MEDIA PLANET
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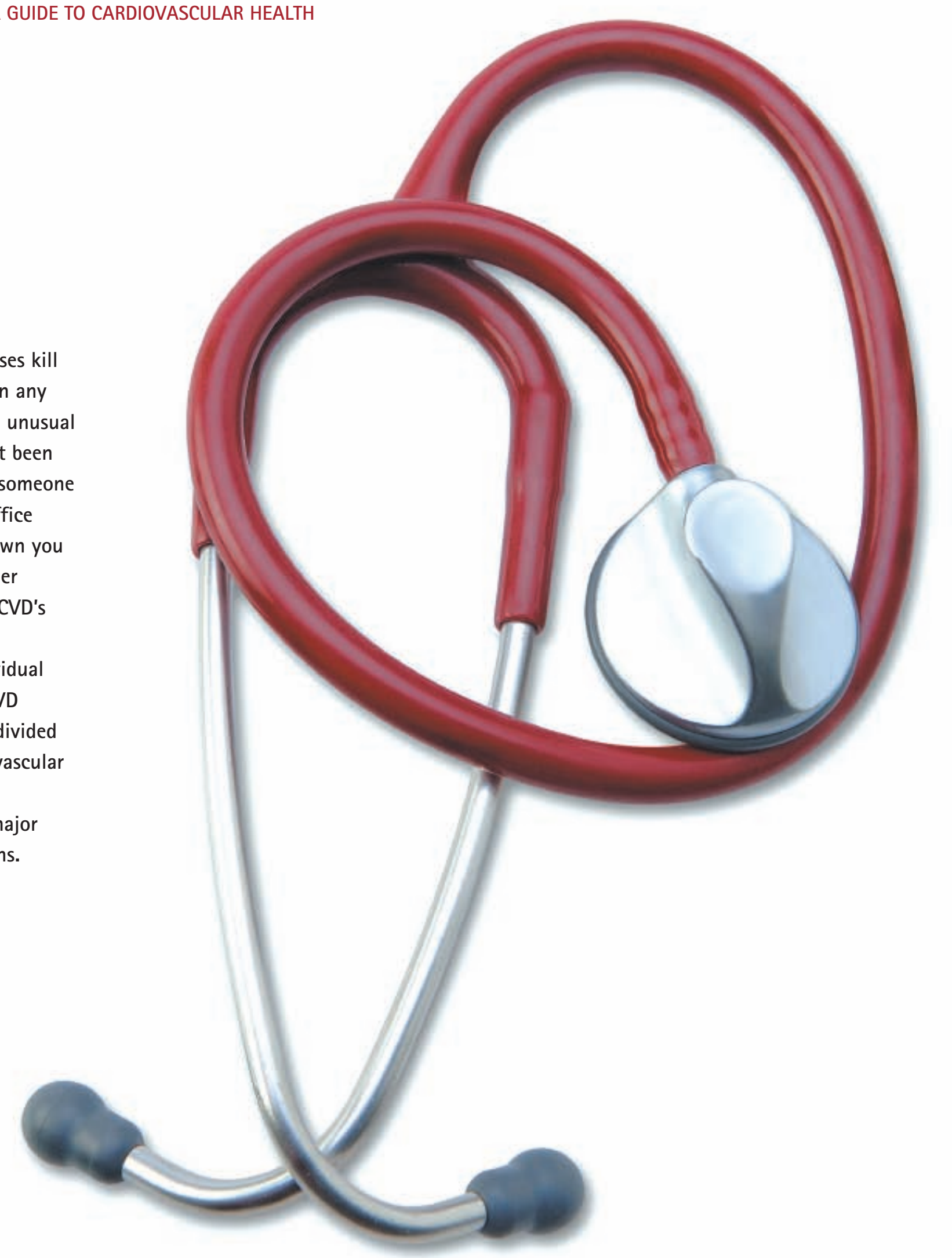
CARDIOVASCULAR

A GUIDE TO CARDIOVASCULAR HEALTH



Cardiovascular diseases kill more Americans than any other illness. It's the unusual person whose life hasn't been impacted by CVD. You, someone you love, a friend, or office buddy has probably shown you first hand what this killer can do. Understanding CVD's complexity starts with distinguishing the individual conditions under the CVD rubric. Broadly, CVD is divided into heart disease and vascular disease.

Here's an overview of major cardiovascular conditions.

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CARDIOVASCULAR
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Project manager: Lovisa de Geer
Production Editor: Marlene Piturro
Design/Prepress: Corinne Meier
Print: Dow Jones

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For more information about supplements in the daily press, please contact Björn Söderström,

001 646 454 2730
bjorn.soderstrom@mediaplanet.com

www.mediaplanet.com

Introduction to heart disease

BY MARLENE PITURRO

A 21st century American with cardiovascular disease (CVD) is much luckier than his 1975 counterpart. He has seen the number of deaths from CVD drop 50 percent, thanks to advances in prevention, diagnosis and treatment of heart and vascular diseases.

That's the good news. However, there's a long way to go before scientists and physicians declare that CVD is history. Heart disease remains the U.S.' leading killer of both men and women. According to the Department of Health and Human Services' Centers for Disease Control, CVD kills nearly 700,000 people annually, accounting for 29% of all U.S. deaths. CVD is also a major cause of disabling hypertension, heart failure and stroke.

Because heart disease cuts a wide swath, a number of organizations such as the American Health Association, the National Institutes of Health, and the American Stroke Association have taken leading roles in educating the public about the roles of diet, exercise, smoking cessation, and medication to prevent or ameliorate CVD. They have also taught us to recognize the first signs of a potentially fatal heart attack or stroke, and to get medical help immediately.

Just as importantly, the American health care system, with hospital executives and doctors in the vanguard, is improving hospitals' response to cardiovascular emergencies. Ever since the Institute of Medicine's To Err is Human report stated that 98,000 patients annually in American hospitals died from medical mistakes, killing more people than car accidents, breast cancer and AIDS, prompt recognition and correct treatment of heart attack and stroke has become a national priority, with stunning success. When the Institute of Healthcare Improvement set out in 2004 to save 100,000 lives through prompt and correct in-hospital response to emergency, it succeeded beyond its expectations. Now it has raised the bar—to saving five million lives by 2010. And the Center for Medicare and Medicaid Services (CMS) now publishes report cards on how every hospital in the United States adheres to 'core measures,' clinically agreed upon benchmarks for the prompt treatment of heart attack and stroke.

