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Women & Heart Disease

It started as just a minor annoyance—some mild chest pain and shortness of breath. But by the end of that April day in 1996, Kathleen Butler's life had changed forever. That's the day the 40-year-old Wisconsin woman, who had never smoked and had normal blood pressure, but was 40 pounds overweight, had a heart attack. "Never in my wildest dreams did I think I could be having a heart attack," says Ms. Butler of that spring day eight years ago. She's not alone.

A 2003 survey of 204 women with heart disease, conducted by researchers at the Mayo Clinic in Rochester, MN, found that many considered their condition "a man's disease." Almost half had been unaware they were at risk of coronary artery disease until after their diagnosis. The survey also found just over a third of the women reported symptoms to their doctors and, of those doctors, nearly one-third had failed to recognize the women's symptoms as related to their heart.[1]

"There have been some very real misconceptions about heart disease in women formed by the medical community as well as the public that are important to dispel," says Sharonne N. Hayes, MD, director of the Mayo Clinic Women's Heart Clinic. "Like the idea that women don't get heart disease. Or that it's not a big deal for women." In fact, she says, surveys still show that women perceive cancer, not heart disease, as by far their greatest health threat.

Hopefully, that perception will be changing soon. "The Heart Truth," a campaign aimed at raising awareness nationwide about women and heart disease launched in 2002 and sponsored by the National Heart, Lung, and Blood Institute (NHLBI), now is in full swing. Additionally, the American Heart Association released new guidelines in February 2004 for preventing heart disease and stroke in women based on a detailed review of nearly 7,000 studies. The guidelines urge women to work with their health care professionals to determine their risk and to come up with prevention strategies based on their personal cardiovascular health.[2]

The need to increase awareness among women and health professionals is critical since cardiovascular disease (CVD), which includes diseases of the heart and blood vessels, such as stroke, is the leading cause of death in women, accounting for some 500,000 deaths a year. One in 10 women aged 45 to 64 and one in five women aged 65 or older has some form of diagnosed heart disease.[3] Compare that to breast cancer, which in 2004 is expected to claim the lives of about 40,000 women.[4]

Heart disease strikes African-American and Native-American women particularly hard, since they are more likely to have risk factors for cardiovascular disease (high blood pressure, over-

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weight, smoking) and receive poorer health care than Caucasian women. Overall, age-adjusted death rates from cardiovascular disease were higher for African-American women in 2000 (397.1 per 100,000), compared to Caucasian women (285.8 per 100,000).[3]

There's a good explanation for the misperception about the impact of heart disease on women, says Dr. Hayes. "First, a lot of women do get breast cancer, but not that many die of it. So your average 50-year-old woman probably knows someone who is close to her who had breast cancer. But she may not know a woman who's had a heart attack or heart disease because that tends to happen later in life." Although younger women, like Kathleen Butler, do develop heart disease, it typically occurs about 10 years later than it occurs in men, generally after women have completed menopause.

After menopause is not the time to start taking care of your heart, though. The time to start is now, regardless of your age. Because, as Dr. Hayes notes, hardly anyone dies of a heart attack these days. Instead, you wind up with heart failure and in constant chest pain, short of breath and with the threat of another heart attack, one that will kill you this time, hanging over you. "And that's a terrible way to die," she says.

Heart Disease in Women: The Gender Gap

Heart disease looks strikingly different in women than it does in men. This is relatively new knowledge, however, since research into heart disease in women is about 50 years behind research into the disease in men, notes Noel Bairey Merz, MD, director of the Preventive and Rehabilitative Cardiac Center at Cedars-Sinai Medical Center in Los Angeles, CA.

For instance, women are only half as likely as men to survive a first heart attack, and significantly more likely than men to experience a second heart attack within one year. They may also exhibit some unique symptoms in the month before a heart attack, such as unusual fatigue, sleep problems, indigestion and weakness in their arms.[5]

Dr. Bairey Merz is leading the effort to increase our understanding of heart disease. She heads the Women and Ischemia Syndrome Evaluation, or WISE trial. Sponsored by NHLBI, WISE has been tracking 1,000 women for more than half a decade to evaluate gender-specific issues related to women undergoing coronary angiography (a diagnostic procedure to identify artery blockages) and the diagnosis of coronary artery disease.

