

Women's  
Health Study

# Update

## Numbers to know for your heart's health

Many factors are known to increase the risk for coronary heart disease. The more risk factors a woman has, the greater the likelihood that she will develop heart disease and suffer a heart attack. Some risk factors are beyond one's control, including increasing age and a family history of heart disease. However, most risk factors, including an unfavorable cholesterol profile, high blood pressure, and high blood sugar, can be modified by making relatively simple lifestyle changes—quitting smoking, increasing physical activity, losing excess weight, and improving your diet—and, if necessary, taking certain medicines.

In 2004, the American Heart Association adopted the slogan “Know your numbers” to boost the public's awareness of heart health. Let's review 11 numbers that are worth knowing.

The fats in your blood are collectively known as lipids, the most important of which are **LDL (bad) cholesterol** and **HDL (good) cholesterol**. The lower your LDL and the higher your HDL, the lower your odds of having a heart attack. **Total cholesterol** is a useful general measure. High **triglycerides** increase risk, especially in combination with excess weight, high blood sugar, and low HDL cholesterol.

You blood pressure has two components: **systolic pressure** (the top number of a blood pressure reading, or your pressure when your heart contracts) and **diastolic pressure** (the bottom number, or your pressure when your heart relaxes). The higher each reading is, the greater your chance of experiencing a heart attack or stroke.

Excess weight—especially at the waist or abdomen—adversely affects heart health. **Body mass index** (BMI) indicates weight in relation to height. To calculate your BMI, multiply your weight in pounds by 703, divide the resulting number by your height in inches, and then divide again by your height in inches. Individuals with a BMI of 18.5 to 24.9 are considered to be at a healthy weight, while those with a BMI

of 25 to 29.9 are overweight, and those with a BMI of 30 or more are obese. To determine your **waist circumference**, hold a tape measure at the level of your navel and circle your torso with it. Measure below, not at, the narrowest part of your abdomen.

Diabetes, or high blood sugar, is harmful to the heart. **Fasting blood**

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Do you know your numbers?				
Indicator	Ideal	When to worry <sup>a</sup>	How often should it be measured? <sup>b</sup>	Write your number here
<b>Lipids</b>				
Total cholesterol	Under 200 mg/dL	240 mg/dL or higher	Every 5 years	
HDL cholesterol	Over 60 mg/dL	40 mg/dL or lower		
LDL cholesterol	Under 100 mg/dL <sup>c</sup>	160 mg/dL or higher <sup>d</sup>		
Triglycerides	Under 150 mg/dL	200 mg/dL or higher		
<b>Blood pressure</b>				
Systolic	Under 120 mm Hg	140 mm Hg or higher <sup>e</sup>	Every year	
Diastolic	Under 80 mm Hg	90 mm Hg or higher <sup>f</sup>		
<b>Body measurements</b>				
Body mass index	Under 25 kg/m <sup>2</sup>	30 kg/m <sup>2</sup> or higher	At every physical exam	
Waist circumference	Under 30 inches	35 inches or higher		
<b>Fasting blood sugar<sup>g</sup></b>				
	Under 100 mg/dL	Over 125 mg/dL	Every 3 years	
<b>Hemoglobin A1c<sup>h</sup></b>				
	Under 7% <sup>h</sup>	Over 8% <sup>h</sup>	Every 3 to 6 months <sup>h</sup>	
<b>C-reactive protein<sup>i</sup></b>				
	Under 2 mg/L	3 mg/L or higher	Not determined	

a. When to take action beyond lifestyle changes. These numbers may be different for people with heart disease, stroke, diabetes, or other medical issues.

b. More often for persons with abnormal values or at increased risk of heart disease.

c. For persons who have an LDL cholesterol level below 100 mg/dL but are at high risk of heart disease because of other risk factors, a goal of below 70 mg/dL is recommended.

d. This depends on how many other risk factors are present. For people with many risk factors, an LDL over 100 or 130 suggests the need for treatment with cholesterol-lowering medications; for others, an LDL of 160 or more, or 190 or more, does so.

e. 130 mm Hg or higher for persons with heart disease, diabetes, or kidney disease.

f. 80 mm Hg or higher for persons with heart disease, diabetes, or kidney disease.

g. People with blood sugar levels of 100 to 125 mg/dL have prediabetes, and those with blood sugar levels of 126 mg/dL or higher have full-blown diabetes.

h. For persons with diabetes.

i. Some guidelines recommend CRP screening for people at moderate risk of heart disease by virtue of other risk factors.