While our present successes with CVD are impressive, our future is even brighter. Every day scientists learn more about who is at risk for CVD, unlocking the biological mysteries that make us vulnerable. Virtually every life-threatening cardiovascular killer—from deadly and stealthy cardiac arrythmias, clogged coronary arteries, heart attack, stroke, congenital problems with the heart's structure, heart failure, and genetic predisposition to CVD—has been tamed if not conquered. Our imaging of the cardiovascular system—heart, brain and blood vessels has improved dramatically. Coronary artery bypass surgery is becoming a 'minimally invasive procedure,' leaving patients with their breastbones intact. Arrhythmias that strike suddenly can be detected and corrected before they have a chance to kill. Heart failure patients exercise and improve the quality of their lives. DaVinci surgical robots, improved pharmacology, and monitoring systems that allow patients with heart disease to remain safely at home are here today. Heart transplants, over 2000 done annually in the U.S., are practically routine. Finally, early stem cell research shows promise to grow new heart muscle, restoring life's pump to vitality. These are exciting times for cardiac warriors—the researchers, physicians, educators, patients and diet and fitness conscious citizens—who are fighting a very good fight.

What is cardiovascular disease?

BY MARLENE PITURRO

Cardiovascular diseases kill more Americans than any other illness. It's the unusual person whose life hasn't been impacted by CVD. You, someone you love, a friend, or office buddy has probably shown you first hand what this killer can do. Understanding CVD's complexity starts with distinguishing the individual conditions under the CVD rubric. Broadly, CVD is divided into heart disease and vascular disease.

Here's an overview of major cardiovascular conditions:

Arrythmia and atrial fibrillation-abnormal, irregular or chaotic heart rhythms that, if undetected, can lead to sudden death. In arrhythmias, the heart's natural pacemaker slows, skips heartbeats, or exhibits erratic electrical activity. Atrial fibrillation (AF) is an abnormal heart rhythm that does not permit the heart's chambers to fill and contract properly. AF increases with age and can cause debilitating strokes from clots formed in the malfunctioning left atria.

Atherosclerosis ('hardening of the arteries')-the accumulation of lipids in arteries, it first attacks the arteries supplying blood to the heart, and then peripheral arteries. It can cause an acute myocardial infarction (heart attack), angina (severe chronic chest pain), or heart failure.

Heart failure-when atherosclerotic disease progresses it can cause multiple small heart attacks, often going unnoticed by the patient. Eventually it leads to an 'enlarged heart' as the heart compensates for its decreased pumping capacity. Common symptoms of heart failure include shortness of breath after exertion, and fluid accumulation in the legs and/or around the lungs. Although atherosclerosis is the most common cause of heart failure, high blood pressure and cardiomyopathy (congenital abnormalities) can cause HF as well.

Hyptertension ('high blood pressure')-an increase in blood pressure caused by a variety of factors including genetic predisposition, atherosclerosis, stiffening of the arteries with age, and abnormalities in the hormones that regulate blood volume. Hypertension doesn't cause symptoms but increases the risk for other disease, especially stroke, atrial fibrillation, heart attack and kidney failure.

Hypertrophic cardiomyopathy (HCM)-in this disease the wall between the two ventricles becomes enlarged and obstructs the blood flow from the left ventricle. HCM is the single most common cause of sudden death in seemingly healthy young people. About 1 in 250 people suffer HCM, and screening programs among teenage athletes for HCM is increasing rapidly

Stroke-similar to a heart attack, stroke has been called a 'brain attack,' causing death of brain tissue and/or scarring caused by an interruption in blood supply. Stroke may be cause by atherosclerosis, a hemorrhage, or occlusion of brain arteries from blood clots originating in the heart or other large blood vessels.

Valve disease-the heart's four valves (mitral, tricuspid, aortic, and pulmonic) all ensure that blood flows in only one direction through the heart. Valvular heart disease is caused by congenital malformations, narrowing, insufficiency ('leaky value'), rheumatic fever, and heart attack, and is corrected through surgery.

Vascular disease-affects the arteries that carry blood away from the heart and the veins that return blood back to the heart. Peripheral artery disease involves a number of serious conditions including carotid artery blockage, claudication (blockage in the legs), and kidney artery disease. An Aneurysm is an abnormal bulge in the wall of a blood vessel, occurring most commonly in the aorta, the body's largest artery.

Fast Facts: Heart Disease

- Approximately 47% of cardiac deaths occur before emergency services or transport to a hospital
- Worldwide, coronary disease kills more than 7 million people annually
- Heart disease is the leading cause of death for both men and women in the U.S.
- In 2002, 696,947 people died of heart disease; 51% of them were women.
- Heart disease kills 241 out of 100,000 Americans annually
- Heart disease is the leading cause of death for American Indians, Alaska Natives, African-Americans, Hispanics and Caucasians. For Asians and Pacific Islanders it is the second highest cause of death, after cancer
- Coronary heart disease is the principal type of heart disease, accounting for 71% of heart disease deaths
- In 2003, 37% of adults reported having two or more of these six risk factors for heart disease-hypertension, high cholesterol, diabetes, smoking, physical inactivity, obesity

Source: Centers for Disease Control, 11/15/2007

CARDIOVASCULAR WHAT IS CARDIOVASCULAR?

The American Heart Association – your guide to cardiovascular fitness

BY MARLENE PITURRO

THE AMERICAN HEART ASSOCIATION GETS AMERICA MOVING

Heart disease and stroke continue to be the nation's number one and three killers, respectively; 140 million American adults (66%) are overweight and sedentary, leading to cardiac risk factors such as high cholesterol and high blood pressure. To reduce those risk factors, Dr. Richard Stein, an A.H.A. spokesman, wants to get everyone up and moving. "There is overwhelming evidence that keeping physically active and eating a healthy diet extends life. Studies show that for every one hour of regular vigorous exercise, you could gain two more hours of life," says Dr. Stein.

As a cardiologist who faithfully walks with his black Labrador retriever three miles to the deli for coffee, Dr. Stein's and the AHA's challenge is getting people started on an exercise regime. "Our two barriers are starting and integrating exercise into our lives," he says. To win the battle against a sedentary lifestyle the A.H.A. chose simplicity; encouraging everyone to walk 30 minutes a day six days a week, through the Start! program. "Almost everyone can do this. All you need is a safe place to walk and sensible shoes, preferably sneakers," adds Dr. Stein.

The trick is integrating walking into your daily routine. Walk six blocks to and from work, eat a salad for lunch and then walk for 20 minutes, or mall walk with a buddy. As you acclimate to exercising, raise the bar incrementally. Start with flat terrain, then walk at a brisk pace up and down hills.

Although the Start! program targets adults, Dr. Stein fears for the cardiac health of America's children. "We stand to lose the 20% gains we've made in preventive cardiology because we've produced a generation of overweight and sedentary kids." Attributing high-calorie fast food, videogames, and high definition TV to the growing number of sedentary obese adolescents, Dr. Stein is not optimistic. "It's easy to eat a 1,000 calorie fast food meal. Walking a mile burns 100 calories. I don't see these kids walking ten miles to balance their food intake." He urges all of us to be walkers instead of couch potatoes. Sound advice.

