

Q&A

Heart Disease and Stroke



Martha N. Hill, R.N., Ph.D.

Each year since 1984, cardiovascular diseases have killed more women than men in the U.S. Together heart disease and stroke are the number-one cause of death among American women, claiming more than half a million female lives every year. That's more than the next 16 causes of death among U.S. women combined.

Educating women about their risks for cardiovascular diseases is a high priority for **MARTHA N. HILL, R.N., Ph.D.**, current president of the American Heart Association (AHA). Hill is the first nurse and nonphysician to hold that title. She also serves as director of the Center for Nursing Research at Johns Hopkins University School of Nursing, where she is an internationally known researcher studying hypertension and heart disease. In the following interview, **KATHLEEN FACKELMANN**, special correspondent for *SCIENTIFIC AMERICAN*, talks to Hill about why so many women are unaware of their risks for heart disease and stroke and what women can do to stay healthy—particularly in their 50s and 60s.

Q *The American Heart Association's recent survey suggests that only 8 percent of American women recognize that heart attack and stroke are their greatest health threats. Why do women fail to appreciate the risk these diseases pose to them?*

A I think it's primarily a lack of awareness of what the facts are. They haven't heard it on the news, and they haven't heard it from their physicians. Most women are shocked when they hear that although one out of eight women die of breast cancer, one out of two die of heart disease or stroke. In other words, half of all American women will die of heart disease or stroke. And yet when we asked American women to name their greatest health threat, 61 percent said cancer, particularly breast cancer. Breast cancer is a very serious threat—we don't underestimate that at all. But we think that women should also be aware of their risk of heart disease and stroke—and know how to protect themselves.

Do women's symptoms of heart disease differ from men's?

Research shows that chest pain remains the most common manifestation of coronary artery disease in both men and women. Like men, women experience angina, the chest pain that occurs when the heart's blood supply is inadequate. But

women are more likely than men to have other symptoms that are more subtle, such as nausea, abdominal pain or fatigue. Sometimes we see a woman who has the classic chest pain, but when we probe we find that she's been having these other symptoms for a week or two but didn't recognize them as symptoms of heart disease or that her physician didn't recognize them as such.

Previous research has shown that physicians historically have been less likely to order diagnostic tests—such as electrocardiogram (ECG) stress testing—to detect heart disease in their female patients than in their male patients. Is this still true today?

It is somewhat true, but it is not the only explanation for the lack of predictive diagnostic testing for heart disease in women. Women usually have more advanced heart disease—and at older ages—than men, probably because estrogen protects women from developing coronary artery disease until after menopause. But because they're older, women tend to suffer more

For more information, visit the American Heart Association's site for women at <http://women.americanheart.org> on the World Wide Web.

from complicating conditions, such as diabetes. All of that poses challenges to diagnosing women accurately. And, of course, until recently women weren't included in very many clinical trials. So for a long time physicians really didn't recognize heart disease as a problem for women. But now there's an increase in awareness. An enormous amount of energy and effort is going into educating physicians and other health care providers—as well as women themselves.

What You Can Do

Are there things women can do to ensure that they are diagnosed and treated effectively for heart disease and stroke?

Yes. One thing women can do is to begin to evaluate their own risk factors. Have you had your cholesterol measured? Do you know what your numbers mean? The American Heart Association has set up a free hotline, 888-MY-HEART, for women to call for information on coronary artery disease and stroke. The AHA has also developed a risk-assessment guide so that women can evaluate their own personal risk factors for heart disease [see box at right]. Do this assessment as best you can and then go talk to your doctor. Women need to take charge about knowing what their risk factors are and what they should be doing to protect their own health.

Get all the information you can. In some cases, you have to become very assertive. You have to walk into the doctor's office and say, "Hello, how are you, I've got some questions." Don't wait until you're walking out the door, and the doctor's already got his or her mind on the next patient. Bring your agenda forward early in the visit.

How do the female sex hormones, estrogen and progesterone, protect women from heart disease?

We know that they help lower LDL cholesterol, the bad cholesterol, and that they help to raise HDL cholesterol, the good cholesterol. They also appear to help dilate blood vessels. Bigger coronary arteries are less likely to trigger a heart attack. And it appears that estrogen and progesterone have an antioxidant effect on LDLs. Researchers believe that oxidized LDLs help kick off the process of atherosclerosis. So antioxidants may help by countering that artery-clogging tendency. Many studies are now looking at these issues; I think we will know a lot more soon.

