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American Cancer Society Guidelines for the Early Detection of Cancer, 2004

Robert A. Smith, PhD; Vilmia Cokkinides, PhD; Harmon J. Eyre, MD

ABSTRACT Each January, the American Cancer Society (ACS) publishes a summary of its recommendations for early cancer detection, including updates, emerging issues that are relevant to screening for cancer, or both. In the spring of 2003, the ACS announced updated guidelines for breast cancer screening, and several other organizations released updated guidelines that we compare with recent ACS updates. Finally, the most recent data pertaining to participation rates in cancer screening are presented by age and sex from the Centers for Disease Control and Prevention’s Behavioral Risk Factor Surveillance System, as are U.S. maps profiling states based on the proportion of the age-eligible population not recently screened for breast cancer or colorectal cancer. (CA Cancer J Clin 2004;54:41–52.) © American Cancer Society, 2004.

INTRODUCTION

Four years ago, the American Cancer Society (ACS) began a yearly report on its cancer detection guidelines and current issues related to screening and testing for the early detection of cancer.1 The first report also included a description of the ACS process for the development or update of a cancer screening guideline. The annual reports have been a summary source for ACS guidelines for the early detection of cancer, but also the background and rationale for guidelines that were updated in the previous year, announcements of upcoming guideline reviews, recent data and issues pertaining to early cancer detection, and a summary of the most recent data on adult cancer screening rates.1–4

In 2001, the ACS published revisions in the early detection guidelines for colorectal, endometrial, and prostate cancers, and also an updated narrative related to testing for early lung cancer detection.2 Guidelines for cervical cancer screening were updated in 2002.5 In 2003, guidelines for the early detection of breast cancer and a modification of the recommendations for fecal occult blood testing for colorectal cancer screening were published.6,7

In addition to providing an overview of existing ACS recommendations for early cancer detection, in this issue we provide (1) a brief summary of updated ACS guidelines for breast cancer screening; (2) a brief update on guidelines and new technologies for colorectal cancer screening; (3) a summary of updated recommendations for cervical cancer screening issued by the US Preventive Services Task Force (USPSTF) and a comparison of USPSTF guidelines and ACS guidelines for cervical cancer screening; and (4) a summary of current screening rates among adults in the United States.

