

THE NO. 1 KILLER OF WOMEN

No, it's not breast cancer. More women die of heart disease than of all cancers combined. What you should know about the latest research, and how you can protect yourself

By **CHRISTINE GORMAN**

ASK AMERICAN WOMEN WHAT DISEASE THEY'RE MOST SCARED of, and the vast majority will answer without hesitation: breast cancer. They may even cite the ominous statistic that 1 in 8 women will develop breast cancer at some point in her life. But what most women don't realize is that they actually have far more to fear from heart disease, which will strike 1 out of every 3. More than 500,000 women die in the U.S. each year of cardiovascular disease, making it, not breast cancer (40,000 deaths annually), their No. 1 killer.

Women and heart disease? Better believe it. For while most people still think of cardiovascular trouble as mainly a man's problem, the reality is that heart disease has never discriminated between the sexes. In fact, for a variety of complex reasons, the condition is more often fatal in women than in men and is more likely to leave women severely disabled by a stroke or congestive heart failure. True, women don't usually start showing signs until their 60s—about 10 years after men first develop symptoms. And hormones seem to play a protective role in women before menopause. But the common belief that premenopausal

Photograph for TIME by Howard Schatz



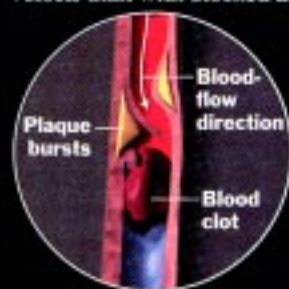
A WOMAN'S HEART

Physically, it's no different from a man's heart. Only when disease strikes do dissimilarities begin to emerge

HEART ATTACK

When heart muscle is robbed of its blood supply, the heart either pumps erratically or simply stops beating. Fatty plaques that build up in heart-vessel walls and then burst, blocking blood flow, are the primary cause of heart attacks

WOMEN VS. MEN Women tend to experience heart attacks 10 to 20 years later than men, but a woman's first heart attack is more likely to be fatal. Many women don't experience the classic symptoms that men feel—pain in the chest and arm and shortness of breath. Some doctors believe this is because heart attacks in women may have more to do with spasms in the heart vessels than with blocked arteries



ANGINA

Angina is the medical term for pain felt in the chest when the heart does not get the blood and oxygen it needs. Angina can be the first sign that the heart is ailing

WOMEN VS. MEN More women than men complain of chest pain, but in relatively few women is angina accurately diagnosed. Doctors are just beginning to realize that any chest pain in women, even younger women, could be a sign of heart trouble



TIME Diagram by Joe Lertola
Text by Alice Park

women are immune to heart problems is just plain wrong. Heart attacks strike 9,000 women younger than 45 each year.

The more scientists learn about a woman's heart and what can go wrong with it, the more they realize that females aren't just small males. There are subtle but important differences in how women's cardiovascular systems respond to stress, hormones, excess saturated fat and toxins like tobacco. There are also some pretty big differences in how aggressively doctors

treat women with heart trouble—even in the emergency room when they are in most desperate need of help.

All those publicity campaigns that have focused attention on breast cancer may be part of the problem. The pink ribbons, the docudramas and the races for a cure have inadvertently left women with the impression that breast cancer is the only thing they need be worried about. So when public-health officials at the National Heart, Lung and Blood Institute (NHLBI)