Do women have different risk factors for heart disease than men?

The only gender-specific risk factor that women face is the loss of estrogen that they normally experience with aging. It is quite controversial whether menopause itself increases a woman's risk of heart disease. Women start losing estrogen well before menopause. In fact, you see a drop in estrogen in women in their 40s. Perimenopause—the period around menopause—can add up to a decade or more. So estrogen levels drop earlier than the narrow point in time of menopause, when a woman experiences her last menstrual period.

When should women start thinking about heart disease and stroke?

Don't wait until you haven't had a period for two years. It's never too early to start asking what you can do to prevent, delay or minimize your risk of heart disease. As for stroke, women

What Is Your Risk of Heart Disease and Stroke?

Use this quiz to learn where to focus your efforts in reducing your risk of heart disease and stroke.

✓ Check all the boxes that apply to you.

Age

- You are a woman over 55 years old, or you have passed through menopause or had your ovaries removed.

Family History

- Your father or brother had a heart attack before age 55, or your mother or sister had one before age 65.
- You have a close blood relative who had a stroke.

Smoking

- You smoke, or you live or work every day with people who smoke.

Cholesterol

- Your total cholesterol level is 240 mg/dL or higher.
- Your HDL ("good") cholesterol level is less than 35 mg/dL.
- You don't know your total cholesterol or HDL levels.

Blood Pressure

- Your blood pressure is 140/90 or higher, or a medical professional has told you your blood pressure is too high.
- You don't know what your blood pressure is.

Physical Activity

- You get less than 30 minutes of physical exercise at least three days each week.

Weight

- You are 20 pounds or more over your healthy weight.

Diabetes

- You have diabetes or take medication to control your blood glucose (sugar) level.

Medical History

- You have coronary artery disease or have had a heart attack.
- A doctor has told you you have carotid artery disease—in which the major arteries supplying the brain narrow—or you have had a stroke.
- You have an abnormal heartbeat.

If you checked two or more boxes, see your doctor for a more complete evaluation of your risks. Then, work with him or her to reduce, control or prevent as many risk factors as you can.

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should start thinking about their risk fairly early in life. A third of the strokes occur before the age of 60. And they are devastating. When a 30-year-old woman has a stroke, it's a tragedy because it was preventable.

An Ounce of Prevention

What does research reveal about how to prevent heart disease in women?

Tobacco is the number-one issue. There's been a steady rise in the number of female smokers, and there's a lot of evidence to suggest that many women use tobacco for weight control—not just to be “cool.” The weight issue makes it harder to convince females to quit. What they're concerned about is weight gain as they quit. So an important issue for women who are going to quit smoking is exercise. They should make plans to increase their physical activity because they might eat more. Not smoking is the single most important thing you can do to reduce your risk of heart disease. If you already smoke, quit.

The second most important thing is to know your total cholesterol level and blood pressure. If they are elevated, then initiate lifestyle modifications, such as controlling your weight. You can do that by changing both your eating patterns and your amount of physical activity. The third thing you can do is to look at your alcohol intake, which can elevate both blood pressure and triglycerides, fats in the blood that can pose a particular risk of heart disease for women. So moderate or reduce—or, if necessary, eliminate—alcohol consumption.

Doesn't current research indicate that a drink a day can reduce the risk of heart disease?

Moderate alcohol intake has been associated with lower rates of coronary artery disease. But if you're taking in a lot of empty calories as alcohol, it becomes a problem for weight control. The other issue is there is a relation that is not clearly understood between alcohol and high blood pressure. So women who have high triglycerides and hypertension and are struggling with their weight need to be cautious about drinking.

How can women reduce their risk of stroke?

Number one: they should stop smoking. Number two: women need to look at alternative forms of birth control besides the pill. Number three: women should take steps to reduce their blood pressure and their risk of heart disease. People who suffer from heart disease also have a greater risk of suffering a stroke.

Is it ever too late to reduce our risk of heart attacks and stroke?