SCREENING FOR BREAST CANCER

The ACS guidelines for breast cancer screening were updated in 2003,6 and these recommendations are shown in Table 1. The ACS no longer recommends monthly breast self-examination (BSE) beginning at age 20 years, and instead recommends that women should be informed about the potential benefits, limitations, and harms associated with BSE and that they may choose to do BSE regularly, occasionally, or not at all. The change was based on a legacy of limited scientific evidence that cancers detected by women themselves are commonly detected during the formal...
<table>
<thead>
<tr>
<th>Cancer Site</th>
<th>Population</th>
<th>Test or Procedure</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast</td>
<td>Women, age 20+</td>
<td>Breast self-examination (BSE)</td>
<td>Beginning in their early 20s, women should be told about the benefits and limitations of breast self-examination (BSE). The importance of prompt reporting of any new breast symptoms to a health professional should be emphasized. Women who choose to do BSE should receive instruction and have their technique reviewed on the occasion of a periodic health examination. It is acceptable for women to choose not to do BSE or to do BSE irregularly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clinical breast examination (CBE)</td>
<td>For women in their 20s and 30s, it is recommended that clinical breast examination (CBE) be part of a periodic health examination, preferably at least every three years. Asymptomatic women aged 40 and over should continue to receive a clinical breast examination as part of a periodic health examination, preferably annually.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mammography</td>
<td>Begin annual mammography at age 40.*</td>
</tr>
<tr>
<td>Colorectal</td>
<td>Men and women, age 50+</td>
<td>Fecal occult blood test (FOBT)† or flexible sigmoidoscopy, or flexible sigmoidoscopy 2 or flexible sigmoidoscopy 3 or double contrast barium enema (DCBE), or colonoscopy</td>
<td>Annual, starting at age 50. Every five years, starting at age 50. Annual FOBT and flexible sigmoidoscopy every five years, starting at age 50. DCBE every five years, starting at age 50. Colonoscopy every 10 years, starting at age 50.</td>
</tr>
<tr>
<td>Prostate</td>
<td>Men, age 50+</td>
<td>Digital rectal examination (DRE) and prostate-specific antigen test (PSA)</td>
<td>The PSA test and the DRE should be offered annually, starting at age 50, for men who have a life expectancy of at least 10 years.§</td>
</tr>
<tr>
<td>Cervix</td>
<td>Women, age 18+</td>
<td>Pap test</td>
<td>Cervical cancer screening should begin approximately three years after a woman begins having vaginal intercourse, but no later than 21 years of age. Screening should be done every year with conventional Pap tests or every two years using liquid-based Pap tests. At or after age 30, women who have had three normal test results in a row may get screened every two to three years. Women 70 years of age and older who have had three or more normal Pap tests and no abnormal Pap tests in the last 10 years and women who have had a total hysterectomy may choose to stop cervical cancer screening.</td>
</tr>
<tr>
<td>Endometrial</td>
<td>Women, at menopause</td>
<td>At the time of menopause, women at average risk should be informed about risks and symptoms of endometrial cancer and strongly encouraged to report any unexpected bleeding or spotting to their physicians.</td>
<td></td>
</tr>
<tr>
<td>Cancer-related check-up</td>
<td>Men and women, age 20+</td>
<td>On the occasion of a periodic health examination, the cancer-related checkup should include examination for cancers of the thyroid, testicles, ovaries, lymph nodes, oral cavity, and skin, as well as health counseling about tobacco, sun exposure, diet and nutrition, risk factors, sexual practices, and environmental and occupational exposures.</td>
<td></td>
</tr>
</tbody>
</table>

*Beginning at age 40, annual clinical breast examination should be performed prior to mammography.
†FOBT as it is sometimes done in physicians’ offices, with the single stool sample collected on a fingertip during a digital rectal examination, is not an adequate substitute for the recommended at-home procedure of collecting two samples from three consecutive specimens. Toilet bowl FOBT tests also are not recommended. In comparison with guaiac-based tests for the detection of occult blood, immunochemical tests are more patient-friendly, and are likely to be equal or better in sensitivity and specificity. There is no justification for repeating FOBT in response to an initial positive finding.
‡Flexible sigmoidoscopy together with FOBT is preferred compared with FOBT or flexible sigmoidoscopy alone.
§Information should be provided to men about the benefits and limitations of testing so that an informed decision about testing can be made with the clinician’s assistance.
process of monthly BSE and new data and literature reviews that have questioned the value of routine BSE.\textsuperscript{8,9} The consensus among organizations and individuals with expertise in the field of cancer screening is that it is more likely that these cancers are detected during normal activities, thanks to the heightened sense of awareness that has evolved over the past several decades about breast cancer and associated symptoms. Although BSE is one way women can increase their awareness of breast changes, other means to maintain heightened awareness are also possible. Thus, the new guidelines emphasize that clinicians should inform women about breast symptoms, early breast cancer detection, and the importance of prompt reporting of any new symptoms. An extensive discussion related to the underlying evidence and the challenges associated with early diagnosis of palpable masses can be seen in the guidelines update.\textsuperscript{6}

The ACS recommendations for clinical breast examination remain unchanged with respect to age-specific periodicity. Clinical breast examination should be performed every three years in women between the ages of 20 and 39 years, and annually for women aged 40 and older. This examination, which should occur during periodic health checkups, provides an opportunity to access risk, to discuss the importance of early detection, to discuss the importance of regular mammography in women aged 40 years and older, and to answer any questions patients may have about their own risk, new technologies, or other matters related to breast cancer. There may be some benefit to performing the clinical breast examination before the mammogram.\textsuperscript{6} Women who choose to do BSE can have their technique reviewed during these encounters.

