

Chapter 3. Effectivenessⁱ

Cancer

Key Findings:

- The majority of women are screened for breast (70.3% of women over 40) and cervical cancers (81% of women 18 and over).
- Less than half of those who should have colorectal cancer screening do so.
- Colon (8.0 per 100,000) and breast cancers (7.5 per 100,000) have higher rates of late-stage detection than rectal and cervical cancers.
- Late detection of some cancers, notably cervical and colorectal cancer, has been decreasing over the last two decades.

Background and Impactⁱⁱ

Cancer is the Nation's second leading cause of death, after heart disease. The number of new cancer cases is projected to reach over 1.3 million, and the number of cancer deaths is expected to top 550,000 in 2003. Four cancers: (lung, colorectal, breast, and prostate) account for over half of the new cases. The projected deaths from these cancers in 2003 are:

- Lung cancer: 157,000 men and women
- Breast cancer: Nearly 40,000 women
- Colorectal cancer: More than 57,000 men and women
- Prostate cancer: More than 28,000 men

Although deaths from cervical cancer have declined over the last several decades, 4,100 U.S. women will die of this cancer in 2003, and 12,000 new cases are expected to be diagnosed in the same period.

Cancer is among the most expensive diseases with projected total expenses of \$189.5 billion in 2003, including over \$64.2 billion in total direct health care expenses.¹

ⁱ **Note:** Detailed information about the measures used in Chapter 3 is contained in two appendixes to this report, the Measure Specifications Appendix, and the Measures Background Appendix. A third appendix, the Tables Appendix, contains all the data tables. The sections in this chapter highlight selected findings from a subset of the measures for each of the conditions discussed.

ⁱⁱ Statistics are from the American Cancer Society, Cancer Facts and Figures, 2003.

How the NHQR Measures Cancer Quality of Care

Experts agree on the elements of good quality care and how to measure it for some cancers and for some aspects of care. This report includes three kinds of measures for cancer: screening, advanced stage detection, and mortality. Additionally, because cancer patients account for over half of those who receive hospice care,² this report discusses hospice as a dimension of cancer care. (The specific measures used in this report are listed in a table at the end of this section.) The cancers selected for inclusion in the report include breast, colorectal, cervical, lung, and prostate. These cancers, excluding cervical cancer, were chosen because they represent the four most common cancers. There are gaps in the full array of possible measures of health care needs, for the wide variety of cancers, and across the spectrum of health care approaches.

Screening

Screening is defined as the “application of a test to a population to classify individuals as likely or not likely to have a disease.”³ Screening allows for the detection of precancerous abnormalities and the early detection of disease and, when followed by appropriate treatment, can lead to a reduction in the likelihood of illness and death from the cancer. This report includes consensus-based screening measures for breast, cervical, and colorectal cancers.

Advanced-Stage Detection

This report contains measures that track the incidence rates of breast, cervical, and colorectal cancers that are diagnosed at advanced stages when treatment options are limited and less successful in preventing mortality. The incidence of advanced stage cancer detection is an indicator of the success of screening, i.e., the lower the rate the greater the success.

Mortality

Cancer mortality rates are a summary indicator of the success or failure of the Nation’s collective health care system in combating cancer through prevention, screening, and treatment.

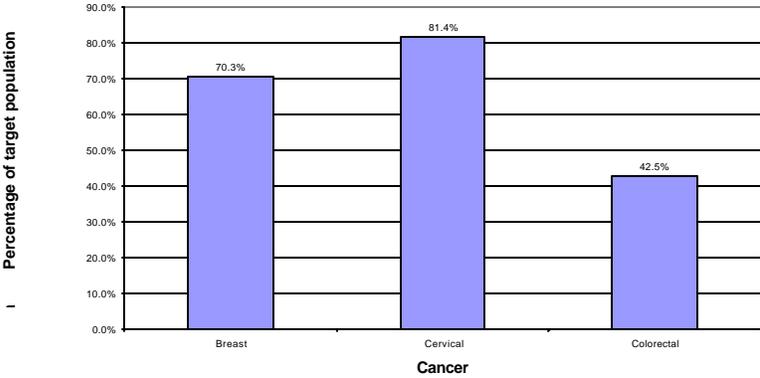
How the Nation Is Doingⁱⁱⁱ

This section is organized by cancer site—i.e., breast, cervical, colorectal, lung, and prostate—including text on the results for each cancer. For ease of presentation, graphs of each measure are reported across all cancer sites with reference to the graphs in the text. The end-of-life care measures are not cancer-specific, and the overall data are addressed in a separate section.