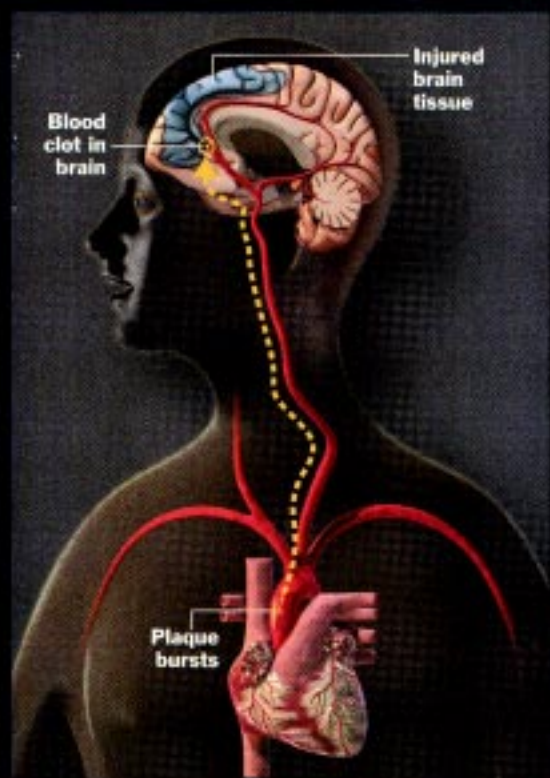
decided to spread the word about women's risk of heart disease with a campaign called Heart Truth, they took a page from the cancer advocates' manual, designed their own lapel pin—in the shape of a bright red dress—and sought help from some very highly placed women, starting with the First Lady. "Women take care of all the people in their family—their children, their husbands—but they sometimes don't take care of themselves," says Laura Bush. "The goals of this campaign are just to really

STROKE

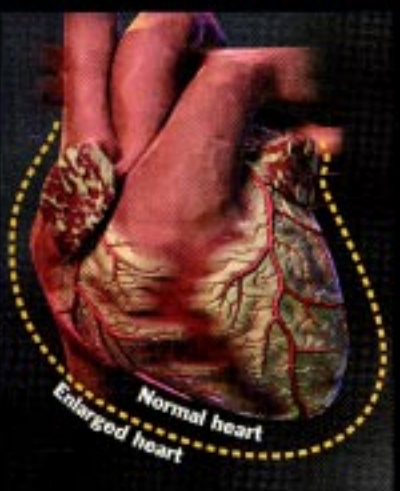
A stroke is like a heart attack in the brain. Strokes occur when blood vessels that supply oxygen to the brain either burst or are blocked by clots—clots that often start in the heart. If nerve cells are deprived of oxygen long enough, they begin to die, resulting in loss of brain functions and, eventually, permanent paralysis.

WOMEN VS. MEN

More women than men die of strokes (60% of women, 40% of men), even though more men have strokes. Doctors aren't sure why, but they think it may have to do with women's smaller blood vessels, which are more vulnerable to blockage.



CONGESTIVE HEART FAILURE



When the heart cannot pump enough blood to each of the body's organs, it becomes overworked and slowly shuts down. Because not enough blood is pumped out of the heart, blood entering the heart tends to pool, causing "congestion" in the body's tissues and enlargement of the heart. The most obvious signs of heart failure are swelling of the legs and ankles.

WOMEN VS. MEN One in five women with congestive heart failure will die within one year of their diagnosis, probably because women tend to be older and their disease more advanced when they receive the diagnosis. For the same reasons, twice as many women as men who have a heart attack will be disabled by heart failure.

make sure that women know that heart disease is their No. 1 killer and that they can change their lifestyles to prevent it."

The new push couldn't come at a more critical juncture. Many women were stunned last year when the famous Women's Health Initiative discovered that pills providing a combination of estrogen and progestin do not protect the hearts of postmenopausal women. (Tests on estrogen alone are still under way.) Suddenly, what had seemed to be the simplest, most

elegant solution to the aging female heart—replacing the hormones a woman makes before menopause—had vanished.

After that bombshell, doctors and their female patients had a lot of questions. If hormones don't prevent heart disease, what does? Is the ailment fundamentally different in men and women? If not, why do their symptoms seem to differ? And why do treatments such as bypass surgery and angioplasty, which work so well for men, often fail for women? In some ways, says

HEALTH

Dr. Sharonne Hayes of the Mayo Clinic in Rochester, Minn., "the findings have allowed us appropriately, and perhaps belatedly, to refocus our efforts."

It's not as if doctors were starting from scratch. Cholesterol-lowering drugs like statins and antihypertensive medications like beta-blockers clearly help both men and women, as do a healthy diet and plenty of exercise. "The vast majority of heart attacks in women could be prevented with a combination of lifestyle modifications and medication," says Dr. JoAnn Manson at the Brigham and Women's Hospital in Boston. "Just making use of existing information could nearly eradicate the disease."