FYI: The A.H.A.'s web-based tool, MyStart!Online, helps individuals track their fitness and nutrition progress. Visit heart.org/start to register for this free service.

THE A.H.A. AND CORPORATE AMERICA TEAM UP FOR CARDIAC FITNESS

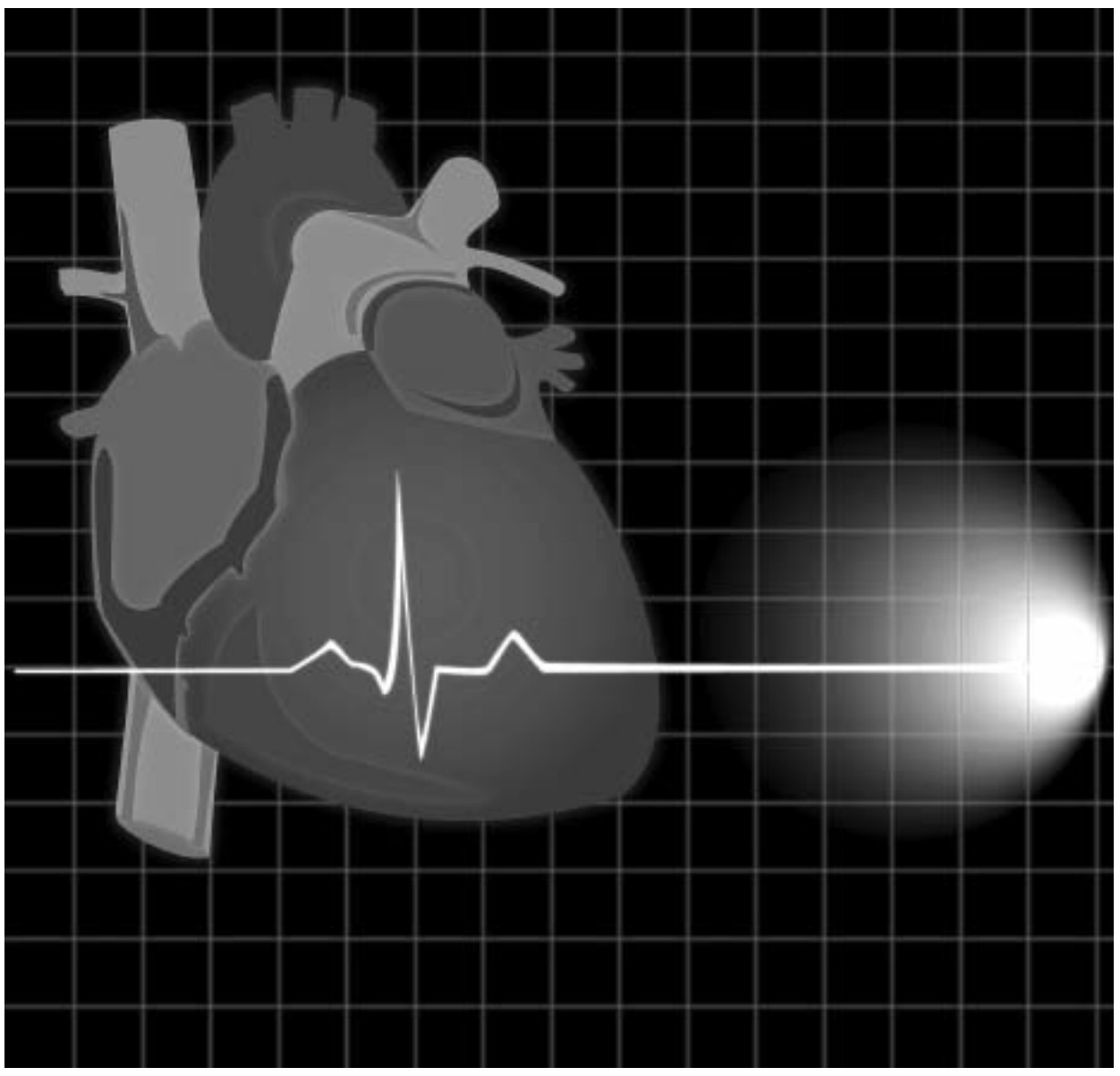
The American Heart Association has partnered with corporate America to get employees to exercise. One of its major efforts is the Heart Walk. Currently, there are over 450 Heart Walks held each year in cities across the country to promote fitness and to raise money for the A.H.A. In New York City, for example, over 11,000 people participated in the 2007 Wall Street Run (more a leisurely four-mile walk), raising $1.2 million for the A.H.A. Corporate sponsors kicked in, as did participants paying nominal entry fees and collecting dollars for miles walked from individual friends and family.

The Heart Walks are only part of a multi-faceted approach by corporations to cut their healthcare costs, especially the 70 percent of costs for preventable illnesses. A U.S. Department of Health and Human Services study released in 2002 reported that corporate fitness programs reduce employer healthcare costs by 20 to 55 percent. A.H.A. spokesperson Dr. Richard Stein outlines some of the things corporations are doing to promote physical fitness: walking paths and other areas to walk, treadmills, heart-healthy cafeteria meals, on-site gyms, subsidized gym membership, and online educational tools. "Most Americans work at sedentary jobs and nearly 70 percent of Americans engage in no regular leisure-time physical activity, which we define as light-moderate activity for more than 30 minutes, five times a week," says Dr. Stein. "Through our AHA-corporate partnerships we've opened the door for sustained change in corporate culture, a culture that is encouraging companies to seek solutions that improve their employees' health," he concludes.

THE DASH DIET

The A.H.A.'s DASH diet: (Dietary Approaches to Stop Hypertension), lowers blood pressure, reduces cholesterol and improves insulin sensitivity. Rich in fruits, vegetable, low fat or nonfat dairy, it also includes lean meats, fish and poultry, nuts, beans and grains. The DASH diet is not a flashy, fad diet. The A.H.A. made DASH an easy-to-follow diet, designing it around ingredients that are affordable and readily accessible at local supermarkets.

You can download the DASH diet manual for free at: www.nhlbi.nih.gov/health/public/heart/hpb/dash/new-dash.pdf. Click to "A Week with the Dash Diet for sample menus. The DASH Diet Action Plan can also be ordered for $19.95 at www.dashdiet.org.



