

American Cancer Society Guidelines for the Early Detection of Cancer, 2003

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ABSTRACT Each January, the American Cancer Society (ACS) publishes a summary of existing recommendations for early cancer detection, including updates, and/or emerging issues that are relevant to screening for cancer. In 2002, the ACS assembled expert groups to update guidelines for cervical cancer screening and breast cancer screening, and to evaluate new technology for colorectal cancer screening. In November 2002, updated guidelines for cervical cancer screening were published in this journal, and breast cancer screening guidelines will be updated in 2003. In this issue, there is a report of a workshop held to review emerging technology for colorectal cancer screening that resulted in a modification of current previous recommendations for fecal occult blood tests, and revised recommendations for the “cancer-related check-up” in which clinical encounters provide case-finding and health-counseling opportunities. Finally, we provide an update of the most recent data pertaining to participation rates in cancer screening by age, gender, and ethnicity from the Centers for Disease Control and Prevention’s Behavioral Risk Factor Surveillance System (BRFSS). (*CA Cancer J Clin* 2003;53:27-43.) © American Cancer Society, 2003.

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INTRODUCTION

In 2000, the American Cancer Society (ACS) issued its first yearly report on its cancer detection guidelines and current issues related to early detection tests for 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 report is a summary source for ACS guidelines for the early detection of cancer, but it also provides the background and rationale for guidelines that were updated in the prior year, announcements of upcoming guideline reviews, recent data and issues pertaining to early cancer detection, and it offers a summary of the most recent data on adult cancer screening rates.

In 2001, the ACS published revisions to the early detection guidelines for colorectal cancer, endometrial cancer, and prostate cancer, and an updated narrative related to testing for early lung cancer detection.² No guideline updates were announced in the 2002 yearly report,³ but during 2001 to 2002, the ACS convened expert groups to update guidelines for the early detection of cervical cancer, which were published in late 2002,⁴ and breast cancer, which will be published in 2003. In 2002, the ACS also held a workshop related to emerging technologies for colorectal cancer screening in order to determine if the evidence was sufficient to include these tests among those currently recommended as options for screening.

In addition to providing a summary overview of existing ACS recommendations for early cancer detection, in this issue, we provide: (1) a description of an additional option to the current recommendations for fecal occult blood tests for colorectal cancer screening; (2) an update of recommendations for the cancer-related check-up; (3) a summary of the recent update of the guidelines for cervical cancer screening; (4) a description of recent literature that relates to cancer screening recommendations; and (5) a summary of current screening rates among US adults.

SCREENING FOR BREAST CANCER

The ACS guidelines for breast cancer screening were last revised in 1997,⁵ and these recommendations are shown in Table 1. The ACS currently recommends that women begin monthly breast self-examination (BSE) at age 20; between age 20 and 39, women should have a clinical breast examination (CBE) by a health care professional every three years; and beginning at age 40, women should have an annual mammogram and CBE* (Table 1). There is no upper-age limit noted in the ACS breast cancer screening guidelines; screening is recommended for as long as a woman is in good health. Women at significantly higher risk for breast cancer should talk with their health care providers about initiating screening earlier.⁶ During 2001 to 2002, the ACS assembled an expert panel to consider new data published since 1997, and an update of the ACS breast cancer screening guidelines will be published in 2003.

In 2002, the United States Preventive Services Task Force (USPSTF) updated their breast cancer screening guidelines to recommend that women aged 40 years and older should receive mammography every one to two years with or without clinical breast examination.⁷ The new guideline represents a change over the previous guideline by extending the recommendation for routine screening to women in their 40s.

In last year's annual guidelines review, we described several challenges to existing recommendations to mammography and breast self-examination (BSE).³ In particular, a Cochrane Collaboration Review on screening for breast cancer with mammography concluded that there was no reliable scientific evidence that screening for breast cancer reduces mortality,^{8,9} and a report from the

Canadian Task Force on Preventive Medicine concluded that routine teaching of BSE should be excluded from periodic health examinations in women aged 40 to 69 since there was fair evidence of no benefit, and good evidence of harm.¹⁰ In the interim, there have been new developments in each of these areas.

Olsen and Gøtzsche's conclusion that there was no evidence to conclude that breast cancer screening reduces breast cancer mortality rested primarily on their critique of the underlying methodology of the breast cancer screening randomized, controlled trials (RCTs). They also concluded that breast cancer mortality as a study endpoint was biased in favor of screening. Further, they argued that screening led to excess harms, including excess mastectomy rates in screen-detected cases, and excess deaths in screen-detected cases resulting from radiotherapy-induced cardiovascular mortality.⁸

The Cochrane Report has received considerable scrutiny, due largely to the credibility of the Cochrane Collaboration¹¹ and *The Lancet*, but also in response to considerable press and electronic media coverage. However, the conclusions of independent reviews by several governments, including Sweden¹² and the Netherlands,¹³ expert groups such as the USPSTF,⁷ the International Agency for Research on Cancer,¹⁴ and the European Institute of Oncology,¹⁵ and individual researchers^{16,17} were uniformly that the analysis by Olsen and Gøtzsche was flawed, and that the Cochrane Report had not provided credible evidence to support their claim that there was no reliable scientific evidence that screening for breast cancer reduces mortality. Furthermore, their claim that radiotherapy results in excess cardiovascular deaths was based on older studies and inconsistent with current approaches to designing radiation fields that avoid the heart. Long-term follow up of more recently treated

*The ACS withdrew its recommendation for a baseline examination between the ages of 35 and 40 in 1992. (Dodd GD. American Cancer Society guidelines on screening for breast cancer. An overview. *Cancer* 1992;69:1885-1887.)