Since it launched, however, the trial has become much more. "It's a springboard for providing a lot of answers to a lot of questions that we've never asked before," says Dr. Bairey Merz. Like, why do more women die of heart disease every year than men? Why do relatively young women under the age of 55 have a much higher risk of dying with their first heart attack compared to men of the same age? What role do hormones and, specifically, estrogen play? What is the best way to diagnose heart disease in women?

For instance, in 2000 WISE uncovered surprising new information regarding a form of heart disease more prevalent in women, but not frequently seen in men. Called microvascular disease, or cardiac syndrome X, it involves the dysfunction of the small blood vessels within the heart muscle. These smaller arteries cannot be seen during common procedures like angiograms, nor can they be cleared out via angioplasties or even bypass surgery.

"Because we couldn't see it, and no one bothered to study this form of heart disease, because it was fairly unusual

in men, we didn't know very much about it," says Dr. Bairey Merz. "But from our estimates from the WISE study, there are more women with cardiac syndrome X in the U.S., than women dying from breast cancer. And, it accounts for much of the unexplained chest pain women have, pain often dismissed as psychological by health care professionals."

You don't have to tell that to Mary Olson, a 57-year-old community college instructor from Stewartsville, MN. Ms. Olson first began experiencing chest pain on her regular walks five years ago but dismissed the pain as a sign of aging. She ignored the symptoms for two years until finally mentioning them to her family doctor during a routine physical.

Although she wasn't overweight, exercised regularly, ate healthful foods and didn't smoke, she had a strong family history of heart disease. Her doctor performed an electrocardiogram to test her heart's electrical activity. The test showed some slight abnormalities, so he sent her to the Mayo Clinic in nearby Rochester. Two years and numerous tests and medications later, she received the cardiac syndrome X diagnosis.

"The doctor told me that at one time they would have thought the pain was 'all in my head', but now we know better," she recalled.

Today Ms. Olson takes a variety of medications for her heart condition and attends cardiac rehabilitation to learn how to exercise without triggering her chest pain, called angina. She also pays close attention to the messages her body sends and no longer ignores any symptoms.

Her message to other women: "Seek help sooner than I did. And once you're treated, if you're not getting what you feel is the optimum relief, go back and seek more help again and again until you're told they've done everything they possibly can. Then seek a second opinion before you accept that."

Shortchanging Women's Hearts

That's advice far too few women follow. In fact, notes Dr. Bairey Merz, one reason more women die of heart disease than men may be that they don't receive the same level of care compared to men. For instance, women are less likely than men to receive an aspirin during or after having a heart attack, a basic treatment recommendation.

Women also are shortchanged when it comes to receiving prescriptions from their health care professional for cholesterol-lowering statin drugs, known to significantly reduce the risk of a heart attack or heart disease. They're also less likely to be referred to cardiac rehabilitation than men. And, even though more women than men have diabetes, women are less likely to be prescribed the three medications recommended to prevent heart disease in people with diabetes: an aspirin, a statin and an ACE inhibitor, says Dr. Bairey Merz.

No one really knows just why women don't get the same treatment, but both Dr. Bairey Merz and Dr. Hayes suspect it may have to do with the way society undervalues women and women undervalue themselves as a result. "So whereas a man might demand to see a cardiologist, or automatically be offered a referral to one, women don't," says Dr. Bairey Merz.

The disparity may also be related to economic factors, she says. Women, particularly older women, are more likely to live in poverty, and so may be less able to seek appropriate medical care.

Understanding Your Own Risk

Because heart disease and its risk factors can be silent for so long, often with few symptoms until the disease is well underway, it's important to know your personal risk factors, says Dr. Hayes. That includes your family history, cholesterol and blood pressure levels. Two major studies published in the summer of 2003 found that nearly everyone who dies of heart disease, including heart attacks, had at least one or more of the conventional heart disease risk factors: smoking, diabetes, high blood pressure and high cholesterol.[6,7]

A heart disease risk assessment tool based on the Framingham Risk model can be found online: http://www.americanheart.com. It estimates your 10-year risk of having a heart attack or dying of coronary heart disease based on your answers to questions about your personal risk factors.

