



The Atherosclerosis Risk
in Communities (ARIC) Study

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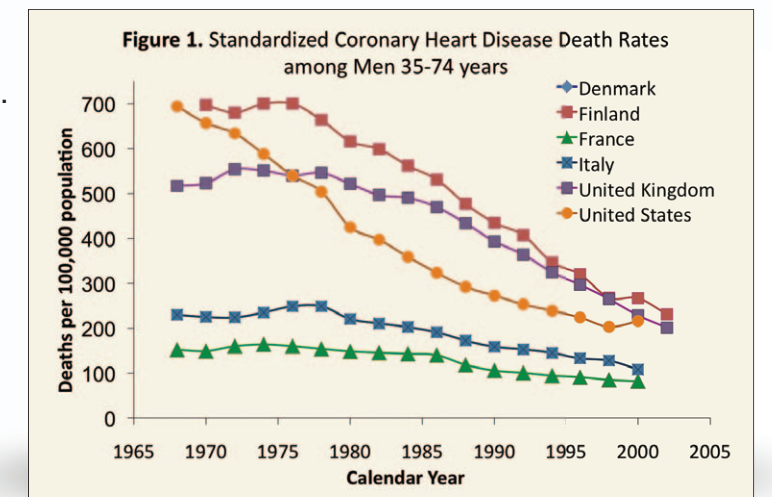
The Atherosclerosis Risk in Communities (ARIC) Study • Spring 2010

Rates of Death from Coronary Heart Disease are Declining

Coronary heart disease is now the leading cause of death worldwide. It is on the rise in many parts of the world and like other pandemics, it respects no borders. At the same time, mortality from coronary heart disease (CHD) has been falling in many countries as well as in the United States. Between 1980 and 2004 the rate of deaths from coronary heart disease fell by approximately 50% in the U.S. **Figure 1** shows a steady decline for men, which started out with some of the highest in the world. The trends look similar for women in the U.S.

The ARIC study has contributed important information toward understanding the reasons for this decline, and how to prevent coronary heart disease in more Americans. Scientists now have information indicating that reductions in the risk factors for coronary heart disease are contributing

to the decline in coronary heart disease rates, such as lowering blood cholesterol, blood pressure, and smoking rates (24%, 20%, and 12% reduction in coronary heart disease mortality from each). Even though most of the reduction in deaths is attributed



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ARIC study members designate their “proxy”

Dear ARIC study member,

One of the most important goals of ARIC is to learn about your health, what you do to stay healthy and how you manage health issues. Linking updated information to information you have shared with ARIC over the years is crucial for answering scientific questions.

Although you are the best source for information about your health, there may come a time when you are not able to provide this critical information.

We are asking you to provide us with the name and contact information of a “proxy.” A proxy is someone who can tell us about your health if you cannot.

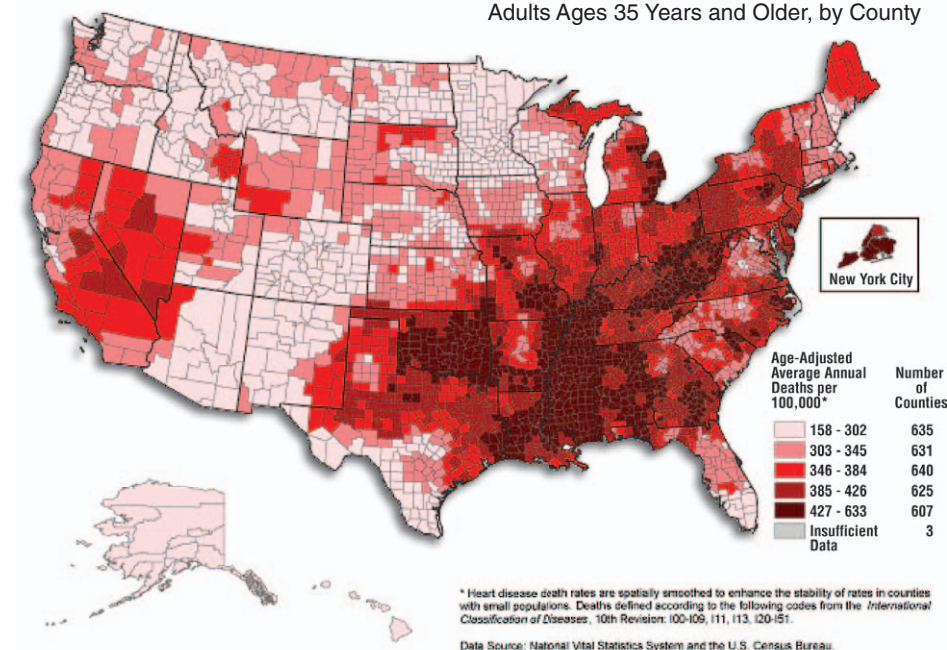
Your proxy should be someone who knows if you have had health problems or have been in the hospital, and who can give us the approximate dates. Your proxy should be someone you talk to often, and who you trust. We would ask your proxy the same questions that you answer each year for the ARIC person-

