Recent Trends in Breast Cancer Mortality among White and Black US Women

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ABSTRACT

Objectives. Time trends in breast cancer mortality were analyzed from 1970 to 1992 among White and Black US women aged 25 and over.

Methods. Mortality data from the National Center for Health Statistics were summarized within three periods: 1970 to 1979, 1980 to 1988, and 1989 to 1992. The annual change was calculated as the average yearly percentage of change based on the logistic model.

Results. For White women of all ages, breast cancer mortality decreased by 1.6% (95% confidence interval = −2.0%, −1.1%) per year on average during 1989 to 1992, in contrast to the flat mortality rates observed during the 1970s and a 0.5% average annual increase during 1980 to 1988. The decline was observed for White women under age 60, among whom breast cancer mortality had been decreasing, and for White women aged 60 to 79, among whom breast cancer mortality had been increasing, but it was not observed among Black women.

Conclusions. The long-awaited decline in US breast cancer mortality has finally appeared, although only among White women. The possible contributions are changes in inherent risk of disease, changes in treatment effectiveness, and increased use of screening mammography. (*Am J Public Health.* 1997;87:775–781)

Introduction

Breast cancer mortality rates remained constant or increased by a small amount in the United States over the 1970s and 1980s, despite advances in breast cancer treatment and screening.[1] However, trends in mortality rates reflect trends in breast cancer risk as well as in treatment and screening, and breast cancer incidence rates increased dramatically in the early and mid-1980s.[2–4] The age-adjusted incidence rate (for women of all ages using the 1970 US standard population) increased from 85.2 per 100 000 women in 1980 to a peak of 112.4 per 100 000 women in 1987—a 32% increase—followed by a small decrease by 1991 to 110.2.[2] This rate of increase would be alarming if it represented a true increase in the population's inherent breast cancer risk. However, incidence rates can be artificially and temporarily increased when a new screening mode is introduced in a population because some cases are then diagnosed at an earlier time in the disease's progression.[5] Thus, the dramatic increase in incidence may actually represent a beneficial trend toward earlier detection by mammography screening.

Monitoring trends in breast cancer mortality is important to determine if mortality is increasing over time owing to an increase in true underlying risk, or if the anticipated decline in mortality due to increased use of screening mammography[1] and improved treatment[6] is finally appearing. Because trends in mortality would be expected to lag behind any increase in underlying risk or in the use of screening by at least 5 to 10 years,[5] we analyzed the most recent available breast cancer mortality rates to 1992 in light of earlier incidence rates to 1988 and the use of mammography in 1987. Mammography data for 1992 is also included.

Methods

Because breast cancer death and incidence rates are negligible for young women, our analyses are restricted to women aged 25 years and over. Analyses are shown separately for White and Black women.

Breast Cancer Mortality Data

US breast cancer mortality data for 1970 to 1992 were analyzed using information obtained from death certificates collected by states and later compiled for the United States by the Division of Vital Statistics of the National Center for Health Statistics of the Centers for Disease Control and Prevention.[7–9] For 1970 to 1978, breast cancer deaths were classified according to the *Eighth Revision of the International Classification of Diseases, Adapted for use in the United States*[10] as malignant neoplasm of breast (ICDA-8, no. 174); for 1979 to 1992 they were similarly classified according to the *Ninth Revision of the International Classification of Diseases*[11] (ICD-9, nos. 174 to 175). Breast cancer mortality trends for 1970 to 1992 were minimally affected by the classification change to the ninth revision, as indicated by an estimated