Not really. Even in nursing homes, among people who have been very, very sedentary, it has been shown that walking reduces weight. That, in turn, can help reduce blood pressure and improve the cholesterol profile, lowering the risk of heart attack and stroke.

Hormone replacement therapy is known to protect postmenopausal women from heart disease. Yet it can also pose other potential problems, including an increased risk of breast cancer. What's a woman to do?

The question of whether to use hormone replacement therapy has to be an individual decision. A woman really needs to sit down and talk with her physician about her own situation. What stage of menopause is she in? What symptoms is she experiencing? What's her family history of heart disease and cancer? And what about osteoporosis? There's very strong evidence concerning the benefits of hormone replacement therapy for preventing osteoporosis. In my family, for example, all the women get osteoporosis. Frankly, that motivates me to take hormone replacement therapy even more than the potential cardiovascular benefits, because I've seen how painful and debilitating osteoporosis can be.

And as new hormone replacement therapies come out, they'll have fewer adverse effects. For many women, that's going to be very important. Because the data show that about a third of women who have a prescription for hormone replacement therapy never fill it, in part because they're afraid of side effects or breast cancer.

Another third start taking it but then stop within two to three months because they gain weight, develop painful, swollen breasts or experience some other side effect. That tells us that each woman has to be involved in the decision-making process in order to be committed.

How important is obesity as a risk factor for heart disease in women?

The obesity issue is getting quite interesting. More studies are being done in different populations, using different methodologies. Some of the results are contradictory. One study may say obesity is a big risk factor. Other studies say people can gain weight, and as long as they are fortunate enough not to develop high blood pressure, high blood cholesterol or diabetes, it isn't so bad. I believe that obesity by itself can pose a problem: it increases the burden on the heart.

What lies ahead?

This is a very exciting time. There's a lot of research on women and heart disease being conducted right now, and there are numerous opportunities for women to participate in research. Women who have an interest might want to call their local academic health center to find out what kinds of studies are going on in their area. There's an old saying: “You see what you look for, and you look for what you know.” Now that we know that heart disease is a major health problem for women, more people are looking for it, and they're seeing it. And that means that more women are being treated earlier in the course of the disease and that many more are learning how they can prevent heart disease and stroke. 5A

What Do the Cholesterol Numbers Mean?

The most common cholesterol test is for total cholesterol, measured in milligrams per deciliter of blood (mg/dL). But it's also important to know your HDL level—the amount of high-density lipoprotein, or good cholesterol, in your blood.

The American Heart Association (AHA) says healthy women should have less than 200 mg/dL total cholesterol and at least 35 mg/dL of HDL cholesterol. Total cholesterol levels between 200 and 239 mg/dL are considered borderline-high, and those greater than 240 mg/dL are considered high. If your HDL cholesterol levels are too low, you should also have your low-density lipoprotein (LDL), or bad cholesterol, checked—it should be lower than 130 mg/dL.

Some physicians prefer to analyze your cholesterol ratio: your total cholesterol divided by your HDL cholesterol. The optimal ratio for women is 3.5 to 1; anything above 5 to 1 is a health risk. —K.F.

What's in Store for the Future

By the turn of the century, approximately 50 million women in the U.S. will be age 50 or older. Inevitably, that will translate into more women with heart attacks, strokes and other cardiovascular diseases. Unfortunately, most of the scientific knowledge about these disorders has been based on studies of middle-aged men.

That gender gap will soon narrow. Researchers have launched several studies of cardiovascular disease in women that should yield results in the coming decade. By the time female baby boomers enter the cardiovascular risk zone after menopause, researchers should have a better understanding of the female heart and circulatory system. Here are some of the top questions about women, heart disease and stroke—and how researchers plan to answer them.

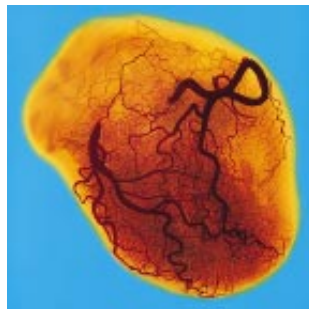
Does estrogen really protect against heart disease?

Although many studies have shown a lower rate of heart attacks among women taking estrogen as part of hormone replacement therapy, no single investigation has been large enough or has lasted long enough to prove estrogen's benefits definitively—or to show beyond a doubt that estrogen's heart-healthy effects outweigh its risks for breast cancer.