ⁱⁱⁱ Adjusting for known contributing factors, such as gender, age, and insurance status (multivariate analysis) would allow for more detailed exploration of the data, but this generally was not feasible for this report. Any adjustments that were done are noted in the detailed tables. The data presented in this report do not imply causation.

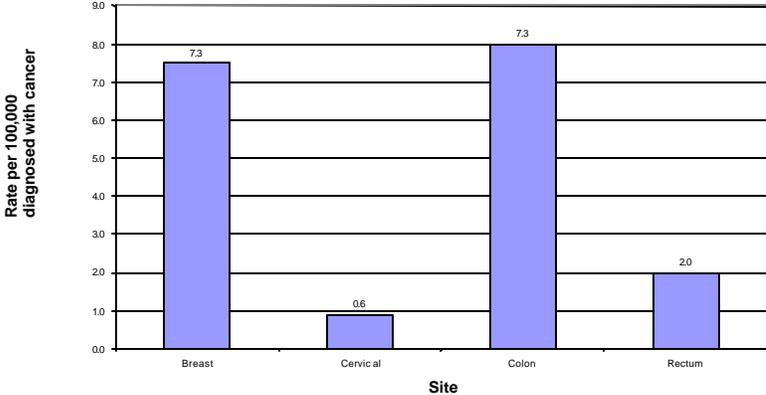
Figure 1 presents the screening rates, Figure 2 presents the incidence of advanced-stage detection, and Figure 3 presents the mortality rates.

Figure 1. Screening rates for selected cancers, 2000



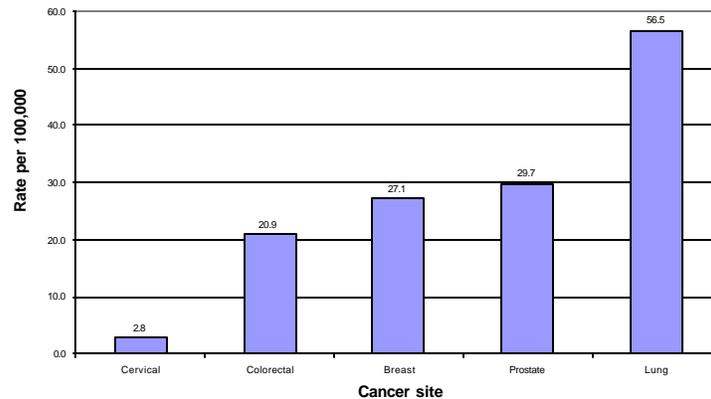
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2000.

Figure 2. Rates of new cases of advanced-stage disease by cancer site, 2000



Source: SEER Program, National Cancer Institute, November 2002 submission, year of diagnosis 2000.

Figure 3. Mortality rates in target population, per 100,000, 2000



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System, 2000.

Breast Cancer

Screening

A majority of women over the age of 40 (70.3%) are being screened with mammography for breast cancer (see Figure 1), which already meets the Healthy People 2010 objective.

Early detection

As shown in Figure 2, the incidence of new cases of breast cancer cases detected at an advanced stage is 7.3 per 100,000 women. According to the National Cancer Institute (NCI), the rate has not declined over the last two decades as have the rates for colon, rectal, and cervical cancers.⁴

Mortality

The death rate from breast cancer is 27 per 100,000 females as shown in Figure 3. According to NCI data, the trend in mortality shows a decline of an average of 2.3% per year through the 1990s.⁵ The decrease in the death rate has been attributed, in part, to increased mammography⁶ and to the broader dissemination of adjuvant chemotherapy into medical practice.⁷

Cervical Cancer

Screening

Cervical cancer screening rates are higher than both breast and colorectal cancer screening rates. Eighty-one percent of women report having a Pap test within the past 3 years (see Figure 1).