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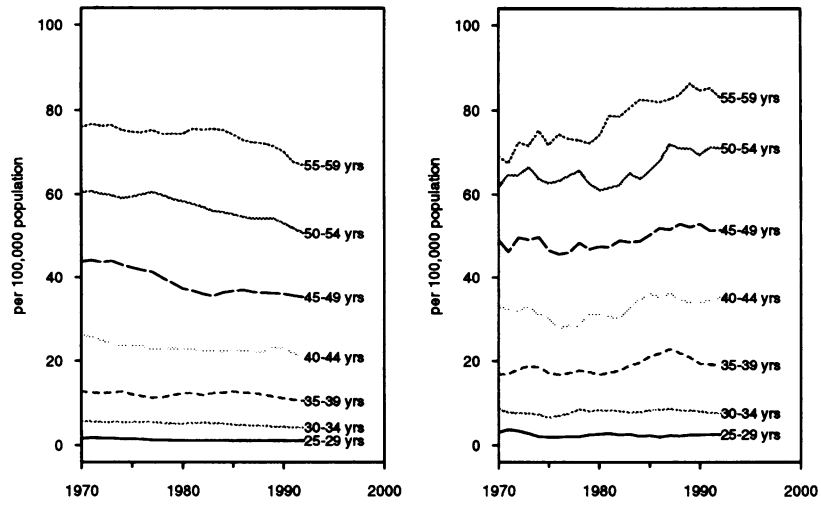

Figure 1A - White women

Figure 1B - Black women

[a]Two-year moving average plotted for 1970 & 1992.

FIGURE 1—Three-year moving averages[a] of breast cancer age- and race-specific mortality rates in the United States, ages 25–59.

comparability ratio close to one (1.0089).[12] Age-specific death rates were based on population data from the decennial censuses and from intercensal estimates and post-1990 census projections produced by the Census Bureau.[7,8,13]

Mortality trends were analyzed for the periods 1970 to 1979, 1980 to 1988, and 1989 to 1992. The 1970s served as a reference period before the introduction of mammography. The 1980 to 1988 time period reflects the introduction of screening mammography,[1] and 1989 to 1992 represents the recent time trends in mortality.

Breast Cancer Incidence and Mammography Data

Data on the incidence of invasive breast cancer are from the Surveillance Epidemiology and End Results (SEER) program of the National Cancer Institute (NCI).[2] Corresponding population data were produced by the Census Bureau for the SEER program. The SEER incidence data from 1973 to 1988 cover residents in the metropolitan areas of Atlanta, Detroit, San Francisco, and Seattle (beginning with data for 1974), and the states of Connecticut, Hawaii, Iowa, New Mexico, and Utah. These nine regions cover an estimated 9.5% of the US population and are considered representative of the entire country.[2] Two time periods were analyzed: 1973 to 1979 and 1980 to 1988.

Estimates of mammography use among White and Black women were produced from information collected in the National Health Interview Survey (NHIS), a nationally representative annual survey of approximately 49 000 households sponsored by the National Center for Health Statistics. Age-specific estimates of percentages of women who had ever had a mammogram and who had had a mammogram within 1 year of the interview date were produced for 1987, when questions on mammography use were first included in the NHIS, and for 1992. Questions on cancer control, including mammography, were administered to 22 403 adults in 1987[14] and to 12 035 adults in 1992.[15] Estimates and their 95% confidence intervals (CIs) take into account the complex sampling design of the NHIS in producing standard errors.

Statistical Analysis

Unconditional logistic regression[16] was used to analyze rates and calculate the average annual percentage of change (AC) for both national mortality and SEER incidence breast cancer data (Tables 1 and 2). Age adjustment for the summary age groups was accomplished by including 5-year age categories in the models. The average annual percentage of change was estimated by modeling the year of mortality or year of diagnosis as an ordinal variable within each time period and converting the resulting coefficient β to an average annual percentage of change using

$$AC = (e^{\beta} - 1) * 100.$$

The average percentage change within each n-year time period was estimated as

$$(e^{n\beta} - 1) * 100.$$

Maximum likelihood techniques were used to compute the estimates and 95% confidence intervals.[16]

The time trends in the figures use 3-year moving averages of breast cancer age-specific death rates, except for the end dates, for which 2-year moving averages were used.