No matter what your age, if you suspect you have heart disease or are at risk of heart disease, talk to your health care professional about having diagnostic tests such as an exercise echocardiogram or a nuclear stress test.

Young Women & Heart Disease

Getting at the heart of the differences between men and women when it comes to cardiovascular disease is important not just for women, but for men, as well, says Dr. Hayes. For instance, if researchers could figure out just

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...Cardiovascular disease, which includes diseases of the heart and blood vessels, such as stroke, is the leading cause of death in women, accounting for some 500,000 deaths a year.

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After menopause is not the time to start taking care of your heart. The time to start is now, regardless of your age.

what it is that protects women from heart disease longer than men, they might be able to extend that same protection to younger women, in whom the condition is more serious than in post-menopausal women, and to men.

For years, researchers thought that protection was estrogen, since women's risk of heart disease is so much lower than men's prior to menopause when women's estrogen levels are high. Then came the Women's Health Initiative (WHI), a major federally funded study of more than 16,000 women between the ages of 50 and 79, which showed that women who used menopausal hormone therapy containing estrogen and progestin had a slightly higher risk of heart disease than women who didn't.[8]

While the WHI results are important, says Dr. Bairey Merz, they don't address the issue of estrogen in younger women. For instance, young, premenopausal women are more likely to die from heart disease or heart attack than men of the same age even though these women tend to have few risk factors. "When young women have a heart attack, they don't just have it and get better," says Dr. Hayes. "They come back the next year and they've had progression of their coronary artery disease and another heart attack. And these are women who turn their lives around and control all their risk factors. So I'm convinced there is something there."

Research from the WISE study shows these younger women with heart disease often are relatively estrogen deficient usually because they menstruate without ovulating, a condition called anovulatory menstrual cycling. Conversely, young women who have had their ovaries removed and receive supplemental estrogen have a much lower risk of subsequent heart disease than women who don't. "So we think this is another story [about estrogen and heart disease] that needs to be told," says Dr. Bairey Merz. ✕

Heart Health: Know Your Numbers[9,10]

Test	Range	What it Means
Total cholesterol	Less than 200 mg/dL	Ideal
	Between 200 and 239	Borderline high
	240 and above	High
LDL ("bad") cholesterol	Below 100 mg/dL	Optimal
	Between 100 and 129	Near optimal/ above optimal
	130 to 159	Borderline high
	160 to 189	High
	Above 190	Very high
HDL ("good") cholesterol	Less than 40 mg/dL	A major heart disease risk
	50 to 59	Preferred
	60 or higher	Ideal. Helps lower your risk of heart disease
Triglycerides	Under 100 mg/dL	Ideal
	149 or lower	Normal risk of coronary artery disease
	150 to 199	Borderline high risk of coronary artery disease
	200 to 499	High risk of coronary artery disease
	500 or above	Very high risk of developing coronary artery disease
Blood pressure	Less than 120/80 mm hg	Normal blood pressure
	Between 120/80 and 139/89	Prehypertension*
	Between 130/80 and 139/89	Twice the risk of developing hypertension
	Between 140/90 and 159/99	Stage 1 hypertension
	160/100 or higher	Stage 2 hypertension

** Hypertension is the medical term for high blood pressure.*

Resources

American Heart Association
7272 Greenville Avenue
Dallas, TX 75231
1-800-242-8721
http://www.americanheart.org
Devoted to research, advocacy and education about cardiovascular disease and stroke. Provides heart-healthy lifestyle information and detailed information on heart disease risks and management.

American Diabetes Association
ATTN: National Call Center
1701 North Beauregard Street
Alexandria, VA 22311
1-800-342-2383 (English and Spanish)
http://www.diabetes.org
Supports advocacy, research and education on diabetes diagnosis, treatment and management. Offers diabetes-related lifestyle information in a variety of formats.

National Heart, Lung, and Blood Institute
NHLBI Health Information Center
PO Box 30105
Bethesda, MD 20824-0105
301-592-8573
http://www.nhlbi.nih.gov
Plans and coordinates a national program, including clinical trials, in diseases of the heart, blood vessels, lungs and blood, and sleep disorders. Web site offers wide range of information.