100 k lives

BY MARLENE PITURRO

"Some is not a number. Soon is not a time." With those words, on December 21, 2005 Dr. Don Berwick, CEO of the Cambridge, MA-based Institute for HealthCare Improvement (IHI), launched a national campaign to prevent 100,000 unnecessary hospital deaths by June 14,2006. Led by IHI, participating hospitals agreed to these six life-saving campaigns:

- Rapid Response Teams to provide immediate clinical attention at the first sign of a patient's medical distress
- Prompt administration of medications during a heart attack or stroke
- Prevent adverse drug reactions by giving the right medications at the right dosages
- Prevent infections through staff hand washing and barrier precautions
- Reliably delivering antibiotics to prevent infections after surgery
- Pneumonia prevention in ventilator patients

In the case of immediate reaction to a stroke, each participating hospital decided what top quality stroke care should be. For its patients Seattle-based Swedish Medical Center set out to cut death rates from stroke. It witnessed a 24 percent decline in such mortality, winning the coveted 2005 Codman Award for exemplary stroke care. Dr. William Likosky, Swedish Stroke Program medical director, who accepted the Codman Award on his team's behalf said: "The award is a testament to the expertise, dedication to advancement and hard work of everyone associated with the care of stroke patients at Swedish."

Using a powerful medical arsenal, from clot-busting drugs, to 24/7 evaluation of a stroke victim within 15 minutes of hospital arrival, to CT or MRI brain scans administered within minutes, and neurosurgeons always at the ready, the medical center has comprehensive stroke care at its three campuses.

Energized by its 100K campaign, which met and exceeded its June 14, 2006 goal, I.H.I has raised the bar substantially. Its current goal is to save five million more lives by December 2008 using the tools developed in its six major campaigns.

Read this, save lives

BY MARLENE PITURRO

Unless you want to gamble with your life, check how hospitals near you rank on cardiac 'core measures'. That bit of research could be the difference between life and death.

Core measures are a set of medically agreed-upon minimum standards of care for all patients used by the Centers for Medicare and Medicaid Services (CMS) and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) to rank every U.S. hospital. For cardiac care they are:

Heart Attack

1. Aspirin at arrival
2. Aspirin prescribed at discharge
3. ACE inhibitor or Angiotensin Receptor Blocker for left ventricular systolic dysfunction
4. Beta blocker prescribed at discharge
5. Beta blocker on arrival
6. Thrombolytic agent received within 30 minutes of hospital arrival
7. Primary Percutaneous Coronary Intervention (PCI) received with 120 minutes of hospital arrival
8. 30-day heart attack mortality

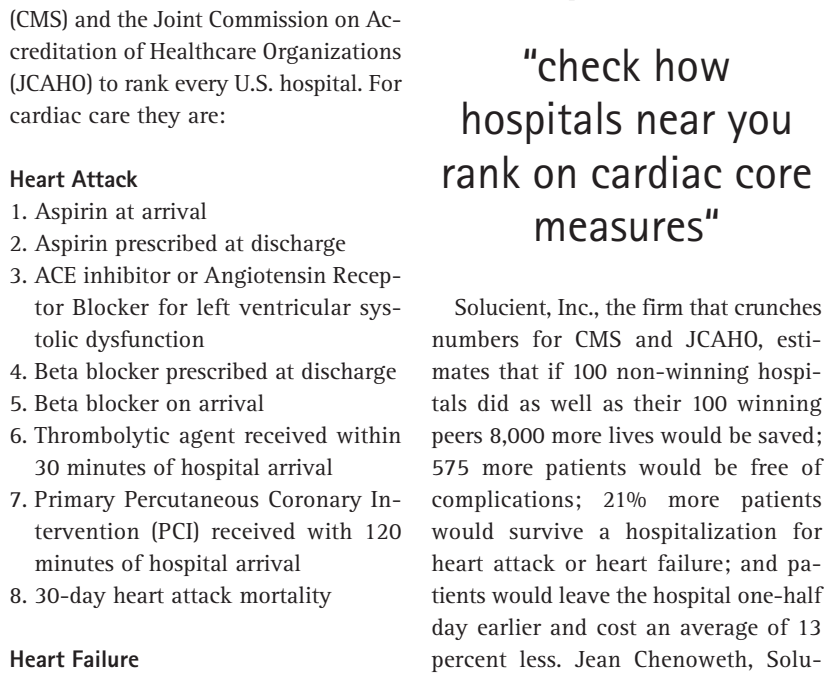
Heart Failure

1. Discharge instructions
2. Left ventricular function assessment
3. ACE inhibitor or Angiotensin Receptor Blocker for left ventricular systolic dysfunction
4. Adult smoking cessation counseling

To level the playing field, CMS/JCAHO compare hospitals to their peers. The three groups are teaching hospitals with cardiovascular residents, teaching hospitals without cardiovascular residents, and community hospitals. For a list of the best visit www.100tophospitals.com/winners/Cardiowinners.aspx

"check how hospitals near you rank on cardiac core measures"

Solucient, Inc., the firm that crunches numbers for CMS and JCAHO, estimates that if 100 non-winning hospitals did as well as their 100 winning peers 8,000 more lives would be saved; 575 more patients would be free of complications; 21% more patients would survive a hospitalization for heart attack or heart failure; and patients would leave the hospital one-half day earlier and cost an average of 13 percent less. Jean Chenoweth, Solucient's senior vice president, said the 100 top hospitals for cardiovascular care bring great value to their communities and have set national benchmarks for clinical standards, outcomes and efficiency at a reasonable cost.



Gender differences

Think of a typical heart attack victim. An overweight middle-aged man who overly enjoys cigarettes, juicy steaks, and alcohol may come to mind. That stereotype is wrong.

BY MARLENE PITURRO

Cardiovascular disease is the leading cause of death in women as well as men. More than twice as many women die from CVD as from all forms of cancer combined.

Heart disease doesn't discriminate when it strikes. When it comes to diagnosing and treating CVD, though, there are measurable differences between the sexes based on myriad factors– attitude, hormonal and similar biological factors, risk factors, and how male and female bodies respond to common diagnostic tests and surgeries.

The emergency room highlights CVD gender differences. Thanks to thrombolytics, clot-busting drugs such as TPA and streptokinase, heart attack survival rates have greatly improved in the past ten years, but more so for men than women. A Washington state study of 1,078 men and women showed that 30% of women arrived at the E.R. too late for thrombolytic therapy, and only 55% of eligible women versus 78% of men received the necessary drugs. Why the differential treatment? It's unclear. Clot-busting drugs work best when administered within one hour of a heart attack and women delay getting to the E.R. longer than do men. Physician and patient attitudes toward the urgency of women's heart attacks may differ.

Men and women also respond differently to common tests. For example, women's treadmill stress tests were misread 35% more frequently than were men's, while nuclear imaging during stress testing led to more accurate readings for women. Researchers believe that women's menstrual cycles and oral contraceptive use may lead to abnormal stress test results, and that stress tests induced by drugs rather than exercise may be preferable for them.

With balloon angioplasty, used to unblock clogged coronary arteries, women fare poorly; a Cleveland Clinic study showed death rates for women three times higher than for men. Some of those results can be explained with other risk factors; women having angioplasty were older than men and more likely to have diabetes and high blood pressure. Women fared even worse with bypass surgery (CABG). A study conducted at Emory University School of Medicine of over 42,000 patients showed that women had higher death rates and complications. Doctors cut women's risk of death during or after CABG by not using the conventional heart-lung pump, working off-pump instead.