At the top of the list of risk factors that men and women share is smoking, the most dangerous killer for both sexes, followed by diabetes, high blood pressure, high cholesterol levels, excess weight and physical inactivity. Some factors, however, seem to affect women more severely than men. In fact, smoking and diabetes completely counteract whatever protective benefits a woman normally enjoys before menopause. Also, women are more likely to be overweight, less likely to exercise and appear to be affected more adversely by stress.

Of course, neither men nor women can do anything about their age or the genes they were born with. (If your father had a heart attack before 55 or your mother had a heart attack before 65, you should pay special attention to your heart health.) And it's still unclear why heart disease seems to strike men and women so differently. Structurally, their hearts and arteries are basically the same; women's hearts are smaller, but in proportion to their bodies. So doctors are pretty sure that any differences are matters of degree rather than kind.

Cardiologists are confident that they understand how heart attacks occur in men. The trouble usually begins when a fatty deposit or plaque, which has taken decades to build up on the inside of a coronary artery, becomes unstable and bursts, triggering a clot that blocks a blood vessel. Doctors can see these plaques during a fairly invasive procedure called an angiogram, in which a catheter is threaded through an artery in the

All stents
and
catheters
used to come
in just one
size: men's

groin or leg up to the arteries of the heart and a dye is then released to make any blockages easier to spot.

ALTHOUGH THE RESEARCH IS CONTROVERSIAL, some evidence suggests that bursting plaques may not be as important for women as for men. Doctors have long puzzled over the fact that some of their female heart-attack patients—usually those who have not yet gone through menopause—show few signs of artery-clogging plaques on their angiograms. Perhaps their blockages don't occur in the major arteries of the heart, where angiograms are performed and bypasses are most effective. Perhaps blood flow is restricted in the smaller vessels that branch off the coronary arteries. And perhaps the problem isn't plaques at all but the fact that these smaller blood vessels are somehow more prone to spasm, snapping shut at the slightest stress or trigger, cutting off the flow of blood to parts of the heart.

Indirect evidence of just such a possibility was published by researchers at the University of Wisconsin-Madison in the *Journal of the American Medical Association* last year. By looking at high-resolution images of the blood vessels of the retina—one of the few places where doctors can easily examine the body's vascular system without an invasive test—they found that women with the narrowest arteries were most likely to have heart disease but that the size of the blood vessels made no difference in men.

The small-vessel theory has some flaws. For example, certain drugs called vasodilators, which act to keep blood vessels open, do not appear to prevent heart attacks in women, as you would expect if spasms were the primary problem. Still, there are enough other ways in which small vessels may be involved that researchers aren't yet ready to dismiss their role.

It's also possible that plaques—whether in the main coronary arteries or the smaller vessels—behave differently in women. Unlike men, women tend to distribute all the “garbage” associated with atherosclerosis—such as saturated fat and oxidized waste products—more evenly throughout the arteries. The process is analogous to the way men and women gain weight, says Dr. Noel Bairey Merz of the Cedars-Sinai Medical Center in Los Angeles. “When men get fat, it all goes to their belly,” she says. “When women get fat, they tend to get fat all over—fat at the ankles, fat in the sides, fat in the upper arms.” So although

ODD SYMPTOMS:
For Kestan, diagnosis and treatment would prove difficult



Heart disease is the **No. 1 killer of women** is a greater threat than cancer • A woman's first heart event, compared with a 30% chance of a first heart attack, **38% of women will die** **women are disabled** by heart failure after

women generally avoid the monster plaques that kill so many men in early middle age, the continuing buildup in women's arteries may come back to haunt them in their 50s, 60s, 70s and 80s.

Plaques are another reason for women to throw away their cigarettes, as smoking seems to turn stable plaques into unstable ones. “If you look at the plaque [of a woman]

under a microscope, it doesn't appear to be the kind of plaque that can become unstable and rupture,” says Dr. Robert Bonow of the American Heart Association. “But the surface has become eroded, exposing the material beneath the surface to the blood, which causes blood clots. And it turns out that the women who have this plaque erosion tend to be women who smoked.” Those



TRILL WOLF/ISTOCK PHOTOS

But only 8% of American women realize it has a **50% chance of dying** from her heart disease in a year • Of those who survive their heart attack, **46% of women die within a year**, vs. 25% of men • **46% of women die within a year** of a heart attack, compared with 22% of men

clots can travel through the bloodstream, wreaking havoc in the heart or the brain.