WomenHeart: The National Coalition for Women with Heart Disease
818 18th Street, NW, Suite 730
Washington, DC 20006
202-728-7199
http://www.womenheart.org
National organization founded by women with heart disease; dedicated to reducing death and disability among women living with heart disease.

For more information on women and heart disease, visit: www.healthywomen.org

The Diabetes-Heart Disease Connection

If you have diabetes—and 9.3 million women do—you should be as concerned about your heart as you are about your blood sugar.[11]

For if you are a woman with diabetes, you are three to seven times more likely to develop heart disease and have a heart attack, and are at much greater risk of having a stroke, than women without heart disease.[12] Overall, two out of three people with diabetes wind up dying from heart disease and stroke.[13]

Researchers aren't entirely sure about the connection between diabetes and heart disease, but they do know that nearly every patient with diabetes experiences injuries to the small blood vessels throughout the body, says Sharonne N. Hayes, MD, director of the Mayo Clinic Women's Heart Clinic in Rochester, MN. That's why people with diabetes may develop eye disease (retinopathy), kidney disease (nephropathy) and nerve disease (neuropathy).

In addition, she notes, people with diabetes often have accelerated atherosclerosis, or a buildup of plaque in their arteries, meaning they develop the condition faster than those without diabetes who have other similar risk factors. A survey of physicians who treat people with diabetes found that more than 90 percent believe that having diabetes is the highest risk factor for developing cardiovascular disease—higher even than smoking.[14]

"Too often people with diabetes themselves don't know this," says Dr. Hayes. "Even though doctors know it, she says, "they aren't conveying it to the patient." In fact, an American Diabetes Association survey found that 68 percent of those with diabetes were not aware of their increased risk for heart disease and stroke, and 60 percent didn't know they were at risk for high blood pressure and cholesterol, both of which increase their overall risk of heart disease and stroke.[15]

It's vital that women with diabetes know their risks of heart disease and stroke and take steps reduce them. That includes the obvious lifestyle changes, including diet, exercise, losing weight and quitting smoking. However, most people with diabetes will also need to take certain medications, regardless of how well they control their blood sugar. Dr. Hayes, for instance, puts nearly all her patients with diabetes on a daily aspirin, an ACE inhibitor and a statin, today considered standard treatment to prevent heart disease in people with diabetes.

In fact, statin medications, which include lovastatin (Mevacor), simvastatin (Zocor), pravastatin (Pravachol), rosuvastatin (Crestor), fluvastatin (Lescol) and atorvastatin (Lipitor), best known for their cholesterol-lowering benefits, work so well at preventing heart disease in people with diabetes, regardless of cholesterol level, that in June 2003 experts began recommending that all people with diabetes, even those with normal cholesterol levels, take a statin.

The unprecedented recommendation came after the publication of the landmark Heart Protection Study that month in the journal *Lancet*. The study found that using 40 mg daily of Zocor cut the risk of cardiovascular problems in diabetics by about a third, even in those whose cholesterol levels were normal. Overall, study researchers said, such an effect could prevent 45 out of every 1,000 people with diabetes from suffering at least one major cardiovascular problem, such as angina or a heart attack.[16]

If you have diabetes, you should talk with your health care professional about your risk of heart disease and ask about taking a statin and possibly other medications to reduce your risk. You should also aim for what are called the ABCs of diabetes: an A1C result (which provides an overview of your blood sugar levels over time) less than seven percent; a blood pressure reading less than 130/80 mm hg; and an LDL cholesterol reading of less than 100 mg/dL. These target ranges have all been found to reduce the risk of heart disease in people with diabetes.[17]

One reason more women die of heart disease than men may be that they don't receive the same level of care compared to men.

Heart Disease in Children

Think heart disease and atherosclerosis and you think about middle-aged or elderly men and women. Now look at your 12-year-old. There's a pretty good chance she's already got fatty streaks in her aorta, the body's main artery, an early sign of atherosclerosis. She may also have high cholesterol.