Results

Figures 1 and 2 show the trends in breast cancer mortality rates from 1970 to 1992 for US White women (Figures 1A and 2A) and Black women (Figures 1B and 2B) by age. The data in these figures are summarized in Table 1 by the annual change (AC), which shows the average yearly percentage of increase or decrease within each of the three periods (1970 to 1979, 1980 to 1988, 1989 to 1992). These statistics are given for each 5-year age group and for summary age groups (ages 25 to 59, 60 to 79, 80+, and all ages 25+).

As shown in Table 1, when all ages are considered together, breast cancer mortality among White women was constant during the 1970s (AC = −0.1%) and increased a small amount during 1980 to 1988 (AC = 0.5%). However, there was a substantial 1.6% average annual decline in breast cancer mortality among White women during 1989 to 1992 (AC = −1.6%; 95% CI = −2.0, −1.1%), or an estimated 5% decline over the 4 years.

The mortality trends differ for White women younger and older than age 60, as shown in Figures 1A and 2A and Table 1. Among White women aged 25 to 59, breast cancer mortality declined in the 1970s for all 5-year age groups, with an average annual decrease of 0.8% (Table 1). This decline continued during 1980 to 1988 with an average annual decrease of 0.6% per year. Within the most recent period (1989 to 1992), the decrease in mortality appears to have accelerated to a 3.1% per year average annual decline (95% CI = −3.9%, −2.3%). This decrease was observed in all seven 5-year age groups but was significant for only

four (all except ages 25 to 29, 30 to 34, and 45 to 49). Across the entire period of 1970 to 1992, the decline was 20%, almost half of which (9%) occurred in the last 4 years.

In contrast to the rates for younger women, breast cancer mortality rates for White women aged 60 to 79 increased slowly during the 1970s (AC = 0.4%) and increased by about 1% per year within 1980 to 1988. By 1988, breast cancer mortality was 13% higher than in 1970. However, within the most recent period (1989 to 1992), the trend toward increasing death rates appears to have reversed, and breast cancer mortality among White women aged 60 to 79 decreased by 1.5% (95% CI = −2.1%, −0.9%) per year on average, for a total decline of 4% across the most recent period. However, among women aged 80 and over, there was no apparent decline during 1989 to 1992.

Among Black women, the annual increase in mortality over all ages during the 1970s was 0.5% per year, increasing to 2.0% during 1980 to 1988. These increases correspond to mortality rates in 1988 being 23% higher than in 1970. Furthermore, the recent decrease in mortality among White women was not apparent for Black women: mortality rates appear to have stabilized or increased by a small amount within 1989 to 1992 among Black women (AC = 0.5%; 95% CI = −0.8%, 1.8%). There were no clear differences by age for these trends.

To help interpret the trends in breast cancer mortality, national trends in breast cancer incidence and mammography use were analyzed for summary age groups. Because mortality rates are influenced by breast cancer incidence occurring several years earlier,[5] incidence is presented from 1973 (the year the SEER program was fully implemented) to 1988 (Table 2). For White women, there were large increases in breast cancer incidence during the 1980s (for all ages combined, AC = 3.8%) such that the average rate in 1988 was 29% higher than that in 1973. The average annual increases during the 1980s were particularly high (>4.5%) for women aged 60 to 79. Although breast cancer incidence rates are generally lower among Black women than among White women, the time trends in incidence among Blacks are similar to those for Whites (Table 2). Over all ages, breast cancer incidence increased 23% from 1973 to 1988 among Black women.

In 1987, mammography use within the last year among White women was 25% for women aged 40 to 59, 20% for women aged 60 to 79, and 10% for women aged 80 and older (Table 3). The corresponding percentages among Black women were 19%, 17%, and 3%. During 1987 to 1992, mammography screening increased dramatically for both Black and White women. By 1992 the percentage of women who had obtained a mammogram in the last year was approximately double that in 1987 for both White and Black women and for all age groups (Table 3).