Guidelines for mammography remain unchanged. Women at average risk should begin regular mammography at age 40 years. Women also should be informed about the benefits, limitations, and potential harms associated with screening. The importance of adherence to a schedule of annual mammograms should be stressed.

The update of the breast cancer screening guidelines also addressed issues related to screening high-risk groups, the age to stop screening, and screening with new technologies. Although there are not yet sufficient data to recommend a specific surveillance strategy for women at higher risk, the update states that women at increased risk for breast cancer may benefit from earlier initiation of screening, screening at shorter intervals, and screening with additional methods such as ultrasound or magnetic resonance imaging. With respect to the age to stop screening mammography, the ACS recommends that these decisions should be individualized by considering the potential benefits and risks of screening in the context of overall health status and longevity. The guidelines narrative stressed the tendency of clinicians to underestimate longevity in older women who would still likely benefit from preventive health strategies. As long as a woman is in good health and would be a candidate for treatment, she should continue to be screened with mammography.

**SCREENING FOR CERVICAL CANCER**

Table 1 summarizes new guidelines for cervical cancer screening published in late 2002.\textsuperscript{5} The present guidelines reflect the current understanding of the underlying epidemiology of cervical intraepithelial neoplasia (CIN), and they offer varying surveillance strategies based on new screening and diagnostic technologies that have emerged since the late 1980s.

The ACS recommends that cervical cancer screening should begin approximately three years after the onset of vaginal intercourse, but no later than age 21 years. Cervical screening should be performed annually until age 30 with conventional cervical cytology, or every two years until age 30 using liquid-based cytology, after which screening may continue every two to three years for those women who have had three consecutive, technically satisfactory normal/negative cytology results. Women aged 70 and older with an intact cervix may choose to cease cervical cancer screening if they have had three or more documented, consecutive, technically satisfactory normal/negative cervical cytologic test results and also no abnormal/
positive cytologic test results within the 10-year period before age 70.

The update of the guidelines also addressed screening for cervical cancer in women for whom additional guidance is relevant. Women with a history of cervical cancer, in utero exposure to diethylstilbestrol, or who are immunocompromised (including those who test positive for the human immunodeficiency virus) should continue cervical cancer screening for as long as they are in reasonably good health.

Cervical cancer screening is not indicated for women who have had a total hysterectomy (with removal of the cervix) for benign gynecologic disease. However, women who have had a subtotal hysterectomy should be screened according to the recommendations for women at average risk. Women with a history of cervical intraepithelial neoplasia (CIN) 2/3 who have undergone hysterectomy, or for whom it is not possible to document the absence of CIN 2/3 as an indication for hysterectomy, should be screened until three documented, consecutive, technically satisfactory normal/negative cervical cytology results and no abnormal/positive cytology results (within a 10-year period) are achieved. Women with a history of in utero diethylstilbestrol exposure or a history of cervical carcinoma should continue screening after hysterectomy for as long as they are in reasonably good health and do not have a life-limiting chronic condition.

When the updated guidelines were published, the ACS addressed the use of human papilloma virus (HPV) DNA testing with cytology as a primary screening test for cervical cancer. There are several potential benefits of HPV DNA testing. Women who have negative results of both cervical cytology and HPV DNA tests are further reassured that they are at low risk for cervical cancer. Women who have repeated positive results for high-risk HPV subtypes are at higher risk for cervical cancer and may potentially benefit from more intensive surveillance. Although the Food and Drug Administration (FDA) had not yet approved HPV DNA testing with cytology as a screening test when the guidelines were published in 2002, the ACS recommended, pending FDA approval, that HPV DNA testing with cytology would be reasonable for screening women aged 30 years and older as an alternative to cytologic examination alone. Based on both published and unpublished data reviewed in the guidelines development process, the ACS recommended that cervical cancer screening with HPV DNA testing and conventional or liquid-based cytology could be performed every three years. The ACS guidelines update also stressed the need to develop management algorithms for women with normal/negative cytology results but positive test results for high-risk HPV DNA subtypes.