Clearly, more research on gender differences in cardiovascular risk factors, age, the impact of other chronic conditions, hormones, diagnosis and treatment remain to be done. When it comes to CVD, men and women truly are different.

NYU Medical Center- Cardiac and Pulmonary Rehabilitation

BY MARLENE PITURRO

Interview with: Jonathan H. Whiteson, MD, Director of Cardiac and Pulmonary Rehabilitation, NYU Medical Center, Co-Director Joan and Joel Smilow Cardiac Rehabilitation and Prevention Center

WHAT RECENT CHANGES HAVE HAPPENED IN YOUR FIELD?
Medicare, the biggest payer for cardiac patients, has broadened what diagnoses they will cover for rehabilitation. Prior to 2007 Medicare only covered outpatient rehab for a heart attack or bypass surgery. Now they've expanded coverage to include heart valve problems, angina, angioplasty, stent placement, and heart transplant. This is a major step in the right direction, but heart failure is not covered. CMS ruled that there is not enough scientific evidence to support the therapeutic effects of exercise on heart failure, but I think the literature supports it.

CMS WANTS TO MOVE PATIENTS OUT OF THE HOSPITAL FASTER. HOW DOES THAT AFFECT YOU?
Medicare has squeezed the acute world [the hospital] moving patients to sub-acute rehab centers quickly. The Rusk Institute -NYU Medical Center has established a relationship with two nursing homes that have cardiac and pulmonary rehab programs. We trained their staffs. It works well.

WHAT IS INVOLVED IN CARDIAC REHAB BESIDES EXERCISE?
I spend a lot of time coordinating with cardiologists on medication assessment and management, particularly ACE inhibitors and beta blockers. The American College of Cardiology and the American Heart Association, say that an ideal blood pressure is 120/70, but the cardiologist may say 140/80 for a 70-year old is good enough. It really isn't. We don't want to interfere with the patient's relationship with his cardiologist or internist, but. I believe we should treat for optimal results.

HOW ELSE DO YOU WORK WITH REFERRING PHYSICIANS?
There's terrible under-referral of patients who are eligible for cardiac rehab because physicians don't always know who will benefit. We can serve greater population population than we do now.

WHO ARE YOUR TYPICAL PATIENTS?
Among outpatients we have many stressed out executives in their 40's and 50's. We aggressively manage their risk factors such as stress, smoking, weight, alcohol, and leading a sedentary life. Our inpatients tend to be in their 70's and 80's, some are even 100 year olds with multiple chronic conditions.

WHAT DO YOU EXPECT FROM PATIENTS?
Patient power is the way to go because it's effective. I teach patients about acceptable parameters on blood pressure, cholesterol, diabetes, weight and smoking. Knowledge is power. I've succeeded when the patient says: "My blood pressure should be 120/70. Doc, let's work harder."

HOW IMPORTANT IS THE PATIENT'S STATE OF MIND?
It's critical. People with social isolation, anxiety, and depression tend to develop cardiac problems and handle it poorly emotionally. That said, normal people who develop heart disease also get depressed, anxious and lonely.
Our physicians and nurse practitioners bring in social workers and psychologists who are experts in counseling patients with cardiac disease. They understand underlying depression and behavioral issues. In order to effect change we have to understand why the patient is overweight or not taking his medication.

WHAT ELSE IS HAPPENING AT NYU CARDIAC REHAB?
Our Mended Hearts Program is the only chapter in the tri-state area participating in this national organization for cardiac patients. Out rehab graduates run monthly meetings for education and peer support. Putting patients together helps them overcome isolation, to normalize and reintegrate with other people.

HOW IMPORTANT IS PEER SUPPORT?
I treat a number of celebrities who insist on separation from other patients. I understand their need for privacy but their isolation is unfortunate. Heart disease carries psychological baggage, made more bearable if you have peer support.

CARDIOVASCULAR TREATMENT

Diagnosing CVD-basic tests

When you're finished reading this article on diagnosing what's wrong with the heart—that mysterious fist-sized, 10.5 ounce upside down cone-shaped pump—you'll want to don a lab coat and drape a stethoscope around your neck. Your knowledge of CVD testing will help you and your doctor be better partners in taking care of you.

BY MARLENE PITURRO

Basic tests

If you're healthy and without several CVD risk factors (see sidebar) these routine tests tell your doctor what she needs to know.

Blood pressure-is measured with an inflatable arm cuff and a pressure-measuring gauge yielding two numbers; the first (upper) number measures the pressure in your arteries when your heart beats (systole); the second (lower) number is the pressure in your arteries between beats (diastolye). Normal blood pressure is 120/70; pre-hypertension is 120-139/80-89. Readings above that signal high blood pressure.

SIDEBAR: RISK FACTORS-THE 800-POUND GORILLA IN THE EXAM ROOM. YOUR DOCTOR FACTORS IN THESE RISK FACTORS WHEN ORDERING YOUR DIAGNOSTIC CARDIAC WORK-UP:

- ✓ Family history-early onset heart disease
- ✓ Smoking
- ✓ Alcohol consumption
- ✓ Obesity
- ✓ Sedentary life style
- ✓ High blood pressure
- ✓ Diabetes
- ✓ Low LDL cholesterol
- ✓ Age-men 45+ years; women 55+ years
- ✓ Large waists men 40+ inches, women 35+ inches

"If you're healthy and without several CVD risk factors (see sidebar) these routine tests tell your doctor what she needs to know"

Blood tests for CVD-routine blood tests measure for C-reactive protein (a marker for fatty deposits clogging your arteries); fibrinogen (blood clotting protein); homocysteine (an amino acid which, in excess, increases stroke risk); lipid panel (cholesterol test)-tests for LDL ("bad") cholesterol, HDL ("good") cholesterol, triglycerides, and total cholesterol; and brain natriuretic peptides-a high level indicates heart damage.

Chest x-ray-a trip to the E.R. with chest pain includes a chest x-ray. This basic test remains a core tool in seeing the size and outline of your heart and blood vessels; calcium deposits, and your lungs' condition. It can reveal damage to your heart valves, coronary arteries, the heart muscle, and heart failure.

Electrocardiogram [ECG or EKG]-records the electrical impulses generated by your heart's natural pacemaker. The EKG detects arrythmias, structural abnormalities, and problems with the supply of blood and oxygen to your heart. It also confirms if you're having a heart attack.

