

# Age-Specific Analyses of Breast Cancer Versus Heart Disease Mortality in Women

Coronary heart disease (CHD) is the leading cause of death among women in the United States,<sup>1</sup> which had 7.5 million women with a history of CHD in 2008,<sup>1</sup> surpassing the 2.6 million women with a history of breast cancer who were alive in 2008.<sup>2</sup> Furthermore, 515,000 women were diagnosed with myocardial infarction (MI) and fatal CHD,<sup>1</sup> exceeding the 230,480 women who were diagnosed with breast cancer in 2008.<sup>2</sup> A telephone survey conducted by the American Heart Association in 2006 and 2009 found that 65% of white women but only 37% and 38% of black and Hispanic women, respectively, were aware of CHD (not breast cancer) as the leading cause of death among women.<sup>3</sup> Younger women (age <55 years), in particular, were less aware of both the high mortality and the risk factors for CHD.<sup>3</sup> Our objectives in this editorial were to (1) examine the role of age when comparing CHD with breast cancer mortality in women and (2) discuss how these insights on mortality and age may be used in promoting women's health.

From 1980 to 2009, age-adjusted death rates from CHD have decreased by about 2/3, whereas such rates for breast cancer have decreased by about 1/3 (Table 1). In 1980, a woman was 8.2× more likely to die of CHD than of breast cancer; by 2009, a woman was still 3.9× more likely to die of CHD than breast cancer. These age-adjusted data, although, mask the effect of age when examining mortality attributed to CHD and breast cancer among women. Table 2 lists age-stratified death rates that compare the risk of death from CHD versus death from breast cancer in 2009. Among subjects aged 25 to 35 years or 35 to 44 years, women were about 1/3 less likely to die of CHD compared with breast cancer (Table 2). However, the number of women affected in either disease category was relatively small. Women aged 45 to 54 years had an almost equal risk of dying from CHD or breast cancer. In the postmenopausal age groups, death from CHD surpasses that of breast cancer among women, with a 1.4-fold greater risk of dying from CHD than breast cancer for women aged 55 to 64 years, to a 14-fold greater risk for women aged ≥85 years.

These data highlight a key message that both CHD and breast cancer are important conditions that kill women. Overall, more women will die from CHD than breast cancer, but this is driven by a large proportion of older women (aged ≥65 years) who will die from CHD. Among premenopausal women, breast cancer actually poses a somewhat greater, thus earlier and more immediate risk to women's health than CHD. Women aged <50 years are more likely to die of breast cancer, in part, because young

women are more likely to present with more aggressive genetic types of breast cancer, such as triple-negative or BRCA-associated breast cancer, compared with older women. Additionally, common chemotherapy agents used to treat women with aggressive breast cancer, such as doxorubicin, and its daughter drugs induce myocardial damage, which can be chronic and long lasting. CHD is also an important condition in women, but its dominance over breast cancer as a cause of mortality increases markedly with age. In fact, recent research from the United Kingdom has shown that among women aged >65 years diagnosed with breast cancer, most will die from other causes, most commonly from CHD.<sup>4</sup>

There may be many reasons why women still have not fully embraced the message of CHD awareness. As our data highlight, younger women may think of breast cancer as a “now” problem and CHD as a “later” problem, a finding which may undermine CHD prevention efforts. Also, women may be unaware of the association of CHD risk factors and development of CHD. Furthermore, women who do not recognize that CHD is the leading cause of death in the United States are also more likely to underestimate their personal risk for CHD<sup>3</sup> and less likely to pay attention to MI symptoms. Similarly, atypical symptoms of CHD are more common in women, and action is more likely if symptoms are familiar. Also, women may be more likely to care for their family and others before paying attention to their own symptoms. Women often describe CHD as a “male problem” and may attribute the symptoms of MI to other noncardiac conditions.<sup>5</sup>