# Demographic and health profile of women enrolled in the WHS observational follow-up study

Data from the first set of questionnaires completed after the WHS trial of aspirin and vitamin E ended in March 2004 have shed light on the characteristics of the more than 33,000 trial participants who have chosen to take part in the WHS observational follow-up study, which began when the trial was over. As you might expect given the variety of women who enrolled in the WHS trial, women who are participating in the follow-up are drawn from a wide range of ages and health professions. As of September 2006, 16 percent of participants were in their 50s, 56 percent were in their 60s, 23 percent were in their 70s, and 5 percent were age 80 or older. The oldest participant is age 99! Three quarters of participants are registered nurses, with licensed practical nurses, dentists, dental assistants, dental hygienists, dietitians, pharmacists, physicians, physical therapists, radiologic technicians, veterinarians, and speech, language, and hearing specialists also represented.

WHS respondents are geographically diverse, residing in all 50 states and Puerto Rico. Indeed, more than 60 respondents live abroad,

with one or more women mailing their questionnaires to us from (in alphabetical order) Australia, Bermuda, Bolivia, Brazil, Canada, Chile, Costa Rica, Denmark, Egypt, England, Estonia, France, Ghana, Guyana, Ireland, the Netherlands, the Philippines, Poland, Scotland, South Africa, Spain, Switzerland, Uganda, and the West Indies.

Overall, WHS participants appear more health conscious and are in better cardiovascular health than the general population of women in the United States. Only 7 percent of participants were current smokers at the start of the observational follow-up, a figure that compares favorably with the 20 percent of U.S. women who smoke. Nearly 70 percent of WHS respondents report that they use multivitamin supplements, with 4 in 5 users taking a multivitamin on a daily basis.

An impressive 86 percent of WHS respondents reported having had a physical exam in the prior year, and a similar percentage reported knowing their current total cholesterol level. Of women who knew their cholesterol level, 57 percent had a cholesterol level below 200 mg/dL (desirable), 34 percent had a level between 200 and 239 (borderline high), and 9 percent had a level of 240 or more (high). Combining the latter two categories, we see that 43 percent of respondents had a borderline high or high cholesterol level. For comparison, roughly 50 percent of U.S. women have a cholesterol level in this range.

Participants' average systolic and diastolic blood pressures were 124 mm Hg and 74 mm Hg, respectively. Doctors typically define normal blood pressure as a systolic blood pressure of less than 120 and a diastolic pressure of less than 80; prehypertension as a systolic pressure of 120 to 139 or a diastolic pressure of 80 to 89; and full-blown hypertension (high blood pressure) as a systolic pressure of 140 or more or a diastolic pressure of 90 or more, or, alternately, current use of a blood pressure medication. By these criteria, 20 percent of participants have normal blood pressure, 29 percent have prehypertension, and 51 percent have hypertension. For comparison, 53 percent of U.S. women aged 55 to 64, 70 percent of those aged 65 to 74, and 84 percent of those aged 75 or older have hypertension.

Body mass index calculations show that the average BMI of WHS respondents is 27 kg/m<sup>2</sup>. Forty percent of respondents are at a healthy weight (BMI of 18.5 to 24.9), while 34 percent are overweight (BMI of 25 to 29.9) and 25 percent are obese (BMI of 30 or more). For comparison, about 33 percent of U.S. women aged 40 and older are overweight, and 35 percent are obese. If your BMI places you in the overweight or obese category, don't despair. Losing as little as 5 percent of your body weight—even if you aren't able to achieve a BMI below 25—favorably affects cholesterol, blood pressure, blood sugar, and other risk factors for heart disease.

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## A query to WHS Update readers

Are there topics related to women's health that you would like to see addressed in this newsletter, or experiences related to your participation in WHS that you would like to share with other women? If so, please let us know! Our contact information is:

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**sugar** provides a snapshot of your blood sugar at one point in time, while **hemoglobin A1c** gives a time-lapse look over several weeks. Although doctors typically order the latter test only for patients with diagnosed diabetes, some are now also recommending it for individuals at higher-than-usual risk for diabetes and heart disease.