What's hot in basic CVD testing

Cardiac screening of teenage athletes for rare and potentially fatal heart conditions is saving lives nationally. Doctors at Beaumont Hospital in Royal Oak, MI screened 567 students for hypertrophic cardiomyopathy, a heart abnormality that kills young athletes. Of the 567 screened, 104 were further checked with an echocardiogram, and told to stop playing sports immediately until cleared by a cardiologist. At Baltimore's Johns Hopkins, scientists developed a blood test to detect ARVD, a cardiac arrhythmia responsible for an estimated five percent of sudden cardiac deaths annually. With ARVD, a poorly functioning right ventricle beats irregularly and weakens over time. Doctors treat the condition with an implanted defibrillator.

Routine cholesterol screening is enhanced with the VAP (Vertical Auto Profile) test from Atherotech. It improves cholesterol testing accuracy by directly measuring LDL levels. Patients with an abnormal screening profile, a family history of high cholesterol, and elevated triglycerides can all benefit from this advanced cholesterol test.

Advanced CVD diagnostic testing

Something's wrong. You've got unexplained chest pain, your blood tests showed a problem, or your chest x-ray indicated you might have a blocked coronary artery. Time for some advanced cardiovascular testing

BY MARLENE PITURRO

Advanced tests

Coronary angiography/catheterization-uses x-ray imaging to examine the insides of your heart's blood vessels. By inserting a catheter (a long, thin flexible tube) into a vein and injecting a dye that's visible by the x-ray machine, the machine rapidly takes a series of images (angiograms) of your blood vessels. The angiography shows what's wrong with your blood vessels: how many of your coronary arteries are blocked, pinpoints where the blockages are, and assesses blood flow through your heart and blood vessels. Based on the results, your doctor may recommended an angioplasty to unblock clogged arteries.

Echocardiogram-this test uses sound waves to produce images of your heart. It shows your heart in motion, its ventricles contracting and relaxing, and valves opening and closing. It is usually ordered if your doctor suspects problems with your heart valves or chambers of the heart. Like the EKG, the echocardiogram involves sticking electrodes to your body that detect your heart's electrical currents.

Doppler ultrasound-evaluates blood flow and pressure by bouncing high-frequency sound waves off red blood cells. It can help diagnose blood clots, problems with leg veins, heart valve defects, congenital heart disease, and a blocked or narrowed artery.

Nuclear stress test-helps measure blood flow to your heart at rest and during stress. It is similar to a routine exercise stress test but adds images in addition to EKG readings. During the test, technicians inject radioactive dye into your bloodstream, which mixes with your blood and travels to the heart. A camera or scanner detects the radioactive material and creates images of your heart muscle. Inadequate blood flow to any part of the heart will show up with this test.

What's hot in advanced CVD testing

For patients with undiagnosed chest pain, those with no obvious signs of heart disease or blockages based on standard blood, EKG and cardiac stress testing, dual source 64-slice computed tomography (CT) scans offer a less invasive alternative to cardiac catheterization. Dr. Robert Lyons, head of radiology at Columbia St. Mary's Hospital in Milwaukee, uses the sophisticated scanner because the technology is twice as fast, capturing images of the beating heart in seconds. "We don't need to slow the heart with beta blocker medications, as with other CT scanners. This gives a faster, more accurate diagnosis for patients and reduces preparation time. It's a significant advance for diagnostic cardiology" says Dr. Lyon.

Dr. Lee Surkin of Greenville, NC uses the Digirad Cardius-! M nuclear cardiac imaging camera for non-invasive nuclear stress testings. The portable heart imaging camera provides essential information on cardiac wall motion and condition of the heart valves. It helps evaluate conditions such as shortness of breath, chest pain, dizziness, murmurs and other symptoms related to cardiac disease.

Good news on cholesterol – but get tested

Good news came this month from a national survey finding that total average cholesterol levels among adult Americans is now within the ideal range. The average level has fallen steadily in recent decades, mainly reflecting successful drug treatments for high cholesterol.

BY RICHARD LEONARD

The American Heart Association (AHA) points out many misconceptions about the fat-like, waxy substance found in all body's cells. In fact, cholesterol is important for health because the body uses it for producing cell membranes and certain hormones, and other functions.

Low-density lipoprotein (LDL or "bad" cholesterol) can clog arteries, increasing the risk of heart attack and stroke. High-density lipoprotein (HDL or "good" cholesterol) carries cholesterol away from the arteries, and low HDL levels also pose risks.

Liver and other cells make most cholesterol in the blood, and the rest comes from foods. Saturated fat, trans fats, and dietary cholesterol all increase cholesterol levels. Many "low-cholesterol" foods actually contain high levels of saturated fat and/or trans fat.

High cholesterol is often seen as a man's problem because estrogen tends to raise good cholesterol levels for premenopausal women. However, a new study by the National Committee for Quality Assurance highlights risks for older women, who are significantly less likely than men to get treatment to control high cholesterol.

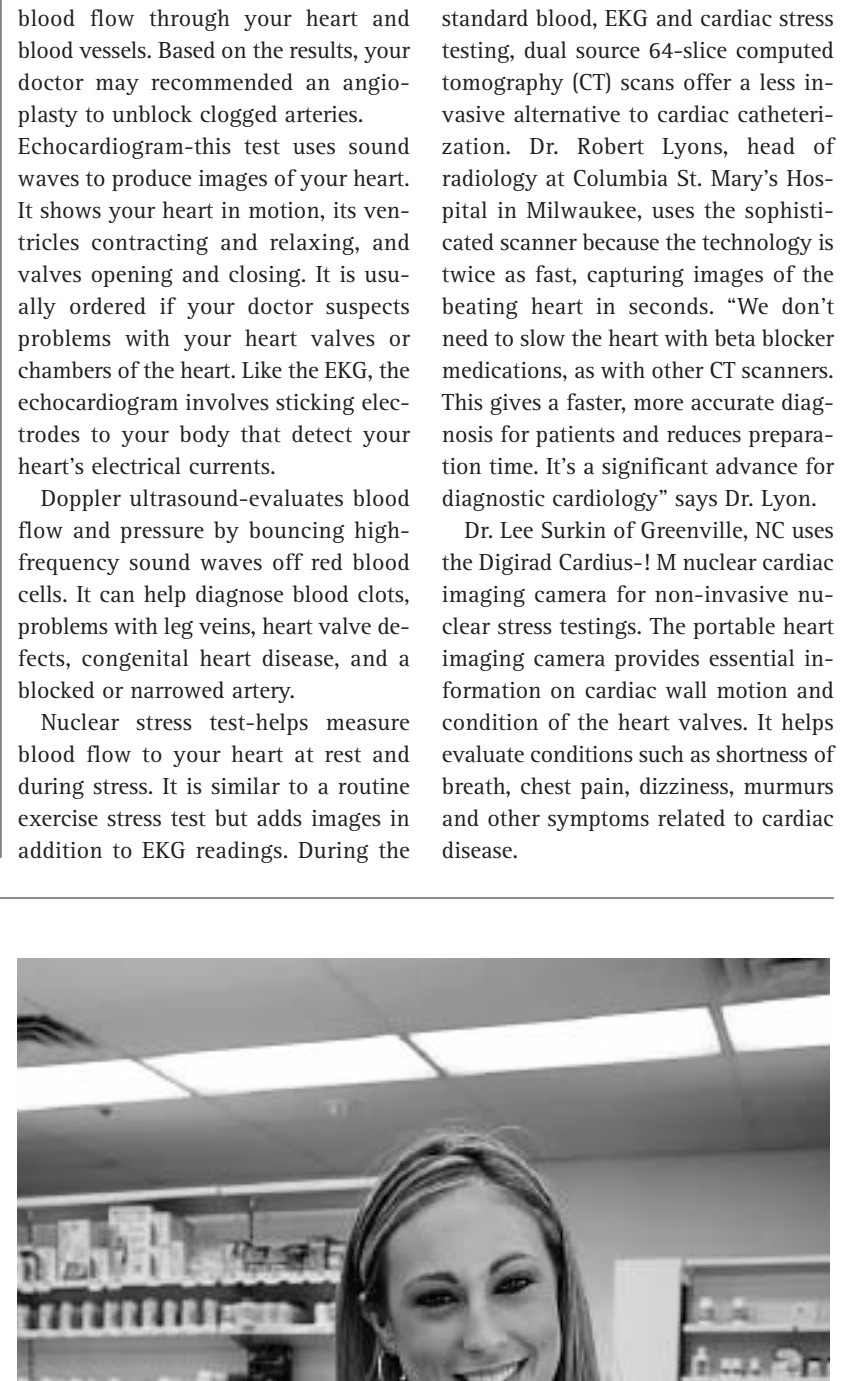
"A healthy diet and regular physical activity are vital for maintaining cardiovascular health"