The ACS discouraged HPV testing any more frequently than every three years and stressed that women who choose to undergo HPV DNA testing should receive counseling and education about HPV. For instance, a positive HPV test result should not be viewed as indicating the presence of a sexually transmitted disease, but rather a sexually acquired infection. Nearly every person who has had sexual intercourse has been exposed to HPV, and the infection is extremely common and usually not detectable or harmful. Testing positive for HPV does not indicate the presence of cancer, nor will the large majority of infections foretell an eventual cancer.

In March 2003, the FDA approved expanded use of Digene Corporation’s Hybrid Capture 2 (HC2) HPV DNA test, which can screen for 13 high-risk strains of HPV associated with cervical cancer.

In January 2003, the USPSTF also updated guidelines for cervical cancer screening, with recommendations for average-risk women, women over age 65, and use of new technologies similar to the ACS update. The USPSTF found good evidence that screening with cervical cytology reduces incidence and mortality from cervical cancer, and indirect evidence indicating that most of the benefit can be obtained by beginning screening within three years of onset of sexual activity or age 21 (whichever comes first) and screening at least every three years. The USPSTF recommended against continuing cytologic screening for women aged 65 and older who have had adequate recent screening with normal results, and
cited ACS criteria for continuing screening in instances where this criteria could not be met.

SCREENING AND SURVEILLANCE FOR THE EARLY DETECTION OF ADENOMATOUS POLYPS AND COLORECTAL CANCER

The ACS guidelines for screening and surveillance for the early detection of adenomatous polyps and colorectal cancer were updated in 2001 (Table 1), and the recommendations for fecal occult blood tests were slightly modified in 2002 with the addition of immunochemical tests.2,7 The ACS recommends that adults at average risk should begin colorectal cancer screening at age 50, using one of the following five options for screening: (1) annual fecal occult blood test (FOBT); (2) flexible sigmoidoscopy every five years; (3) annual FOBT plus flexible sigmoidoscopy every five years; (4) double-contrast barium enema every five years; or (5) colonoscopy every 10 years. These recommendations are very similar to those issued in the USPSTF guidelines, which were updated in 2002.11 The USPSTF recommends that clinicians screen all men and women aged 50 years and older for colorectal cancer. The USPSTF concluded that there was fair to good evidence that screening methods, including FOBT, flexible sigmoidoscopy, combined FOBT and flexible sigmoidoscopy, colonoscopy, and double-contrast barium enema were effective at reducing the mortality rate from colorectal cancer, and that individual tests varied with respect to the quality of the evidence, magnitude of benefit, and potential for harms. The USPSTF also concluded that each test met conventional criteria for cost-effectiveness, but that there was insufficient evidence to recommend one test over another based on the balance of potential benefits, cost-effectiveness, and potential harms.

The ACS recommends more intensive surveillance for (1) persons at increased risk due to a history of adenomatous polyps; (2) persons with a history of curative-intent resection of colorectal cancer; (3) persons with a family history of either colorectal cancer or colorectal adenomas diagnosed in a first-degree relative before age 60 years; (4) persons at significantly higher risk due to a history of inflammatory bowel disease of significant duration; or (5) persons at significantly higher risk due to a family history of or genetic testing indicating the presence of one of two hereditary syndromes.

In 2003, a consortium of gastroenterology societies also updated clinical guidelines for colorectal cancer screening and surveillance.12 The guideline stresses that persons at average risk who are 50 years and older should be screened for colorectal cancer using one of the acceptable options listed previously.