Other substances in the blood, including **C-reactive protein** (CRP), homocysteine, lipoprotein(a), and fibrinogen, have

recently been linked to an increased risk of heart disease. Of these, CRP has received the most publicity. An elevated CRP level indicates low-grade inflammation, a process implicated

in heart disease. However, it is unclear exactly what level of CRP increases your risk and whether controlling CRP will help lower that risk. This marker may be most useful in assessing cardiovascular risk in persons already determined to be at moderate risk on the basis of established risk factors.

Having more than one risk factor for heart disease is especially worrisome, because risk factors tend to “gang up” to worsen each other’s effects. One potent cluster—an increased waist circumference, high triglycerides, low HDL cholesterol, high blood pressure, and high blood sugar—is known as the metabolic syndrome. About 1 in 4 U.S. adults have this syndrome, which is associated with an increased risk of diabetes, heart disease, and stroke.

### Estimating your heart disease risk

There are tools that use your numbers to estimate your likelihood of having a first heart attack or being diagnosed with heart disease in the next 10 years. One widely used tool is the Framingham risk score. Go to <http://hin.nhlbi.nih.gov/atp/iii/calculator.asp>, or ask your healthcare provider to calculate your

score. A Framingham risk greater than 20 percent is considered high; a risk of 10 to 20 percent is moderate; a risk of 5 to less than 10 percent is low; and a risk of less than 5 percent is very low. A web-based tool developed by Harvard School of Public Health researchers gives another estimate of your heart disease risk as well as personalized tips for prevention ([www.yourdiseaserisk.harvard.edu](http://www.yourdiseaserisk.harvard.edu)). The Harvard tool incorporates a wider array of potential risk factors than does the Framingham tool. (Tools for estimating your risk of

stroke, diabetes, certain cancers, and osteoporosis are also available at the Harvard website.) In the future, WHS researchers plan to use the data gathered during the WHS trial and observational follow-up to

develop an alternate tool to predict heart disease risk in women. One caveat—the heart risk assessment tools should not be used by individuals already known to have heart disease. Such persons have a higher risk of future heart attack than other persons, and the tools will underestimate their risk.

Being aware of your heart disease risk may motivate you to make healthy lifestyle changes and will help your doctor determine whether to prescribe certain medicines to lower your risk. Drugs that lower blood pressure or favorably affect cholesterol levels can prevent heart attacks and increase survival in women at above-average cardiovascular risk. On the other hand, menopausal hormone therapy is no longer recommended for the prevention of heart disease, although it may still be appropriate for treatment of menopausal symptoms in women at low risk of cardiovascular disease. All of us, including those who have had a heart attack or stroke, can benefit from adopting healthy lifestyle choices and, when warranted, taking medications. Indeed, the greater your cardiovascular risk is, the greater the payoff from prevention efforts is likely to be.

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### **Q** A recent WHS questionnaire asked for my e-mail address. What is the reason for this request?

The main reason we ask for participants’ e-mail addresses is that e-mail provides a way for us to track women who have moved and forgotten to notify us of their updated contact information. Although postal addresses and phone numbers don’t stay the same when people change residences, e-mail addresses often do. (Please be assured that it is our policy never to include confidential medical information in e-mail communications.) We are also exploring the feasibility of establishing a WHS website, which would allow us to relay information about the study to participants on a more frequent basis than is possible via the newsletter. A website would also allow us to give participants the option of completing their annual questionnaires online.

To date, about 65 percent of WHS respondents have given us an e-mail address. The rest either do not have e-mail or have chosen not to share their e-mail address with us. Because we are aware that some participants do not have access to e-mail—or prefer not to use the Internet to convey sensitive medical data—we will of course continue to offer everyone the option of filling out and returning the annual questionnaires in the usual way—that is, via postal mail. We will also continue the tradition of sending annual newsletters to update participants on the status of the study.



If you have questions regarding the WHS, please let us know. Julie Buring, ScD, the study’s Principal Investigator, will answer them in future issues of *Update*.