"Women must know their risk for heart disease and how to manage it," says Ileana L. Piña, MD, professor of medicine at Case Western Reserve University and spokesperson for the AHA Go Red for Women heart disease awareness campaign.

A healthy diet and regular physical activity are vital for maintaining cardiovascular health. But these are no guarantee of safe cholesterol levels, since many people inherit genes that cause them to make too much cholesterol.

The National Cholesterol Education Program recommends cholesterol testing for everyone age 20 and older every five years. Atherotech, Inc. says that its VAP technology is the first to comply with the Program's updated recommendations calling for more accurate LDL measurement.

It is best to have a doctor do the test and interpret the results in light of various other cardiac risk factors, says the AHA, which hasn't taken a position on cholesterol home testing devices, several of which are on the market.



New Treatments for cardiovascular disease

The healthy heart's natural pacemaker keeps it beating 72 times a minute. When things go wrong, modern medicine intercedes with a wealth of technologies, surgeries and medications to restore the heart and its owner to as good as quality of life as possible.

BY MARLENE PITURRO

Surgical innovation

A heart transplant, the ultimate treatment for an irreversibly damaged heart, has come light years since the first transplant 40 years ago. According to Circulation, in 2005, U.S. cardiovascular surgery teams performed 2,125 heart transplants, up from 2,016 in 2004. There would be many more if donor hearts were available. Unlike early transplant patients, today's recipient of a transplanted heart has an 86% survival rate one year after surgery, and 71% five years later. Today's pioneering surgeons are also transplanting complete artificial hearts, and left-ventricular assist devices continue to keep patients awaiting transplant alive.

If the idea of your sternum cracked open, your ribs pushed aside, and your heart lying quietly outside your body is scary, there's hope. Cardiac surgery has come so far in the past few years that surgeons do coronary bypass surgery (CABG), lung surgery, atrial septal defect closure, and valve replacement routinely through tiny incisions rather than by splitting the chest open.

'Minimally invasive' CABG surgery, unclogging one or more of the heart's five arteries, is now done through small incisions rather than by opening the chest cavity. To help surgeons navigate deftly within the heart; over two-dozen cardiac teams nationally use the $2 million DaVinci robot to guide them. Cardiac surgeon Allen Raczkowski, MD of Banner Heart Hospital in Mesa, AZ uses such robots, as do physicians at the Heart Hospital Baylor Plano (TX), Nashville's Centennial Medical Center, the Wisconsin Heart Hospital, and Palmetto Health in Richard, S.C.

But Dr. George Tolis, Jr, chief of Cardiothoracic Surgery at Boston-based Caritas St. Elizabeth Medical Center says his DaVinci robot is getting rusty. "Robotic techniques in cardiac surgery do not offer additional decrease in morbidity or invasiveness when compared to well established invasive techniques. They do, however involve significant upfront and maintenance costs." Dr. Tolis adds: "In other words, if you need to go from Fenway Park to Logan Airport, Mario Andretti will not provide you with a better ride than your average taxi driver. It may be more exciting but definitely more expensive."

Heart surgery has also improved in less dramatic ways. The Cleveland Clinic's cardiothoracic surgeon Douglas Boyd, MD uses a tiny stapler to replace sutures during CABG, working faster and producing better results. As for drug-coated stents, tiny mesh cylinders used to keep coronary arteries propped open after plaque blockages have been cleared through angioplasty, fears of clots forming because of them have abated. Angioplasty followed by stenting helps patients suffering from severe chest pain, shortness of breath, and ischmia live normal lives. While the number of drug-coated stents had dropped by 22% in 2006 because of patient fears about clotting, their popularity is on the rise again. The emerging scientific consensus is that stents are safe for patients with moderate to severe coronary disease.

THE FUTURE

Expect the incremental strides in minimally invasive coronary bypass, valve replacement, and septal corrections to continue, and for scientists to keep tinkering with artificial hearts and ventricular-assist devices. But cardiology's long-term dream is to repair an irreversibly damaged heart with stem cells. Still in its early stages, stem cell therapy involves injecting such cells into damaged hearts, triggering an increase in oxygen level, a sign that the new cells are working. Scientists have taken patients' own skeletal stem cells, injected them directly into the heart, and had heart patients survive for over one year with improved heart pumping function. Dr. Periannan Kuppusamy, director of Ohio State University's Center for Biomedical EPR Spectroscopy and lead researcher on using transplanted stem cells to increase oxygen levels in damaged hearts, says that though questions remain about the long-term viability of cardiac stem cells, he's encouraged by improved oxygen levels in the heart.