Early Detection

The incidence of new cases of cervical cancer detected at an advanced stage is 0.6 per 100,000 and is lower than the rate of advanced-stage detection for breast, colon, and rectal cancers (see Figure 2). Additionally, the trend in the percentage shows a significant decline over the last two decades.⁸

Mortality

The mortality rate (2.8 per 100,000 women) for cervical cancer is relatively low compared to the other cancers discussed in the report (see Figure 3).

Colorectal Cancer

Screening

Nationally, 42.5% of adults 50 years of age or older report ever having had a sigmoidoscopy, colonoscopy, and/or a fecal occult blood test (FOBT) in the last 2 years (see Figure 1).^{iv} It is also markedly lower than the screening rates for breast and cervical cancer. Screening rates for colorectal cancer vary by State (see Figure 4).

^{iv} This report measures include endoscopy (38.9%) and FOBT (33.3%) separately. NHIS (2000) reports on the receipt of either endoscopy or FOBT which is a more inclusive reporting of colorectal screening.

Lung and Prostate Cancers

The only measure in the report for these cancers is the mortality rate. National measures on screening and advanced stage detection for these cancers have not been agreed to by experts and are not included in this report.

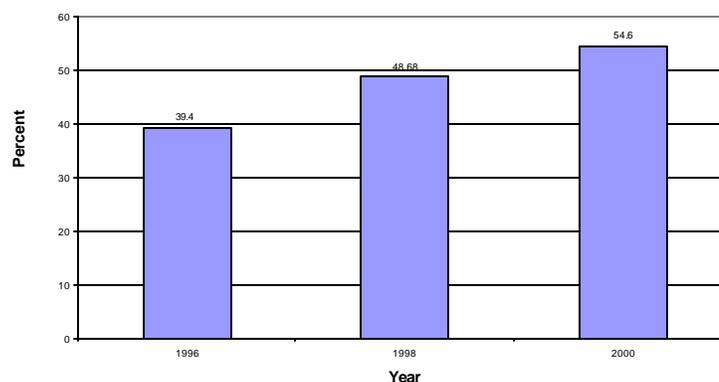
Lung cancer has the highest mortality rate (58.5 per 100,000) of all cancers discussed in the report. The death rate for lung cancer has decreased throughout the 1990s to an average 0.7% per year.¹¹

Prostate cancer has the second highest death rate (29.7 per 100,000) of all cancers discussed in this report. The death rate declined throughout the 1990s rising to an average 4.0% per year in the late 1990s.

End-of- Life Care

The median length of stay until death in hospice care for cancer patients who received hospice care is 15.4 days. For all hospice patients the median stay declined from 27.4 days in 1994 to 15.6 days in 2000.¹² Cancer is the primary diagnosis for hospice admission, and more cancer patients who are nearing death are receiving hospice care. Figure 5 shows the percentage of terminally ill cancer patients who received hospice care between 1996 and 2000. The percentage increased from 39% in 1996 to 55% in 2000.

Figure 5. Percent of terminally ill cancer patients who received hospice care, 1996-2000



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System, 1996, 1998, 2000.

Screening, Early Detection, and Mortality

In summary, one of the safest, simplest, and most cost-effective ways to reduce cancer morbidity and mortality is to raise the screening rates for selected cancers. There is considerable consensus among experts about high quality screening practices.¹³ Although the majority of women report screenings for breast and cervical cancer, less than half of men and women over the age of 50 report screening for colorectal cancers.