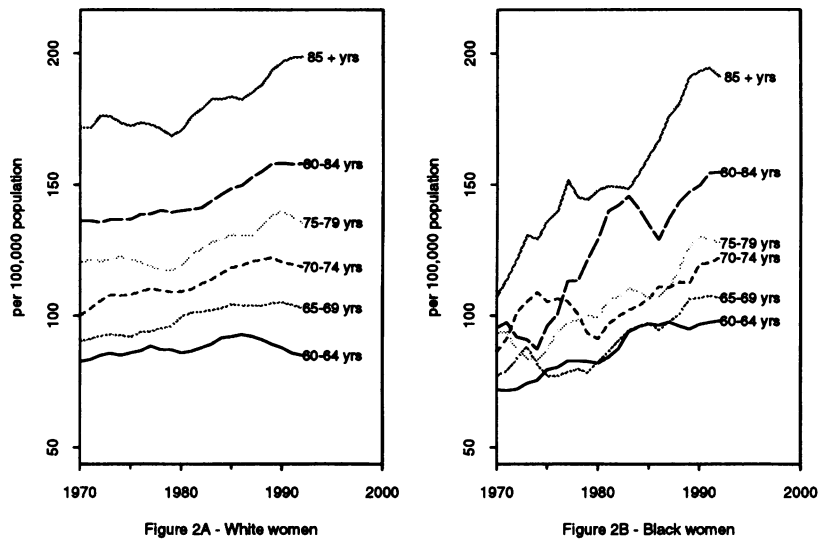

FIGURE 2—Three-year moving averages[a] of breast cancer age- and race-specific mortality rates in the United States, ages 60 and over.

Discussion

The long-awaited decline in US breast cancer mortality has finally appeared, although only among White women. For White women across all ages, a significant 1.6% average annual decline was observed within 1989 to 1992, which is in contrast to the flat mortality rates of the 1970s over all ages (0.1% average annual decrease) and the 0.5% average annual increase for 1980 to 1988. However, there was no apparent decline in mortality among White women aged 80 and over and among Black women of all ages during 1989 to 1992. Although this decline was announced in 1995 by Sam Broder before his retirement as director of the NCI,[17] to our knowledge there have been no published articles analyzing these trends by age, race, and time period. However, declining breast cancer mortality has been reported in England and Wales, which those authors attribute to treatment effects and cohort effects on breast cancer risk factors but not on screening.[18]

These trends in breast cancer mortality are of major public health interest; however, their interpretation is complex because they probably reflect the combined effects of trends in breast cancer risk, screening usage, and treatment effectiveness. Furthermore, because breast cancer case fatality is about 3% to 4% per year for the first 8 years after diagnosis and 1% to 2% for the next 8 years,[2] mortality rates lag behind changes in breast cancer risk, screening, or treatment by at least 5 to 10 years.

The declining mortality from breast cancer among White women under age 60 over the last 2 decades may be due to a combination of decreasing inherent risk of breast cancer, increasing effectiveness of treatment, and the benefits of early detection. Since the early 1970s, a large percentage of young White women aged 20 to 59 (78% at ages 20 to 39 and 63% at ages 40 to 59) were obtaining regular clinical breast exams,[19] and these exams may have contributed to the long-term decline of breast cancer mortality in this group.[20] Mammography use probably accounts for the recent acceleration in the decline to 3% per year. Mammography use was rare prior to 1984,[1,21,22] but by 1987, 25% of White women aged 40 to 59

TABLE 1—Average Annual Breast Cancer Mortality Rate per 100 000 Women, by Age, Race, and Time Period: United States, 1970 through 1992