Category	How It Works	Popular Medications
ACE Inhibitors	Reduces hypertension by relaxing blood vessels	Altace, Mavik, Zestril
Calcium Channel Blockers	Reduces hypertension, angina and irregular heartbeat by relaxing vessels; increase exercise tolerance	Calan, Cardene, Cardizem, Norvasc,Procardia
Statins (HMG-CoA reductase inhibitors	Lowers cholesterol and triglycerides	Lipitor, Pravachol, Zocor
Alpha/Beta Blockers	Reduces hypertension, irregular heartbeat, angina, heart failure	Coreg, Inderol, Lopressor, Tenormin
Nitrates	Reduces angina, atrial fib., heart failure	Imdur, Lanoxin, Nitroglycerin
Diuretic	"Water pill" reduces excess fluid	Lasix
Thrombolytic	Prevents platelets from forming blood clots	Plavix

TELEMEDICINE–HELPING HEART PATIENTS STAY AT HOME

The five million Americans with heart failure (HF) and the 550,000 newly diagnosed each year, have a chronic disease without a cure. Atherosclerosis and multiple small heart attacks weaken their hearts' pumping ability, leaving patients short of breath and with fluid accumulations in the legs and/or lungs. HF is the most listed diagnosis among hospitalized patients; accounts for 3 million physician office visits; 65,000 home visits and costs the U.S. over $20 billion annually.

To avoid hospital readmissions and trips to the E.R., home monitoring is empowering HF patients to take control of their disease. Larry Minnix, president and CEO of the American Association of Homes and Services for the Aging explains: "Technologies are available now to make it easier for individuals to manage and monitor their heart conditions more effectively," He adds: "Your bed doesn't have to be just a place to sleep. It can be embedded with sensors to measure your vital signs and relay them to your doctor. The same goes for your bathroom scale. This helps us share the information needed to better manage diseases like heart failure and improve the individual's qualify of life in a place called home."

Dr. Craig Lehmann, Dean of S.UNY-Stony Brook's School of Health Technology and Management studied monitoring technology's impact on home bound HF patients, finding that their rate of hospitalizations were 50% less than a control group. They also avoided unnecessary E.R. trips. Their nurses found having access through monitors of their patient's vital signs helped them intervene at the first signs of discomfort—adjusting medications or diet on the spot.

Patients with irregular heartbeats are also benefiting from monitoring. Since a deadly arrhythmia can strike at any time, an upper arm blood pressure monitor that detects an arrhythmia and notifies the user with a warning signal lets him get to his physicians or the E.R. quickly.

Medicare does not yet pay for telemedicine 'home visits', impeding this technology's widespread adoption. Despite the lack of government funding, corporations including Honeywell, Intel, J&J, Kimberley Clark, Pfizer, and Phillips have partnered with CAST (www.agingtech.org) to explore technologies keeping heart patients at home, where they want to be.

EFFECTIVE DRUG THERAPY FOR CVD

There are excellent drugs for controlling the symptoms and slowing cardiovascular disease's progress. They're not cures, but they help millions of people with CVD lead normal lives. Here's a primer on frequently prescribed medications for cardiovascular disease:

Prevention: progress and potential

Despite great progress in recent decades in reducing its toll, heart disease remains America's number one killer. Nearly 80 million Americans, one fourth of the population, have some form of heart disease, according to the American Heart Association.

BY RICHARD LEONARD

This leads to more than 6 million hospitalizations and nearly 930,000 deaths each year.

The death rate from coronary disease among those 35 and older fell by about half between 1980 and 2002, according to a November report in the Journal of the American College of Cardiology. Yet gains for young adults seem to be stalling, with deaths actually increasing among women ages 35 to 44 during the last five years covered by the data.

"The take-home message is that heart disease has not gone away, continues to be a problem, and could become a greater problem if Americans fail to pay attention to known warning signs like overweight and obesity, and lack of exercise," said Dr. Philip Greenland, professor at Northwestern University's Feinberg School of Medicine, who co-wrote a companion editorial.

Adopting a healthy lifestyle can help prevent heart disease and prolong life. A study of people between ages 45 and 64 found that over four years, the rate of death or serious cardio-related events such as heart attacks was significantly less among those who began living healthier. Changes included a daily diet with more fruits and vegetables, exercising, maintaining a healthy weight, and not smoking.

"The findings emphasize that making the necessary changes to adhere to a healthy lifestyle is extremely worthwhile, and the middle age is not too late to act," noted Dr. Dana E. King of the University of South Carolina Medical School and his co-authors in the American Journal of Medicine in July.

With many Americans slow to change to healthier living, medications such as those to control cholesterol and blood pressure get much credit for reducing cardiac-related deaths.

Citing 277 medicines for heart disease and stroke in clinical trials or under Food and Drug Administration (FDA) review, Billy Tauzin, president and CEO of the Pharmaceutical Research and Manufacturers of America, said in May that they show that researchers "are keeping up the momentum of drug discovery that has cut deaths from these diseases by more than half since the 1950s."

The American Medical Association in November asked the FDA to set strict limits on salt in processed foods. Excess sodium in our diets contributes to high blood pressure, heart disease stroke, and reducing this by 50 percent over ten years could save at least 150,000 lives a year, said the association.

Are Women at Greater Risk?

Heart disease is the #1 killer of women. In the United States, a woman dies every minute of cardiovascular disease, and more women than men die of cardiovascular disease each year.

Despite increasing awareness of the importance of heart disease in women, "we still have a long way to go" says Dr. Alexandra J. Lansky, a clinical cardiologist and Director of Clinical Services at the Center for Interventional Vascular Therapy at NewYork-Presbyterian Hospital/Columbia University Medical Center. Dr. Lansky is also Director of the Women's Cardiovascular Health Initiative at the Cardiovascular Research Foundation, and Medical Director of the award-winning website www.HeartHealthyWomen.org, designed to educate women about treatment and prevention of heart disease.

Misperceptions about heart disease as a "man's disease" continue to lead women to ignore symptoms, putting their life at risk: "It takes women 15 or 20 minutes longer to get to the emergency room than men," Lansky says. "The sooner they go, the greater the benefits...from quality of life to life itself."

Doctors are continually learning that women develop a different form of cardiovascular disease than men, characterized by more widespread disease and more dysfunction in the small blood vessels. But finding out how to treat women properly is complicated by the fact that only about one third of patients in cardiovascular clinical trials are female. According to Dr. Lansky "We have a responsibility to make sure that the newest cardiovascular treatments are thoroughly evaluated in women, and to do so we need to increase the enrollment of women in clinical trials."

As for what the average woman can do to make she doesn't become just another heart disease statistic, Dr. Lansky has this advice: "The majority of heart disease deaths are preventable. Women need to inform themselves and know their risks, know their numbers, and know their options."

By Cody Pietras

“Novartis lowered my high blood pressure. I’ve been climbing ever since.”

At 45, Phil McKenzie discovered mountain climbing and it quickly became his passion. Then, he was diagnosed with high blood pressure and thought the life he loved was over. But thanks to a treatment from Novartis, he reduced his high blood pressure in a few weeks. Shortly after that, he climbed Mt. McKinley in Alaska, all 20,000 feet of it. And he’s been climbing ever since. **Think what’s possible.**

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