Most cancers that are detected at an advanced stage are more resistant to therapy, more expensive to treat, and have a lower survival rate. The detection rate of some cancers at an advanced stage, notably cervical and colorectal, has been declining over the last two decades, although there has been no improvement in the rates for advanced-stage detection of breast cancer. Mortality rates for the cancers covered in this report have also been declining showing that advances in research and treatment have saved lives. More terminally ill cancer patients are using hospice care. There is considerable variation across the States in cancer screening. Improvement is possible and necessary.

What We Don't Know

Although substantial investments have produced impressive advances in knowledge and higher survival rates for many cancers, there is much more to learn and apply about good quality of care. First, we need to learn more about screening. For example, effective screening techniques are needed for more cancers, especially the most deadly (e.g., lung). Many people are not screened, even when effective tests are available. Screening rates are less than optimal due to the negative influences of lack of health insurance, lack of a usual source of care, low income, low education, and other unknown factors. There is evidence that interventions that increase patient and provider awareness of the need for screening, (e.g. reminder and notification systems) result in higher rates of screening. More precise information is needed to target action. Similarly, more research is needed to understand why many people are diagnosed at an advanced stage of cancer. NCI has funded a stream of research to seek answers to this critical question.¹⁴

Second, more measures are needed to track quality of care for cancer treatment, specifically, those that address the extent to which evidence-based treatments are being used. The NCI initiated a program called Patterns of Care/Quality of Care that identifies specific cancer treatments that are recommended and tracks the usage levels of these treatments using national, population-based data. Specific examples of these studies are documentation of the level of use and trends in use of breast conserving surgery and radiation therapy and systemic adjuvant therapy for breast, colon, and rectal cancers.¹⁵ These efforts will provide valuable knowledge that will lead to nationally recognized measures.

Third, more measures are needed to evaluate end-of-life care. End-of-life care is most often about palliative care, which is intended to relieve symptoms and improve quality of life for

patients nearing death. Measurement needs to move towards the patients' experiences with care, including symptom control and quality of life.¹⁶

What Can Be Done

Much progress has been made in cancer, including the continued decline in death rates for the four most common cancers addressed in this report. However, much more still needs to be done, “including wider application of what science has shown to be effective in preventing, screening, and treating cancer.”¹⁷ Broader delivery of mammography and colorectal cancer screening to all population groups may reduce the burden of cancer and improve health for all communities. Reduced tobacco use¹⁸ and increased consumption of fruits and vegetables¹⁹ will prevent certain cancers. Cancer awareness and outreach programs have also proven successful and show promise of even greater success in the future. One example of an important effort is the National Breast and Cervical Cancer Early Detection Program (NBCCEDP), sponsored by CDC. The goal of this program is to help low-income, uninsured, and underserved women gain access to early detection screening for breast and cervical cancer.²⁰ Since its creation in 1990, the program has provided about 3 million screenings and diagnosed more than 12,000 breast cancers and 800 invasive cervical cancers.²¹ Altogether, the number of women served by NBCCEDP has grown from about 55,000 in 1991-92 to 372,000 in 2001.²² The NBCCEDP's efforts support the use of coalitions and partnerships, involve church groups and others, eliminate barriers to access (such as linguistic and cultural differences), and train doctors and other health professionals, as well as provide national guidance on screening techniques, diagnostic skills, and case management to ensure that current best practices are used.²³ Quality improvement programs conducted by providers improve the processes of care. For example, the Medicare program has set a national goal to improve mammography rates through its Quality Improvement Organizations (QIOs). In less than 2 years of the program's initiation, the QIOs had achieved substantial success in most States.²⁴

Research is needed to develop effective means to prevent breast and prostate cancer.²⁵ Better understanding of the process of diffusion may help translate research results into action at the delivery system and community levels.

Sharing best practices may help cancer control planners, providers, and consumers. Good examples of these include the National Dialogue on Cancer, a coalition of national partners from the private, public, and not-for-profit sectors, brought together to disseminate advances in cancer care,²⁶ the Cancer Control PLANET (Plan, Link, Act, Network with Evidence-based Tools), a Web-based tool to help stakeholders in the above activities,²⁷ and QualityTools.gov, a Web-based portal from the Agency for Healthcare Research and Quality which provides information on quality measures and quality improvement initiatives.