Getting to the bottom of why men and women report different cardiac symptoms is trickier than might be expected. In fact, some researchers think the differences can be emphasized too much. If a woman doesn't think she can have heart disease, notes Dr. George Sopko of the NHLBI, she's

not going to interpret her symptoms as heart disease—even if her symptoms are the same as a man's.

Truth is, the classic heart attack made famous onstage and onscreen, where you clutch your chest and fall to the ground, doesn't tell the whole story. "Half the time women don't do that," says Cedars-Sinai's Bairey Merz. "But 40% of the time, men

don't have a typical heart attack either." Men, however, have been conditioned for decades to suspect that they might be suffering a heart attack even when they feel perfectly healthy. So while women are more likely to experience the prelude to an attack as shortness of breath, extreme fatigue or a feeling that they have a bad case of indigestion, they often can't believe that their symptoms are cardiac in origin. Equally important, their doctors often don't believe it either. Doctors tend to put off ordering necessary tests for women having a heart attack or fail to treat them aggressively enough.

Just ask Kathy Kastan, 43, a psychotherapist in Memphis, Tenn., who suffered both classic and less common symptoms. "I noticed that I would get tired more quickly," says Kastan, who was and still is very active—biking, swimming, running, walking. "I would sometimes have to stop because I had shortness of breath." After a couple of trips to the doctor, who failed to pick up on her heart problems, she collapsed in the street while on a vacation in Colorado. "I clutched my chest, had profuse sweating, chest pains from the front to the back, down my arm, up into my jaw." When the symptoms went away, she attributed them to the altitude. Finally, after collapsing one more time, she underwent a more comprehensive and rigorous stress test, which revealed a blockage that required bypass surgery after earlier treatments ended in failure. Now when Kastan talks to women's groups about heart disease, she tells them they need to know their risks and insist that doctors take them seriously.

To be fair, denial isn't the only thing working against women. "More than men, women have stress-related chest pain and pain when they are resting," says Dr. Randolph Martin of the Emory University School of Medicine in Atlanta. Sometimes the pain results from sore chest muscles or monthly variations in a woman's sensitivity.

Also, women frequently have abnormal ECG readings during the classic treadmill test even when their hearts are functioning normally. But before you decide that treadmill tests are worthless, consider the latest research from the WISE study, short for Women's Ischemic Syndrome Evaluation. Data from WISE suggest that false positives in women may be not so much an error as an early warning of a problem, perhaps in the smaller blood vessels, that could become significant in 20 to 30 years, according to Bairey Merz.

To get a better handle on what's going on inside a woman's heart, many cardiolo-

WHAT YOU CAN DO

Women and men alike can reduce their chances of developing and dying from cardiovascular disease by addressing their risk factors head on



SHUTTERSTOCK/STEFAN WERNER

Stop Smoking

Smoking more than triples a woman's chances of having a heart attack. If you quit, that risk is cut in half within two years; after 10 years, the odds return to nearly normal.

Lose Weight

Carrying excess fat, especially around the middle, increases your risk of a heart attack or stroke. Obesity can also lead to diabetes, a major risk factor. Doctors recommend a reduced-calorie diet with lots of

vegetables and whole grains, plus at least 30 minutes of moderate aerobic exercise a day.

Lower Cholesterol

Elevated lipids—cholesterol and triglycerides—are important risk factors. Although doctors have traditionally focused on levels of LDL (bad cholesterol), HDL (good cholesterol) may be a better predictor of heart-disease risk in women. Women should maintain HDL at levels as high as possible.



SHUTTERSTOCK/STEFAN WERNER

Control Blood Pressure

Hypertension makes the heart work harder to move blood through the body, and more than half of women over 45 have it—putting them at higher risk of both heart disease and stroke. If you get short of breath when you exert yourself, don't ignore it; tell your doctor.

And if you have high blood pressure, treat it with proper diet, exercise and medication if needed.