	Year of Death											
	1970–1979				1980–1988				1989–1992			
Age Groups	No.	Rate[a]	AC	95% CI	No.	Rate[a]	AC	95% CI	No.	Rate[a]	AC	95% CI
White women												
5-year												
25–29	1 063	1.5	−4.3	−6.4, −2.3	878	1.1	−1.8	−4.3, 0.8	355	1.0	−1.9	10.6, 7.7
30–34	3 325	5.4	−1.1	−2.2, 0.1	3 709	5.0	−1.9	−3.1, −0.7	1 541	4.2	−2.8	−7.0, 1.6
35–39	6 311	12.1	−1.7	−2.5, −0.8	8 014	12.3	−0.0	−0.9, 0.8	3 674	10.9	−3.2	−5.9, −0.3
40–44	12 266	24.1	−1.4	−2.0, −0.8	12 013	22.4	−0.5	−1.2, 0.2	6 833	22.2	−5.6	−7.6, −3.6
45–49	22 673	42.4	−1.5	−1.9, −1.0	16 736	36.5	−0.1	−0.7, 0.5	8 769	35.6	−1.3	−3.1, 0.6
50–54	32 559	59.9	−0.2	−0.6, 0.2	25 106	55.9	−0.9	−1.4, −0.5	10 591	52.2	−2.7	−4.4, −1.1
55–59	38 003	75.5	−0.5	−0.9, −0.2	35 063	74.6	−0.6	−1.0, −0.2	12 941	68.7	−3.2	−4.7, −1.7
60–64	38 457	85.6	0.6	0.3, 1.0	41 227	81.2	1.0	0.6, 1.3	17 077	86.5	−2.1	−3.4, −0.8
65–69	37 023	93.1	0.5	0.1, 0.8	42 402	91.8	0.4	0.0, 0.8	20 453	104.4	−1.1	−2.3, 0.2
70–74	33 271	107.2	0.9	0.5, 1.3	40 087	103.6	1.5	1.1, 1.9	20 142	120.4	−1.0	−2.2, 0.3
75–79	28 353	120.2	−0.6	−1.0, −0.2	34 432	114.0	1.0	0.6, 1.5	18 792	138.4	−1.9	−3.2, −0.7
80–84	21 522	137.7	0.3	−0.1, 0.8	26 307	147.0	1.5	1.0, 2.0	14 961	157.8	−0.0	−1.4, 1.4
85+	19 117	172.1	−0.2	−0.6, 0.3	27 661	181.6	0.9	0.4, 1.4	16 161	197.0	0.8	−0.6, 2.2
Summary												
Ages 25+	293 943	52.4	−0.1	−0.3, −0.0	313 635	53.5	0.5	0.3, 0.6	152 290	53.9	−1.6	−2.0, −1.1
25–59	116 200	29.4	−0.8	−1.0, −0.6	101 519	27.7	−0.6	−0.8, −0.4	44 704	25.9	−3.1	−3.9, −2.3
60–79	137 104	98.4	0.4	0.2, 0.6	158 148	105.8	1.0	0.8, 1.2	76 464	108.3	−1.5	−2.1, −0.9
80+	40 639	152.0	0.1	−0.2, 0.4	53 968	161.4	1.2	0.9, 1.5	31 122	174.2	0.4	−0.6, 1.4
Black women												
5-year												
25–29	241	2.5	−7.6	11.6, −3.5	294	2.4	−4.1	−8.3, 0.3	145	2.5	2.0	11.8, 17.9
30–34	616	7.6	0.4	−2.3, 3.2	901	8.2	0.9	−1.6, 3.5	451	7.7	−3.0	10.6, 5.4
35–39	1 219	17.5	0.3	−1.6, 2.3	1 784	20.2	4.9	3.0, 6.8	998	19.3	−1.1	−6.4, 4.6
40–44	2 006	30.5	−1.7	−3.2, −0.2	2 393	34.0	2.2	0.6, 3.8	1 446	34.2	2.5	−2.1, 7.4
45–49	2 954	47.7	0.3	−1.0, 1.5	2 991	49.3	1.6	0.2, 3.0	1 648	52.3	1.6	0.2, 3.0
50–54	3 769	64.1	−0.1	−1.2, 1.1	3 672	65.8	2.4	1.2, 3.7	1 868	70.7	2.0	−2.1, 6.2
55–59	3 604	71.5	0.5	−0.7, 1.6	4 272	81.4	1.2	0.0, 2.4	1 967	84.1	−0.1	−4.0, 3.9
60–64	3 447	77.2	2.2	1.0, 3.4	4 368	92.8	2.4	1.2, 3.6	2 127	95.7	1.5	−2.3, 5.4
65–69	3 222	79.7	−0.2	−1.4, 1.0	3 872	93.2	2.2	0.9, 3.4	2 155	107.5	0.3	−3.5, 4.1
70–74	2 570	100.2	0.6	−0.7, 2.0	3 388	104.0	2.4	1.0, 3.7	1 868	118.6	1.4	−2.6, 5.6
75–79	1 813	92.0	0.9	−0.7, 2.6	2 605	108.8	1.0	−0.5, 2.6	1 577	128.4	−0.7	−5.0, 3.8
80–84	1 166	101.2	2.9	0.8, 5.1	1 901	139.4	0.3	−1.4, 2.1	1 150	149.5	3.3	−1.9, 8.8
85+	1 109	133.7	3.0	0.9, 5.1	1 860	161.2	2.9	1.1, 4.8	1 228	191.9	0.2	−4.7, 5.3
Summary												
Ages 25+	27 736	43.7	0.5	0.1, 0.9	34 301	49.2	2.0	1.6, 2.4	18 628	53.0	0.5	−0.8, 1.8
25–59	14 409	29.7	−0.2	−0.7, 0.4	16 307	32.1	2.0	1.4, 2.6	8 523	33.1	0.1	−1.8, 2.0
60–79	11 052	84.7	0.9	0.3, 1.6	14 233	97.4	2.1	1.4, 2.7	7 727	109.0	0.7	−1.3, 2.7
80+	2 275	114.8	2.9	1.4, 4.4	3 761	148.1	1.6	0.3, 2.9	2 378	167.6	1.7	−1.9, 5.4