Effectiveness

Cancer

List of Measures

Cancer

Measure title	National	State
Screening for breast cancer:		
Process: % of women (age 40 and over) who report they had a mammogram within the past 2 years	Table 1.1a (00)	Table 1.1b (01) Table 1.1c (00)
Outcome: Rate of breast cancers diagnosed at advanced stage	Table 1.2(00)	XXX
Screening for cervical cancer:		
Process: % of women (age 18 and over) who report that they had a Pap smear within the past 3 years	Table 1.3a (00)	Table 1.3b (01) Table 1.3c (00)
Outcome: Rate of cervical cancers diagnosed as invasive (includes local, regional, and distant disease except in situ disease)	Table 1.4 (00)	XXX
Screening for colorectal cancer:		
Process: % of men and women (age 50 and over) who report they ever had a flexible sigmoidoscopy/colonoscopy	Table 1.5a (00)	Table 1.5b (01)
Process: % of men and women (age 50 and over) who report they had a fecal occult blood test (FOBT) within the past 2 years	Table 1.6a(00)	Table 1.6b (01)
Outcome: Rte of colorectal cancers diagnosed as regional or distant staged cancers	Table 1.7	XXX
Cancer treatment:		
Outcome: Cancer deaths per 100,000 people per year for all cancers	Table 1.8a (00) Table 1.8b (99)	Table 1.8c (00)
Outcome: Cancer deaths per 100,000 people per year for most common cancers, prostate cancer	Table 1.9a (00) Table 1.9b (99)	Table 1.9c (00)
Outcome: Cancer deaths per 100,000 people per year for most common cancers, breast cancer	Table 1.10a (00) Table 1.10b (99)	Table 1.10c (00)

Outcome: Cancer deaths per 100,000 people per year for most common cancers, lung cancer	Table 1.11a (00) Table 1.11b (99)	Table 1.11c (00)
Outcome: Cancer deaths per 100,000 people per year for most common cancers, colorectal cancer	Table 1.12a (00) Table 1.12b (99)	Table 1.12c (00)
Palliative care:		
Process: Cancer deaths in hospice per 100 cancer deaths	Table 1.13a (00) Table 1.13b (98) Table 1.13c (96)	XXX
Process: Median length of stay for cancer patients who received hospice care	Table 1.14 (00)	XXX

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- ¹⁰ Weir et al, 2003.
- ¹¹ Weir et al, 2003.
- ¹² Haupt BJ. Characteristics of hospice care discharges and their length of service: United States 2000. National Center for Health Statistics. Vital Health Stat 13(154) 2003.
- ¹³ US Preventive Services Task Force reports on breast cancer screening, <http://www.ahrq.gov/clinic/uspstf/uspsbrca.htm>; cervical cancer screening, <http://www.ahrq.gov/clinic/uspstf/uspscerv.htm>; and colorectal cancer screening, <http://www.ahrq.gov/clinic/uspstf/uspscolo.htm>
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- ¹⁶ Zapka, et al., 2003.
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- ¹⁸ Centers for Disease Control and Prevention. Annual smoking-attributable mortality, years of potential life lost, and economic costs—United States, 1995-1999. MMWR Morbidity Weekly Report 2002; 51:300-3.
- ¹⁹ Flood A., Velie E., Chatterjee N., et al. Fruits, vegetables, and risk of colorectal cancer in the Breast Cancer Detection Demonstration Project Follow-up Cohort. Am. J. Clin. Nutr. 2002; 75:936-43.
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- ²² CDC, "The National Breast and Cervical Cancer Early Detection Program, p. 3.
- ²³ Ibid, pp. 3-5.
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- ²⁵ Weir et al., 2003.
- ²⁶ <http://www.ndoc.gov>
- ²⁷ <http://cancercontrolplanet.cancer.gov>