In fact, up to one-third of American children, from age two through the teenage years, have high cholesterol. Compared with their counterparts in many other countries, American children and adolescents also have higher blood cholesterol levels and higher intakes of saturated fatty acids and cholesterol.[18] Young children, even babies, can also have high blood pressure.[19]

So in the summer of 2002, the American Heart Association began recommending that health care professionals start measuring children's blood pressure at age three and blood cholesterol at age five.[19,20] The American Academy of Pediatrics recommends cholesterol tests for children age two or older, if their parents or grandparents had heart disease or vascular disease before age 55, or if their parents have cholesterol levels of 240 mg/dL or higher.[18]

Cholesterol ranges to know in children ages two- to 19-years-old:

- Total cholesterol levels should be less than 170 mg/dL.
- LDL cholesterol levels should be less than 110 mg/dL.
- Total cholesterol levels greater than 200 mg/dL and/or LDL levels greater than 130 mg/dL are considered high.

Blood pressure levels in children vary by age, height and weight, so talk to your health care professional about what your child's should be.

"There is overwhelming evidence now that atherosclerosis, a build up of plaque in the arteries, starts in childhood, not when you're 50 or 60," says David J. Driscoll, MD, professor of pediatrics and director of the Division of Pediatric Cardiology at the Mayo Clinic in Rochester, MN. We know this from autopsies performed on children who die of accidental deaths, he notes. Other studies on young soldiers who died in Korea and Vietnam showed that by their early 20s, many already had the beginnings of atherosclerosis. "Some of them with pretty significantly advanced disease."

We also know that there's a correlation between cholesterol and other blood fat levels in children and the degree of fatty streaking or atherosclerosis in their arteries, he says. In fact, children and adolescents with high cholesterol levels are more likely than the general population to have high levels as adults.[19]

What we don't yet know is if lowering a child's cholesterol levels changes their risk later in life for developing coronary disease, he says. "Intuitively, you would think that it would, but those studies haven't been done yet." And a substantial number of children with high cholesterol levels do become adults with desirable cholesterol levels without intervention.[18]

Nonetheless, the U.S. National Cholesterol Education Program recommends cholesterol lowering drugs for children over age 10 whose LDL (that's the "bad" cholesterol) remains high even after they've changed their diet. Until fairly recently, the most common class of such drugs, statins, were not approved for use in children and few large studies on their effects in children had been conducted.

But a study published in the October 2002 issue of the journal *Circulation* found the cholesterol-lowering drug, simvastatin (Zocor), a statin, significantly reduced cholesterol levels in children with an inherited form of high cholesterol. The study on 173 children between ages nine and 18 also found that even after 48 weeks on the drug, there was no effect on growth or progression of puberty.[21]

Today, statins are generally considered safe to use in children and adolescents, says Dr. Driscoll, "although we use them a bit more cautiously than with adults because if you take a 55-year-old person and put them on a drug for the rest of their life and they live to be 85, that's 30 years. But, with a 15-year-old, you may be talking about a very long time on that drug."

Common Questions about Heart Disease

Q Is it possible to lower high blood cholesterol levels with lifestyle changes alone?

A Yes. Your goal for standard lipids (total cholesterol, LDL, HDL and triglycerides) varies according to your own risk of developing cardiovascular disease. For example, people with coronary disease and those with diabetes are at the highest risk for heart disease, and should be treated most aggressively to reduce their cholesterol and triglyceride levels. If you have an overall lower risk, your levels don't have to be as tightly controlled.

If your cholesterol levels are outside the acceptable range, your health care professional will always advise you to make certain changes to your lifestyle, such as losing weight, stopping smoking and changing your diet. Sometimes, these changes alone may be enough to improve your cholesterol levels. Or, the changes may be the first in a series of steps to improve your cholesterol and triglyceride levels, to be followed by medication. Even if you are prescribed medication, however, you should still modify your lifestyle.

Quitting smoking provides one of the most dramatic benefits. It quickly and substantially raises HDL (the "good" cholesterol), often within 30 to 60 days once you stop smoking. Overall, HDL levels may increase 10 to 15 percent. Additionally, a diet low in saturated fat coupled with regular exercise can also reduce LDL (the "bad" cholesterol) and raise HDL, while restricted carbohydrate diets along with exercise can help lower triglycerides.

Q Are "expanded" cholesterol testing such as the Vertical Auto Profile (VAP) and Berkeley tests worth considering?