nel, but only in the event that you are unable to answer them yourself.

Please inform them that you have provided their contact information to the ARIC Study. To keep our records current, we will ask you whether your proxy information has changed.

You have been a part of ARIC for many years and have made a significant contribution to the efforts to improve the health of all individuals. Thank you for your ongoing participation!

Figure 2: Heart Disease Death Rates, 2000-2006 – All Women Adults Ages 35 Years and Older, by County



to improved medical treatments during an acute heart attack, many challenges remain. Almost two thirds of the men and women who die of coronary heart disease within one month after their first heart attack, actually die before they reach a hospital. It is important that we all learn to recognize the warning signs of a heart attack.

Another big challenge is to understand how to reduce the burden of coronary heart disease in different contexts. **Figure 2** shows the

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Coronary Heart Disease continued from page 1

differences in the rates of mortality among women older than 35 years of age in the U.S. (darker colors reflect higher death rates), reminding us that who we are and where we live is related to our chances of dying from coronary heart disease. Along with this, we need to understand whether the burden of the disease is declining equally among all members of our community, such as the old and the young, women and men, and the many cultural and ethnic groups that are our makeup.

With your help, ARIC also contributes to answer these questions. Our goal is to reach beyond the ARIC study cohort and get a full picture of the trends shown in these graphs as they apply to your whole community. For this reason, we have in the past requested to view your hospital records, or to contact your care provider to confirm a condition you have reported to us. At each ARIC field center, a busy team of highly trained specialists reviews the hospital records and extracts the key items of information needed by ARIC to classify and standardize the diseases we study, in a way that permits

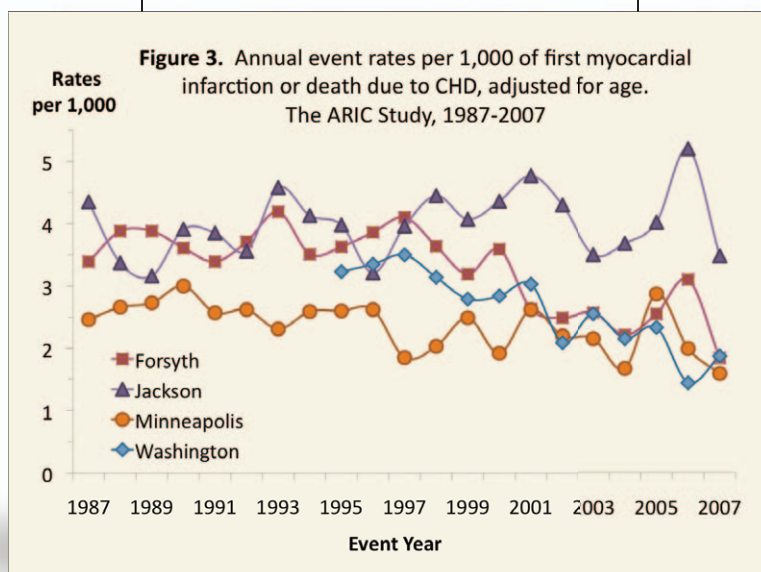
comparisons over time, across regions in the U.S., and between countries. This arm of the study is known as **ARIC Cohort and Community Surveillance**. Its staff does not contact the members of the ARIC study. Instead, by reviewing a yearly sample of all the hospitalizations and deaths that occur in your community, they fill in the larger picture of heart disease over time, by region and for different demographic groups.