Note. AC = average annual percentage of change; CI = confidence interval.
[a]Age-specific rate for the 5-year age groups; age-adjusted rate (to the 1970–1979 population) for summary age groups.

had had a mammogram in the past year (Table 3). Controlled trials show that mammography screening every 1 to 3 years reduces mortality among women aged 50 to 69 by approximately 25%[23] (but not among women under 50), and this benefit appears 5 to 10 years after regular use.[24,25]

There is also evidence that use of adjuvant polychemotherapy and tamoxifen in the treatment of breast cancer has contributed to the decline in breast cancer mortality among women under age 60. Based on meta-analysis of controlled trials, long-term adjuvant polychemotherapy reduces mortality by 27% among women under age 50 and by 14% among women aged 50 and above, and tamoxifen reduces mortality by 17% among women of all ages.[6] Although these trials were reported before 1985, the consensus treatment recommendations on the use of tamoxifen and chemotherapy were issued by NCI over 1986 to 1990.[17]

It is also possible that part of the decline in mortality among White women under age 60 may be due to a decrease in inherent breast cancer risk during the 1980s, even though this may seem contradictory to the observed increase in incidence, the usual measure of risk (Table 2). White women aged 25 to 59 had declining breast cancer mortality in the 1970s and 1980s and declining incidence during the 1970s (Tables 1 and 2), which may be due to cohort effects related to age at first birth,[26] a known risk factor for breast cancer. During the 1980s, the observed incidence of breast cancer was artificially

TABLE 2—Average Annual Invasive Breast Cancer Incidence Rate per 100 000 Women, by Age, Race, and Time Period: SEER Areas, 1973–1988