SCREENING FOR ENDOMETRIAL CANCER

In 2001, the ACS concluded that there was insufficient evidence to recommend screening for endometrial cancer for women at average risk, or for women at increased risk due to a history of unopposed estrogen therapy, tamoxifen therapy, late menopause, nulliparity, infertility or failure to ovulate, obesity, diabetes, or hypertension.2 Rather, the ACS recommended that women at average and increased risk should be informed about risks and symptoms of endometrial cancer at the onset of menopause and strongly encouraged to report any unexpected bleeding or spotting to their physicians (Table 1). However, some women are at very high risk for endometrial cancer due to (1) known hereditary nonpolyposis colon cancer–associated genetic mutation carrier status; (2) substantial likelihood of being a mutation carrier (ie, a mutation is known to be present in the family); or (3) absence of genetic testing results in families with a possible autosomal dominant predisposition to colon cancer. For these women, annual screening beginning at age 35 is recommended due to the high risk for endometrial cancer and the potentially life-threatening nature of this disease. These women should be informed that the recommendation for screening is based on expert opinion in the absence of definitive scientific evidence, and they should be informed about potential benefits, risks, and limitations of testing for early endometrial cancer detection.
SCRENNING FOR PROSTATE CANCER

Guidelines for testing for early prostate cancer detection were last updated in 2001 and reflect the importance of shared decision making about testing.2 The ACS recommends that the prostate-specific antigen (PSA) test and digital rectal examination should be offered annually beginning at age 50 years to men who have a life expectancy of at least 10 years (Table 1). Before making a decision about testing, men should have an opportunity to learn about the benefits and limitations of testing for early prostate cancer detection and treatment of early prostate cancer so that they can make an informed decision with the clinician’s assistance. The ACS guidelines panel concluded that men who ask the clinician to make the testing decision on their behalf should be tested. The ACS also stressed that a policy of not discussing testing or discouraging testing in men who request early prostate cancer detection tests is inappropriate.

Men at high risk, including those of African descent (specifically sub-Saharan African descent) and those with a first-degree relative with the disease diagnosed at a younger age (ie, younger than 65 years) should begin testing at age 45. Men at even greater risk for prostate cancer because they have more than one first-degree relative with prostate cancer diagnosed before age 65 could begin testing at age 40. However, if the PSA level is less than 1 ng/mL, no additional testing is needed until age 45. If the PSA is greater than 1 ng/mL but less than 2.5 ng/mL, annual testing is recommended. If the PSA is 2.5 ng/mL or greater, further evaluation with biopsy should be considered. Men at high risk also should be informed about the benefits and limitations of testing for early prostate cancer detection and treatment of early prostate cancer.

TESTING FOR EARLY LUNG CANCER DETECTION

At this time, the ACS does not recommend testing for early lung cancer detection in asymptomatic persons at risk for lung cancer. However, the increase in the use of spiral computed tomography (CT) to test for lung cancer, as well as the millions of chest radiographs in current and former smokers done each year, led the ACS to update their narrative for lung cancer testing in 2001 to ensure that clinicians and patients were aware of the limitations and potential harms associated with testing.2

The ACS historically has maintained that persons at high risk for lung cancer due to significant exposure to tobacco smoke or occupational exposures and their physicians may choose to have these screening tests done on an individual basis.13 The challenge associated with these personal decisions is more complicated today because of favorable findings from investigations using low-dose spiral CT to test for early lung cancer14,15 and aggressive promotion of these tests to persons at risk. Although these case series reports have demonstrated impressive performance of imaging with spiral CT and positron emission tomography, most organizations that issue screening guidelines likely will require more conventionally definitive results from the ongoing National Cancer Institute and American College of Radiology Imaging Network’s collaborative National Lung Screening Trial before issuing guidelines for lung cancer screening.16 However, because these tests are being aggressively marketed to individuals, the ACS revised the narrative related to lung cancer screening to emphasize the importance of informed decision making for persons who choose to be tested for early lung cancer detection and to recommend that, ideally, testing should be done only in experienced centers that also are linked to multidisciplinary specialty groups for diagnosis and follow-up. Current smokers should be informed that the more immediate preventive health priority is the elimination of tobacco use altogether, because smoking cessation offers the surest route at this time to reducing the risk for premature death from lung cancer.17