Figure 3 is an example of the important information collected by the ARIC medical records specialists at each field center. It documents the rate of occurrence over time of new heart attacks (hospitalized myocardial infarctions) or deaths attributed to coronary heart disease in the four areas studied by ARIC. For close to 10 years



beginning in 1987 Forsyth County, North Carolina and Jackson, Mississippi had much higher rates of such heart attacks than those seen for men and women in the suburbs of Minneapolis, Minnesota. This pattern changed very little during that time until a more marked reduction in rate occurred around 1997 in Washington County, Maryland and Forsyth County, NC. As a result, three of the communities under long term study by ARIC now have considerably lower rates of fatal and non-fatal heart attacks than ever before. In contrast, men and women of

35-74 years of age living in Jackson, MS are still experiencing higher rates of fatal and non-fatal heart attacks than their counterparts in ARIC and their rate of decline is still less than the other regions studied by ARIC's Surveillance personnel.



Obesity: Food for thought

The National Heart Lung and Blood Institute reports that overweight and obesity among U.S. adults and children has reached epidemic proportions. How is overweight and obese defined? Researchers and physicians estimate the relation (or ratio) of our body weight to our height to estimate the degree by which we are over or underweight. That amounts to the fat load on our body, and is expressed as the body mass index (BMI). To calculate your BMI using pounds and inches, you will first need to multiply your weight in pounds by 703 and then divide this number twice by your height as measured in inches. The equation is as follows $BMI = [703 \times \text{weight}$

(in pounds)/height² (in inches)]. You can also go to this website to calculate your BMI (<http://www.nhlbisupport.com/bmi/>), or ask your physician about your BMI.

A common definition used among health care providers (calculated using weight in kilograms and height in meters) refers to a body mass index (BMI) of 25 to 30 kg/m² as “overweight,” and a BMI of 30 kg/m² and greater as “obese.” This cutoff is widely used as a measure of weight adjusted for height.

ARIC researchers are contributing to learn more about the causes of obesity and to inform decision makers on how to handle this epidemic.

Based on the information that you have provided to ARIC, the research organizations below describe how obesity is affected by, and how it affects the community.

- **Morland and collaborators** studied whether your community plays a role in determining your weight. In 2006 they found that the presence of more supermarkets in a community leads to lower levels of residents being overweight or obese. The presence of more small convenience stores on the other hand related to higher levels of overweight and obesity in the community. This shows how important access to healthy foods and daily choices are in maintaining a healthy weight.
- Our doctors tell us to eat well and avoid what is bad for us. A study by **Nettleton and collaborators** in 2008 found

that our doctors are right after all. ARIC participants that ate more high-fat dairy products and more eggs had a higher risk for heart failure. In contrast, ARIC study participants who reported eating more whole grains had a lower risk of heart failure.

- **Yatsuya and colleagues** reported in 2009 that if all of the borderline obese and obese ARIC participants (with a BMI of 28.6 kg/m² or greater) were able to lower their indexes to the BMI level of the majority of ARIC participants, then 18 less ischemic strokes would occur for every 100 that currently occur. This is an important decrease in a very disabling condition that can cause permanent death to portions of

the brain and sometimes long term impairment. A decrease in this kind of strokes would have a positive impact in medical centers, as well as within your own family or community.

- **A study of early retirement** found about one fifth of ARIC participants were able to retire before age 65. Among this fifth, African-Americans were 2-3 times as likely as white participants to retire early due to health reasons. If an ARIC participant reported being overweight or obese at age 25 they were more likely to retire early because of health problems than a participant who had normal weight at age 25 (*Houston and colleagues, 2008*).