	Year of Diagnosis							
	1973–1979				1980–1988			
Age	No.	Rate[a]	AC	95% CI	No.	Rate[a]	AC	95% CI
White women								
Ages 25+	58 360	163.1	−0.6	−1.0, −0.2	99 350	189.5	3.8	3.6, 4.1
25–59	27 054	105.3	−1.6	−2.2, −1.0	39 457	113.0	2.7	2.3, 3.1
60–79	24 767	298.1	0.2	−0.4, 0.9	47 409	375.1	5.0	4.6, 5.3
80+	6 539	367.8	0.6	−0.7, 1.8	12 484	422.2	3.1	2.4, 3.8
Black women								
Ages 25+	3 976	115.9	−0.6	−2.2, 1.0	7 980	136.2	3.2	2.3, 4.1
25–59	2 353	85.9	−1.5	−3.5, 0.6	4 251	95.8	1.9	0.7, 3.1
60–79	1 402	229.6	0.4	−2.3, 3.2	3 104	286.0	5.1	3.6, 6.5
80+	221	280.3	1.6	−5.1, 8.9	625	371.5	2.9	−0.3, 6.1

Note. SEER = Surveillance Epidemiology and End Results program of the National Cancer Institute; AC = average annual percentage of change; CI = confidence interval.
[a]Age adjusted rate (to the 1973–1979 population).

TABLE 3—Percentage of Women Who Had Had a Mammogram within a Given Time Period, by Age and Race: United States, 1987 and 1992[a]

	1987 Had Mammogram				1992 Had Mammogram			
	Ever		Within 1 Year		Ever		Within 1 Year	
Age	%	95% CI	%	95% CI	%	95% CI	%	95% CI
White women								
40–59	44.0	41.9, 46.1	24.6	22.8, 26.4	73.2	70.6, 75.8	44.7	41.9, 47.5
40–49	42.1	39.4, 44.8	23.6	21.2, 26.0	71.2	67.6, 74.8	40.6	37.0, 44.2
50–59	46.3	43.0, 49.6	25.9	23.2, 28.6	75.9	72.0, 79.8	50.3	45.9, 54.7
60–79	36.2	34.1, 38.3	19.5	18.0, 21.0	66.9	64.1, 69.7	43.1	40.2, 46.0
80+	20.4	16.5, 24.3	9.7	7.0, 12.4	48.5	42.4, 54.6	20.8	15.3, 26.3
Black women								
40–59	34.3	29.2, 39.4	18.8	14.9, 22.7	67.7	61.6, 73.8	39.8	32.4, 47.2
40–49	35.7	28.2, 43.2	17.0	12.2, 21.8	65.4	57.3, 73.5	35.4	26.0, 44.8
50–59	32.4	25.7, 39.1	21.3	15.1, 27.5	70.6	62.0, 79.2	45.3	34.6, 56.0
60–79	29.1	23.1, 35.1	17.4	12.2, 22.6	62.3	53.3, 71.3	34.3	25.7, 42.9
80+	8.3	0.7, 15.9	2.6	0.0, 6.4	41.8	24.3, 59.3	27.1	9.0, 45.2

Note. CI = confidence interval.
[a]Data from National Health Interview Survey, National Center for Health Statistics.

increased as screening mammography came into use and cases were shifted to earlier years of diagnosis.[5] We and others have argued that this increase among women under age 60 was actually somewhat *less* than that predicted by models of the effect of mammography.[4,27] Thus, the 2.7% annual increase in breast cancer incidence during 1980 to 1988 for White women aged 25 to 59 (Table 2) may reflect a true *decline* in inherent breast cancer risk plus an artificial increase due to mammography. This decreased inherent risk of breast cancer would contribute to the decline in mortality.

In contrast, for White women over age 60, breast cancer mortality was fairly flat through the 1970s and increased by about 1% per year in the 1980s. The most reasonable explanation for this increase is that the underlying risk of breast cancer was increasing for older White women, resulting in increased mortality rates despite treatment and screening advances. However, the increase in mortality during the 1980s is substantially less than the observed increase in incidence. Several studies have modeled the large increase in incidence among older women and have concluded that part of it is an artifact caused by the increased usage of mammography, but part is due to a long-term trend of increased inherent risk of breast cancer among older women.[4,26,28] Based on these models of incidence and the observed increase in mortality, there is at least a 1% annual increased risk of breast cancer among women aged 60 to 79, possible causes of which are cohort differences in reproductive risk factors,[26] long-term use of postmenopausal hormone replacement therapy,[29,30] and other factors.