THE CANCER-RELATED CHECKUP

Periodic encounters with clinicians offer the potential for health counseling, cancer screening, and case finding.13 These encoun-
ters may include the performance of or referral for conventional cancer screening tests, as described previously, but also case-finding examinations of the thyroid, testicles, ovaries, lymph nodes, oral region, and skin. In addition, self-examination techniques or increased awareness about signs and symptoms of skin cancer, breast cancer, or testicular cancer can be discussed. Health counseling may include guidance about smoking cessation, diet, physical activity, and shared decision making about cancer screening.

The ACS now recommends that the cancer-related checkup occur during a general periodic health examination, rather than as a stand-alone examination done at a specific interval based on a person’s age (Table 1).

SURVEILLANCE OF CANCER SCREENING: COLORECTAL, BREAST, CERVICAL, AND PROSTATE CANCERS

Data Sources and Methods

Each year, this section of the guidelines review reports the most recent prevalence data on the estimated proportion of the US adult population that undergoes specific tests for early cancer detection (Table 2). In addition, a specific topic related to utilization of cancer screening receives special emphasis. This year we are highlighting state-level variations in breast and cervical cancer screening.

These data are from the Centers for Disease Control and Prevention’s (CDC) Behavioral Risk Factor Surveillance System (BRFSS) for 2002. They represent the most current data for estimating the prevalence of cancer screening in the United States. From its inception, the focus of the BRFSS has been to establish a surveillance system to collect data regarding population-based sociodemographics, health behaviors, and related health care factors known to affect chronic diseases and the health status of the general population. The BRFSS provides state-specific estimates for behavioral risk factors from ongoing statewide telephone surveys of civilian, noninstitutionalized adults aged 18 years or older living in households with a telephone.

The BRFSS is conducted annually in all 50 states, the District of Columbia, and Puerto Rico by state health departments in collaboration with the CDC. The BRFSS survey method includes standardized core questionnaires, complex multistage cluster sampling designs, and random-digit dialing methods to select households with telephones. Data are weighted to provide prevalence estimates representative of the state’s adult population. Weighted estimates (prevalence) and the standard error of the estimates were computed for the US population based on the combined state-level weighted data from states participating in the BRFSS in 2002.

Cervical Cancer Screening

In 2002, 86.2% of women aged 18 and older reported having a Pap test in the preceding three years. The high rate of participation in cervical cancer screening reflects a high acceptance of the Pap test among women and their providers as well as the convenience of testing during routine encounters with health care providers. Women who were 18 to 44 years old were more likely to have had a Pap test in the preceding three years compared with women aged 45 and older (88.1% versus 83.4%). In contrast, the prevalence of recent cervical cancer screening is 15% lower among women 65 and older compared with those aged 18 to 44 years (Table 2).

Breast Cancer Screening

In 2002, 61.5% of women aged 40 and older reported having a mammogram in the last year. The proportion of women who reported having a mammogram in the last year was 60.5% among those aged 40 to 64 years and 63.8% among those 65 and older. When considering breast cancer screening with both mammography and clinical breast examination, the estimates are lower, just slightly more than 50%. The proportion of women, aged 40 to 64 years, who reported having both a mammogram and a clinical breast examination in the previous year was
54.9%, and the proportion was 52.3% among women ages 65 and older (Table 2).

**Prostate Cancer Screening**

In 2002, the proportion of men aged 50 and older who reported having a PSA test in the previous year was 53.7%. The proportion of men reporting digital rectal examination in the previous year was 52% (Table 2).