A The role of expanded cholesterol testing is an area of active research. Although these tests are commonly used, they haven't yet been shown to lead to changes in the way we treat cholesterol levels that reduce the overall number of cardiovascular events, like heart attacks. Thus, they have not yet been included in national diagnostic or treatment guidelines for high cholesterol and triglycerides. They do, however, provide additional details about traditional lipids while assessing non-traditional markers of cardiovascular risk.

For instance, while a standard lipid profile provides an LDL level, an expanded profile further characterizes the type of LDL, including LDL particle number and size. In addition, markers indirectly related to lipids but associated with cardiovascular risk, like homocysteine and high sensitivity CRP are measured.

Expanded testing might enable your health care professional to better target your therapy to reduce your individual risk. ✖

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New AHA Guidelines—Easy to Follow and Good for Your Health

By Pamela Peeke, MD, MPH
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Dr. Peeke is a Pew Foundation Scholar in Nutrition and Metabolism, and Assistant Clinical Professor of Medicine at the University of Maryland in Baltimore. She writes about health and lifestyle issues important to all women.

Talk about great timing. In February 2004, the American Heart Association (AHA) released new guidelines that take a personal approach to preventing cardiovascular disease in women.

While some of the guidelines deal with medication—when to prescribe, how much, the best choices—many deal with lifestyle changes that study after study have shown are effective at lowering blood pressure, improving cholesterol levels, minimizing atherosclerosis and, overall, reducing a woman's risk of developing heart disease, based on her individual cardiovascular health. To read about these guidelines, visit: http://www.americanheart.org. All of the recommendations are relatively easy to follow and will provide health benefits far beyond your heart. They include:

- **Quit smoking cigarettes.** Nearly one in five women smokes, despite this habit's grave health consequences. Quitting as soon as possible can begin to restore your health. Today, there's no reason to go it alone when quitting. You can use patches, gums, nasal sprays, even candies to reduce your nicotine cravings. Numerous online and real-life support groups will hold your hand, and the financial savings alone should be enough of an incentive (if you've been spending $3 a pack, you'll save $1,000 by the end of the year).
- **Get active.** You know the drill: Move! Walk, run, garden, bike, swim, climb stairs. Do whatever you have to do to increase your heart rate for at least 30 minutes a day. One major study found that women who walked briskly for three or more hours per week (about 30 minutes a day) slashed their risk of heart disease 35 percent compared to women who walked less frequently.
- **Follow a heart-healthy diet.** No surprises here. The studies showing the beneficial effects of a diet loaded with fruits, vegetables, whole grains, fiber and lean protein could fill a wall in most libraries. Ideally, you would limit saturated fat (found in animal products) to less than seven percent of your daily calories, dietary cholesterol (also high in animal products) to less than 200 mg/day, and limit your intake of trans-fatty acids, a fat produced when oil is turned into solid fat through a chemical process called hydrogenation. Eating a large amount of trans-fatty acids, found in some margarines, for example, also raises blood cholesterol and heart disease risk.

  Also try to eat fish several times a week. Most forms of fish contain omega-3 fatty acids, shown in numerous studies to reduce high blood pressure, improve the heart's electrical activity and reduce atherosclerosis. Although some fish are not advised for pregnant and women of childbearing age because of high mercury levels, you can still eat catfish, flounder and wild salmon, which contain omega-3 fatty acids but have far less mercury.
- **Watch your weight.** Sure, it's a rare woman who hasn't put on a few pounds by the time she hits 40 (or 30). But those extra pounds contribute to a variety of heart disease risks, including high blood pressure and diabetes. If you follow the diet and physical activity recommendations outlined above, you should be able to maintain a healthy body mass index, or BMI, (a measurement of height in comparison to weight) between 18.5 and 24.9.

Questions to Ask About High Cholesterol

Ask your health care professional these questions to learn more about heart disease and high cholesterol:

1. What is my overall risk for heart disease? Can we review my risk factors?
2. What type of test best measures my cholesterol levels?
3. Will you explain the results of my cholesterol test?
4. If I have high LDL cholesterol, what lifestyle and dietary changes can I make to lower it?
5. When and how often should I have my cholesterol level checked from now on?
6. Based on my cholesterol and other risk factors, am I a good candidate for statin use? What are the risks and benefits of using a statin medication?
7. Are there alternative medications I can take if I cannot or do not wish to use a statin?