A clear majority of women who develop clinically significant CHD will have cardiovascular risk factors.<sup>1</sup> Over the past quarter century, CHD mortality has decreased dramatically, with 47% of the decrease attributed to better use of evidence-based treatments and 44% due to better treatment of risk factors especially hypertension and dyslipidemia.<sup>1</sup> This was offset, in part, by a growing epidemic of obesity and diabetes among women. Given the potential to modify and prevent a woman's risk for developing CHD through aggressive risk factor modification and treatment of CHD risk factors, every woman should have a comprehensive evaluation of their risk at some point in time: perhaps around 45 years of age or possibly earlier, in high-risk groups with a strong family history of CHD. We encourage women to be familiar with the wide spectrum of the signs and symptoms of MI and have knowledge of their personal risk of developing CHD based on assessment of their risk factor profile, lest they not take their symptoms seriously.

In this analysis, we focus on mortality from CHD and breast cancer and do not provide data on the prevalence, incidence, and morbidity of either CHD or breast cancer or

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Table 1

Coronary heart disease and breast cancer mortality of women in the United States, overall by year (age-adjusted death rate per 100,000: 1980 to 2009)

Variable	Year															
	1980	1990	1995	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
CHD	263.1	193.9	173.6	160.9	155.6	152.9	146.5	139.9	133.6	127.2	116.7	111.7	103.1	95.7	93.0	86.2
Breast cancer	31.9	33.3	30.8	28.6	27.9	26.6	26.8	26.0	25.6	25.2	24.5	24.1	23.5	22.9	22.5	22.3
Risk ratio*	8.2	5.8	5.6	5.6	5.6	5.7	5.5	5.4	5.2	5.0	4.8	4.6	4.4	4.2	4.1	3.9

Centers for Disease Control and Prevention, National Center for Health Statistics, Compresses Mortality File 1999 to 2009. CDC WONDER online database compiled from Compressed Mortality File 1999 to 2009 Series 20 No. 2M, 2010 assessed at <http://wonder.cdc.gov/cmfi-icd10.html>; vital statistics of the United States—National Center for Health Statistics, 2010.

\* Risk ratio of heart disease mortality to breast cancer mortality.

Table 2

Coronary heart disease and breast cancer mortality of women in the United States, overall by age specific in 2009 (death rate per 100,000, by age)

Variable	Age Group (yrs)						
	25–34	35–44	45–54	55–64	65–74	75–84	85+
CHD	1.2	6.7	25.0	69.8	191.5	614.0	2277.5
Breast cancer	1.7	10.6	26.5	48.8	74.5	111.0	168.0
Risk ratio*	0.7	0.6	0.9	1.4	2.6	5.5	13.6

Centers for Disease Control and Prevention, National Center for Health Statistics, Compresses Mortality File 1999 to 2009. CDC WONDER online database compiled from Compressed Mortality File 1999 to 2009 Series 20 No. 2M, 2010 assessed at <http://wonder.cdc.gov/cmfi-icd10.html>; vital statistics of the United States—National Center for Health Statistics, 2010.

\* Risk ratio of heart disease mortality to breast cancer mortality.

on the broader spectrum of cardiovascular diseases. However, their inclusion will not likely change our overall message: the presence of cardiovascular risk factors may eventually lead to CHD, disability, or death over the course of a woman's lifetime and should be taken at least as seriously as the risk of breast cancer.

Our editorial is a novel attempt to quantify breast cancer versus CHD death rates in women over the past 30 years and provide yet another reason women may not fully embrace the message of CHD awareness. The clinical implications of our finding are confirmatory and reinforce the importance of promoting women's health during their entire life span as it may well affect them adversely later in life. We highlight the importance of considering age-specific analyses when examining mortality among women. Lastly, we encourage women to be passionate about CHD awareness, with vigor equal to that of breast cancer awareness, and to talk with their doctors about CHD risk factors, taking action to prevent or control these risk factors when present.

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