**Colorectal Cancer Screening**

The proportion of adults aged 50 and older reporting recent colorectal cancer screening with an endoscopic procedure (either a sigmoidoscopy or colonoscopy) was nearly twice that of adults reporting recent screening with an FOBT. In 2002, 40.4% of adults in this age group reported having received either a sigmoidoscopy or colonoscopy procedure within the past five years, whereas the prevalence of having an FOBT within the past year was 21.8%. However, because the nationwide prevalence of colorectal cancer screening is only approximately 50% (ie, 53.1% of adults aged 50 years and older had an FOBT or lower endoscopy, or both), the substantial problem of too many average risk adults not being screened with any of the recommended tests persists.

It is important to note that this comparison represents an estimate of the prevalence of adults who are current with ACS guidelines in terms of the kind of testing they have undergone. However, because the BRFSS does not distinguish between sigmoidoscopy and colonoscopy, persons who had colonoscopy more than five years but less than 10 years before the survey was conducted would not be included in the estimate.2 No data are available from the BRFSS to estimate use of the double-contrast barium enema. There were no differences in the sex-specific prevalence of colorectal cancer screening (Table 2).

### TABLE 2 Prevalence (%) of Recent Cancer Screening Examinations Among US Adults, BRFSS, 2002

<table>
<thead>
<tr>
<th>Test</th>
<th>Men Weighted % (95% C.I.)</th>
<th>Women Weighted % (95% C.I.)</th>
<th>Total Weighted % (95% C.I.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorectal Cancer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Either a flexible sigmoidoscopy or colonoscopy*</td>
<td>50+ 41.7 (40.9-42.6)</td>
<td>39.5 (38.8-40.1)</td>
<td>40.4 (40.0-41.0)</td>
</tr>
<tr>
<td>Fecal occult blood testing (home kit)**</td>
<td>50+ 22.4 (21.7-23.1)</td>
<td>21.4 (20.7-21.8)</td>
<td>21.8 (21.3-22.2)</td>
</tr>
<tr>
<td>Breast Cancer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mammogram‡</td>
<td>40-64 60.5 (59.8-61.2)</td>
<td>63.8 (62.8-64.8)</td>
<td></td>
</tr>
<tr>
<td>Mammogram and clinical breast exam§</td>
<td>40-64 54.9 (54.2-55.7)</td>
<td>52.3 (51.2-53.4)</td>
<td></td>
</tr>
<tr>
<td>Cervical Cancer</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Pap test†</td>
<td>18-44 88.1 (87.8-88.7)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>45+ 83.4 (82.8-84.1)</td>
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<tr>
<td></td>
<td>65+ 74.4 (73.2-75.6)</td>
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<td></td>
</tr>
<tr>
<td>Prostate-specific antigen (PSA)**</td>
<td>50+ 53.7 (52.8-54.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digital rectal exam (DRE)††</td>
<td>50+ 52.0 (51.1-52.8)</td>
<td></td>
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</tr>
</tbody>
</table>

*Recent sigmoidoscopy or colonoscopy test within the preceding five years.
†Recent fecal occult blood test using a home kit test performed within the preceding year.
‡Women 40 and older who had a mammogram in the last year.
§Women 40 and older who had a mammogram in the last year and a clinical breast exam.
††Women who had a Pap test within the preceding three years.

**A prostate-specific antigen test (PSA) within the past year for men who have not been told they have had prostate cancer.
††A digital rectal examination (DRE) within the past year for men who have not been told they have had prostate cancer.

Source: BRFSS 2002.
However good the efficacy of a cancer screening procedure, among the practical elements of its effectiveness is the degree to which the designated population participates in regular screening. This section focuses on state-level variation in lack of utilization of screening for breast and colorectal cancer, which are two of the leading cancers affecting men and women for which there is consensus about the efficacy of screening and for which considerable resources are devoted to efforts to increase screening (Figures 1 and 2, respectively). Specifically, the US maps shown in Figures 1 and 2 illustrate the proportion of each state’s age-appropriate population who report not having had a cancer screening test as recommended by the ACS cancer screening guidelines.