The most encouraging finding of our analyses is that among White women

aged 60 to 79, the trend appears to have reversed and decreases in mortality have appeared. Thus, the benefits from the adoption of screening mammography during the 1980s[1,14,21,22] (see Table 3) and from the treatment advances noted above[6] have overcome the effect of any increases in breast cancer risk. Evidence that screening is having an impact in the general population comes from studies showing a shift toward an earlier stage of diagnosis and a declining incidence of late-stage disease.[1–4,21,28] Only among women over age 80 was there no observed decline in mortality, perhaps because of their low use of mammography in the 1980s[1,14] (see Table 3).

The trends in breast cancer mortality among Black women are unfavorable. Over all ages, breast cancer mortality during 1980 to 1988 increased by 2% per year for Blacks vs 0.5% per year for Whites. The reasons for this difference are not clear. Incidence rates increased substantially in the 1980s among Black women, although at a rate similar to that among Whites. Because Black women had lower use of mammography than White women during this period (Table 3), any artificial increase in incidence due to mammography would be less. This suggests that increasing mortality rates among Black women may be due to a greater increase in inherent breast cancer risk and to less benefit from screening. Black women also had lower levels than White women of clinical breast exam in 1973,[19] although by 1985 Black women were as likely to have had a clinical breast exam in the preceding year as White women.[14] Black women also have poorer survival than White women once breast cancer is detected[1,2]; later stage of disease at detection for Black women as well as histological pathological differences explain most of this difference.[31] The large magnitude of the increase in mortality among Black women over the 1970s and 1980s has been reported by others.[3,32] We report recent mortality data (1989 to 1992), and it appears that the trend may be flattening: a nonsignificant 0.5% increase per year from 1989 to 1992 vs a 2% increase per year from 1980 to 1988.

A major limitation of these analyses is that they do not represent a mathematical model of the influences of change in risk factors, increases in screening, and improved treatment on breast cancer mortality. This would require not only data on risk factors, mammography screening, and treatment over time by age and race but also estimates on how these factors influence mortality by age, race, stage of disease, and time since diagnosis.

In summary, the recent decline in breast cancer mortality among White women is promising. The recent stabilization of breast cancer death rates among Black women is not as positive. Nonetheless, it is anticipated that breast cancer mortality will continue to improve for all women, reflecting the more widespread use of mammography by 1992. Still future advances are needed in breast cancer risk reduction, improved treatment and screening modalities, and diffusion of regular mammography to underserved women to continue to reduce the high death toll of this disease. □

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Call for Abstracts for Epidemiology Late-Breaker Sessions

Oral Exchange Session

The Epidemiology Section will sponsor a late-breaker epidemiology oral exchange session on Wednesday, November 12, 1997, during the American Public Health Association's 1997 Annual Meeting in Indianapolis. The exchange will provide a forum for oral presentation of investigations, analyses, or methods that have been conceived, conducted, and/or completed after the February 10, 1997, deadline for regular submission to other epidemiology sessions.

Abstracts of fewer than 250 words (any format) and a stamped, self-addressed return envelope should be submitted to John M. Horan, MD, MPH, Chief, State Branch, Division of Field Epidemiology, EPO, Centers for Disease Control and Prevention, Mailstop C-08, 1600 Clifton Rd, Atlanta, GA 30333; (404) 639-3689.

Abstracts must be received by *September 12, 1997.* Decisions will be made by October 3, 1997.

Poster Session

The Epidemiology Section will again sponsor a late-breaker poster session on Wednesday, November 12, 1997, at the APHA Annual Meeting in Indianapolis. This session permits the presentation of work that has been completed too late in the last year for regular paper submission. Abstracts should report on work conducted during the past year.

Along with a stamped, self-addressed return envelope, abstracts of less than 250 words (any format) should be submitted to Cathey Falvo, MD, MPH, Graduate School of Health Science, Learning Center-310, New York Medical College, Valhalla, NY 10595; (914) 993-4250.

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