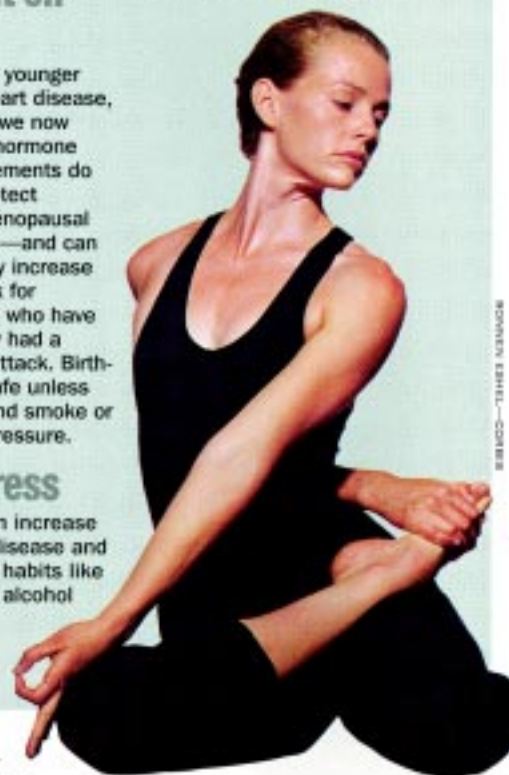
Don't Count on Hormones

Hormones protect younger women against heart disease, but as we now know, hormone replacements do not protect postmenopausal women—and can actually increase the risk for women who have already had a heart attack. Birth-control pills are safe unless you are over 35 and smoke or have high blood pressure.

Reduce Stress

Chronic stress can increase the risk of heart disease and lead to unhealthy habits like smoking, abusing alcohol and eating junk food. Exercise,

yoga and meditation can reduce stress; so can getting enough sleep every night. If you are depressed, get support or treatment as necessary. —By David Bjerkle



SHUTTERSTOCK/STEFAN WERNER

gists perform an echocardiogram during a treadmill test. Echocardiograms can give doctors a detailed picture of the size, shape and pumping action of the chambers of the heart and of how well the valves are working. If the pumping action looks stiff, doctors know the heart is ailing.

Even cholesterol testing is less straightforward in women than in men. Whereas high levels of LDL, the so-called bad cholesterol, are pretty good at identifying men at high risk of heart disease, women seem

more vulnerable to high levels of a different fatty substance, called triglycerides. In addition, women with low levels of HDL, the so-called good cholesterol, are more likely than men to develop heart disease later on. National guidelines suggest a minimum HDL level of 40 mg/dL for men and women. "But [low] HDL is a more powerful predictor of risk in women," says Dr. Lori Mosca of New York-Presbyterian Hospital. "So in my practice I recommend keeping an HDL of 50 mg/dL for women."

The majority of heart attacks in women could be prevented

Add up all the caveats and uncertainties, and it's not surprising that when women finally get to the hospital, it takes longer for doctors and nurses to diagnose their trouble correctly. Unfortunately, the delay may make female patients too sick to qualify for certain lifesaving treatments, such as clot-buster drugs that can stop a heart attack in its tracks. And because most women are older when they develop heart trouble, they are more likely to suffer from other conditions that complicate their care.

Fortunately, the medical community is starting to adapt to the new realities of women and heart disease. Two studies suggest that women may finally be benefiting as much as men from angioplasty, a procedure in which doctors use catheters and balloons to open up dangerously narrowed arteries and insert stents to keep the arteries open. In the past, catheters and stents were all made in one standard size—to fit men's larger arteries. As a result, women suffered more complications and a much

higher risk of death from angioplasty. Also, until about three years ago doctors prescribed the same doses of the blood thinner heparin for men and women, leading to greater internal bleeding in women. Smaller catheters and stents and lower doses should give women better results.

There's plenty that women—and men—can do to help protect themselves. There are no guarantees, but adopting a healthier lifestyle, which includes eating right, getting more exercise and quitting smoking, will tip the odds in their favor. Probably the hardest thing for women to overcome, however, is the false sense of security given by the premenopausal years, which to some degree help delay the start of heart disease about 10 years. Many men would love to have an extra 10 years in which to make positive changes in their lifestyles. Women who fail to take advantage of this gift do so at their heart's peril. —Reported by David Bjerkle, Alice Park and Sara Song/New York

For more information on heart disease in women, go to time.com/heartdisease