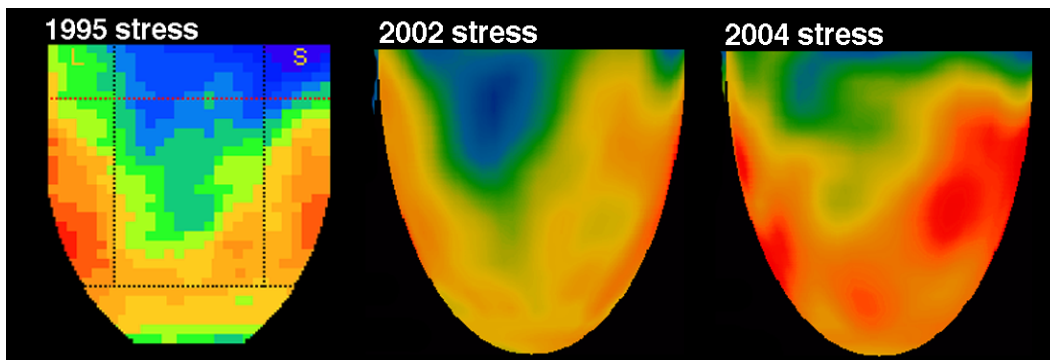
Ray was like most busy young people; he worked long hours, traveled a lot, smoked, didn't watch his diet, didn't have time to exercise and failed to react to his strong family history of heart disease. Then at the age of 34, he suffered a heart attack. Two years later, he had quadruple bypass surgery. When he left the hospital, he was told he would probably be back for another surgery in about 10 years. Like most heart patients at that time, Ray knew he had heart disease but had no idea he could control it. His cardiologists continued to monitor him for new problems, seemingly just waiting for the problem to recur.

He came to see K. Lance Gould MD on the advice of a friend and had a PET scan to check on the status of his bypass grafts. One of his grafts had already closed down and the others were in jeopardy if he did not make some changes. Seeing his abnormal heart and his limited future on the imaging screen after all that success and hard work for early retirement had an impact – he realized what was coming if he didn't shape up. It was at this point, that Ray realized for the first time after meeting Dr. Gould, that he could actually control his destiny, and possibly even “reverse” his heart disease.



Dr. Gould started Ray on medications to control his cholesterol and blood pressure. While Ray could focus intently on his diet, exercise and weight control for short periods, sustaining these goals was difficult for him. Finally, Dr. Gould's personal individualized instructions and tips on business travel and luncheons showed Ray that he could mix “business” or “retirement” and “good lifestyle”. The trick was to turn good lifestyle goals directly into good business as well, to link up what he had always excelled in with his problem in sustaining healthy living. It took a few years but it worked.

He has now retired in Austin, and continues to live “healthy” with regular exercise. He has maintained his target cholesterol goals with medications and recently got down to his target weight, 25 pounds off his highest. Ray comes to Houston for periodic PET scans and each one shows progressive improvement in his heart. His commitment and ability to make dramatic lifestyle changes have earned him the title of HEARTSTAR. Putting him in the limelight also increases the pressure to maintain his goals! Stay with it Ray! You look great lean and your heart really likes what you are doing as the pictures show.





## Living Healthy

### Should I drink alcohol?

While alcohol has been touted as protective against cardiovascular disease in the lay press, its medical use should be limited for several reasons. Alcohol is a carbohydrate high in calories that may maintain elevated triglycerides and excess weight. It is also metabolized by the liver; and when taken in excess, may harm the liver. The liver is then more susceptible to the effects of cholesterol-lowering drugs, which cannot be used if the liver is severely damaged by alcohol. The cholesterol-lowering drugs are more effective in protecting against cardiovascular events than is alcohol. Therefore, alcohol intake should be limited in order to allow optimal cholesterol lowering by drugs in addition to calorie restriction for weight control and low-fat foods.



While all forms of alcohol (whiskey, beer, and wine) have a tendency to increase HDL, other methods of increasing HDL are more effective without the risks to the liver seen with high alcoholic intake. Also, the benefit to HDL was seen with 1-2 drinks per day. There was no further improvement with higher intake and greater risk of liver damage. Other common problems seen with alcohol intake are that its tendency tends to increase your appetite and at the same time reduce your resolve to stick to low-fat foods.

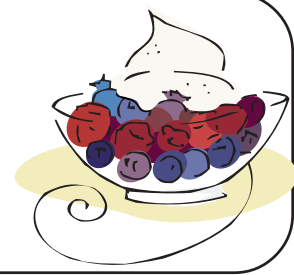
With increasing age, tolerance to alcohol diminishes. Amounts of alcohol that have little effect in your younger years may have serious adverse effects at older ages. Moreover, the effects of excess alcohol may be cumulative without apparent harm until the liver has sustained substantial damage. By the time this liver damage becomes apparent clinically, the liver may have already been substantially and irreversibly impaired. Finally, many people think that as long as they don't get drunk, they are not hurting their liver or drinking too much. However, many people who consume ex-

cess alcohol are never drunk but sustain the cumulative liver damage that leads to intolerance of the cholesterol lowering medications or liver failure.

Accordingly, for patients who do not normally drink alcohol, this program does not encourage its use. For individuals who regularly consume alcohol, one drink per day should be the maximum, since the side effects of greater intake far outweigh the potential benefits.

### Darwin's Dessert

Any Flavor Sugar-free Jello with fresh fruit and walnuts embedded. Topped off with a splash of low-fat whipped topping. ( Reddi-Whip)



### Food Suggestions

**Hormel Smoked Pork Chops** – a 3 oz. serving has 4 grams of fat and 15 grams of protein; patients who need to watch sodium should avoid this product. Extra lean fresh pork cuts are comparable to skinned chicken breast meat in fat and cholesterol content.

**Optimum Protein Powder**-110 calories and 23 grams protein per serving and it mixes and tastes great. <http://www.vigorousliving.com/op100whey5lb.html>

**Kraft Free Raspberry Vinaigrette Dressing** 40 calories per packet

**Marta's Low fat Vanilla Flan** (3 gms fat) available at Central Market in the refrigerated case with boxed salads and dinners to go. Marta's Desserts <http://www.martasdesserts.com>

**I Can't Believe it's not Butter Spray**- no fat or calories; good on steamed vegetables

PET News is published twice annually for the patients and friends of the Weatherhead PET Imaging Center for the Prevention and Reversal of Heart Disease. We welcome your story ideas, comments, and suggestions.

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