**State-Specific Prevalence in the Lack of Breast Cancer Screening**

Timely mammographic screening among women aged 40 years and older could prevent 30% to 48% of all deaths from breast cancer.\(^5,^{19,20}\) In 2002, approximately 40% of American women aged 40 years and older reported that they had not had a mammogram within the last year. Despite the fact that mammography has been widely available since the late 1980s, in some states the prevalence of lack of mammographic screening among age-eligible women is notable. The state-specific prevalence in the lack of mammographic screening among age-eligible women was greater than 45% in nine states: Alaska, Arkansas, Idaho, Mississippi, New Mexico, Oklahoma, Texas, Utah, and Wyoming, with rates ranging from 45.1% to 48.9% (Figure 1).
Colorectal cancer screening could reduce the colorectal cancer mortality rate by 50% or more through early detection of invasive disease and detection and removal of adenomatous polyps. In 2002, 50% of American men and women aged 50 years and older reported that they had not had any colorectal cancer screening (an FOBT within the last year or sigmoidoscopic screening). The state-specific prevalence of not having had any colorectal cancer screening tests (either an FOBT or a sigmoidoscopic examination according to screening guideline intervals) was more than 55% in South Dakota, Utah, Idaho, Hawaii, Louisiana, Mississippi, Nevada, Indiana, New Mexico, West Virginia, Arkansas, Oklahoma, and Wyoming, with rates ranging from 55.6% to 64.3% (Figure 2).

A recent report from the CDC showed slight improvements in the utilization of colorectal cancer screening procedures among persons at average risk between 1997 and 2001: 21% increase in FOBT use within the past year and 29% increase in lower endoscopy within the past five years. Compared with the use of other cancer screening tests, low colorectal cancer screening rates are a function of incomplete diffusion of proven and efficacious methods for screening in the health care systems, low engagement by health care providers in recommending screening to their patients, and lower awareness in the population about the need for and importance of screening.

CONCLUSIONS

Guidelines for cancer screening represent evidence-based strategies for reducing the morbidity and mortality rates associated with late-stage diagnosis of specific cancers. To
the extent that these recommendations identify at-risk populations and specify tests, test intervals, and important quality assurance issues, they are blueprints for reducing the number of premature deaths from cancer. The fact that cancer screening is underutilized and that many Americans have limited or no access to cancer screening means that there is a considerable, persistent challenge to identify strategies that would bring the nation closer to achieving the fullest potential of early cancer detection.

A 2003 report from the Institute of Medicine highlighted the need for new strategies to prevent cancer and, when cancer occurs, to detect and treat it at its earliest stages. This report notes that the principal challenges to optimizing the delivery of effective cancer screening services, and reducing inappropriate testing, lie in changing the behaviors of three sectors of society: (1) systems of care, which should make cancer screening available to eligible populations; (2) health care providers, who should counsel patients about recommended cancer screening and assure that screening is performed in a timely manner; and (3) individuals, who should heed the recommendations made by public health agencies and their physicians on screening and obtain recommended screening tests and pursue follow-up tests. Among the recommendations for the nation to make progress in cancer prevention and early detection were specific recommendations related to early cancer detection. That is, there should be: (1) access to and coverage for early detection services by public and private insurers; (2) support for programs that provide primary care to the uninsured and underserved; (3) support for the CDC’s National Breast and Cervical Cancer Early Detection Program; (4) the design and implementation of programs to improve health care provider education and training and adherence to evidence-based guidelines for early detection services; and (5) promotion of partnerships between public and private organizations to work toward improving the public’s understanding of cancer prevention and early detection with a focus on prevention and early detection of cancer and reduction of disparities in the cancer burden. If key organizations would act on these recommendations with a vision toward improving adherence and efficiency in cancer screening and reducing disparities, then we could anticipate greater reductions in disease burden than we are achieving today.

REFERENCES