In 1991 the National Institutes of Health launched a massive clinical trial called the Women's Health Initiative, which will see if estrogen replacement therapy will reduce the risk of heart attack in postmenopausal women. Part of the study will involve more than 25,000 postmenopausal women across the country: some will take estrogen or a combination of estrogen and progestin called hormone replacement therapy; others will take an inactive placebo pill.

Epidemiologist Elizabeth L. Barrett-Connor of the Univer-

sity of California at San Diego predicts that the Women's Health Initiative should answer the estrogen question in five to 10 years. In the meantime, a report published in the *New England Journal of Medicine* last December suggests that an estrogenlike drug named raloxifene lowers women's blood concentrations of low-density lipoprotein (LDL), the bad cholesterol that when elevated leads to atherosclerosis and an



Heart with coronary arteries injected with dye is seen in a test called an angiogram.

SPL/PHOTO RESEARCHERS, INC.

increased risk of a heart attack. Raloxifene is one of the new selective estrogen receptor modulators (SERMs), which promise the benefits of estrogen without its cancer risk.

How might estrogen work to protect against heart disease?

If estrogen is confirmed to prevent heart disease, the next question will be how it does so. A preliminary study presented at an American Heart Association conference in March suggests that estrogen shields premenopausal women from heart disease by lowering their blood levels of an enzyme called hepatic lipase. John E. Hokanson of the University of Washington reported at the conference that the hepatic lipase levels of 25 men were 53 percent higher than those of 39 premenopausal women.

Hepatic lipase is known to help form the worst type of LDL—the so-called small, dense

LDL—which is most likely to clog arteries. Hokanson notes that estrogen appears to regulate the activity of hepatic lipase. Researchers are now examining whether postmenopausal women, who have lowered estrogen levels, have higher levels of hepatic lipase than premenopausal women.

Should women take aspirin to prevent a heart attack?

Many doctors now tell their healthy male patients to take a low dose of aspirin regularly, based on a report in 1988 by epidemiologist Charles H. Hennekens of Harvard Medical School and his colleagues. The study showed that middle-aged men who took an aspirin every other day cut their risk of suffering a first heart attack dramatically. In 1991 the same researchers published results from the Nurses' Health Study hinting that aspirin's benefits might also transfer to women. After tracking the health of the more than 80,000 women in the Nurses' Health Study for six years, the researchers found that women age 50 and older who took an aspirin between one and six times a week had one-third fewer heart attacks than women who didn't.

Hennekens and his colleagues are now conducting a study to evaluate the risks and benefits of low-dose aspirin versus a placebo among another group of 40,000 female doctors, nurses and other health professionals. Within the next several years, Hennekens says, the new Women's Health Study should indicate whether women would be wise to pop an aspirin every other day along with their male partners.

Do vitamins prevent heart disease in women?

No wonder women are confused. In 1993 the Nurses' Health Study showed that women who took vitamin E

supplements regularly had a lower risk of heart disease than women who didn't. But three years later a study by Lawrence H. Kushi of the University of Minnesota School of Public Health indicated that women can get the heart benefits of vitamin E only by eating a diet rich in the nutrient—not by taking dietary supplements.

The Women's Health Study should clear up the confusion over vitamin E within three to four years. It should also confirm the heart benefits of vitamins B₆ and folate, which the Nurses' Health Study earlier this year suggested might also reduce women's risks for heart disease. But even once the results on B₆ and folate are in, Hennekens advises that it is most important for women to focus on reducing their known risk factors for heart disease.

Why are African-American women at greater risk of dying from cardiovascular disease than Caucasian women?

Black women with cardiovascular disease are 69 percent more likely to die than their white counterparts, according to the American Heart Association. To account for this racial disparity, Lori J. Mosca—a preventive cardiologist at the University of Michigan and a member of the American Heart Association's task force on women and cardiovascular disease—and her colleagues are now analyzing health data gathered over the past 40 years on 30,000 white and black women. Mosca speculates that black women are more likely to die than white women because they tend to have more cardiovascular risk factors, such as high blood pressure. Left untreated, high blood pressure can result in more severe heart disease and a greater risk of death, she says. Mosca and her team expect preliminary results by 2000. —K.F.

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