TABLE 1

American Cancer Society Recommendations for the Early Detection of Cancer in Average-Risk, Asymptomatic People			
Cancer Site	Population	Test or Procedure	Frequency
Breast	Women, age 20+	Breast self-examination	Monthly, starting at age 20.
		Clinical breast examination	Every 3 years, ages 20-39. Annual, starting at age 40.*
		Mammography	Annual, starting at age 40.
Colorectal	Men and women, age 50+	Fecal occult blood test (FOBT)†	Annual, starting at age 50.
		-or-	
		Flexible sigmoidoscopy	Every 5 years, starting at age 50.
		-or-	
		Fecal occult blood test (FOBT)† and flexible sigmoidoscopy‡	Annual FOBT and flexible sigmoidoscopy every 5 years, starting at age 50.
		-or-	
Double contrast barium enema (DCBE)	DCBE every 5 years, starting at age 50.		
-or-			
Colonoscopy	Colonoscopy every 10 years, starting at age 50.		
Prostate	Men, age 50+	Digital rectal examination (DRE) and prostate-specific antigen test (PSA)	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.§
Cervix	Women	Pap test	Cervical cancer screening should begin approximately 3 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 2 years using liquid-based Pap tests. At or after age 30, women who have had 3 normal test results in a row may get screened every 2 to 3 years. Women 70 years of age and older who have had 3 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.
Cancer-related check-up	Men and women, age 20+	On the occasion of a periodic health examination, the cancer-related check-up 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.	

*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 the 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.

cases shows no such effect.^{18,19} The claim that breast cancer screening results in excess mastectomies was also misplaced since the detection of smaller tumors creates the opportunity for breast-conserving therapy, and as mammography rates have increased, mastectomy rates have declined.²⁰⁻²² Drawing on data from the Florence, Italy screening program, Paci, et al. recently showed that mastectomy rates had fallen 40 percent since the establishment of a policy of offering breast cancer screening with mammography.²³

Although Olsen and Gøtzsche's dismissal of the value of breast cancer screening has been summarily discredited, there is a broad range of opinion about just how much benefit can be derived from breast cancer screening.²⁴ Thus, while the totality of the RCT evidence tells us clearly that breast cancer screening leads to a reduction in breast cancer mortality, relying on the actual measure of benefit from individual trials or meta-analyses is more problematic since the RCTs represent technology and technique over a 40-year period as well as a broad range of protocol elements that influence screening performance and outcomes.²⁵ Further, it is also important to know how much screening benefits individuals who attend screening since estimates of benefit from the RCTs are based on breast cancer mortality differences in groups randomized to an invitation to screening versus usual care, not differences in mortality among screened and non-screened groups. The recent trend toward evaluating the impact of large, population-based screening programs has the potential to provide us with a clearer measurement of the benefit of modern mammography.

Among recent publications, two recent examples of the evaluation of service screening in Europe are noteworthy. In Sweden, Duffy and colleagues evaluated long-term trends in breast cancer mortality based on exposure to screening at both the population and

individual level. The most recent report²⁶ expanded an earlier analysis in a smaller geographic area in Sweden²⁷ to seven counties in the Uppsala region, representing more than one-third of the Swedish female population. Duffy, et al. compared breast cancer mortality in the pre-screening and post-screening periods among women aged 40 to 69 in six counties, and 50 to 69 in one county. In all counties together, breast cancer mortality was 44% lower in the post-screening period compared with the pre-screening period among women who actually had attended screening (RR = 0.56, 95% CI = 0.50 - 0.62). When all incident tumors were examined (i.e., cancers detected in women attending screening and in women not attending screening) after adjustment for selection bias, the policy of offering screening to the population was associated with a 39% mortality reduction (RR = 0.61, 95% CI = 0.55 - 0.68).²⁶ Greater breast cancer mortality reductions were observed in those counties that had a policy of offering breast cancer screening for longer than 10 years (-32%) compared with counties that had offered screening less than 10 years (-18%). Since screening programs take several years or more to be established, longer periods of follow-up are necessary in order to measure the impact of screening. Similar mortality reductions have been observed in the Florence, Italy screening program (also comparing breast cancer mortality among attenders and non-attenders to screening) and in the population before and after the introduction of screening.²⁸ Furthermore, after excluding the breast cancer cases diagnosed at the first screening examination (i.e., the prevalent screening round), the incidence rate of Stage II or greater breast cancer cases was 42% lower in screened women compared with the women diagnosed with breast cancer that had not been invited to screening (RR = 0.58, 95% CI: 0.45-0.74).

These data demonstrate that modern, organized screening programs with high rates of attendance can achieve breast cancer mortality reductions equal to or greater than those observed in the RCTs.

When the Canadian Task Force concluded that the evidence did not justify teaching BSE, their conclusion was strongly influenced by early results from a randomized trial of BSE instruction in Shanghai, China.²⁹ In 2002, Thomas, et al. published extended follow-up data from the Shanghai Trial of Breast Self-Examination and concluded that intensive instruction in BSE did not result in reduced breast cancer mortality, and was associated with a higher rate of benign breast biopsy.³⁰ The authors concluded that programs consisting of BSE-only would be unlikely to reduce mortality, and that women who chose to do BSE should be informed that its efficacy is unproven, and that the practice could lead to increased risk of benign breast biopsy.

At first glance, these results may seem counterintuitive. However, examination of the results shows a relatively high rate of self-detection of localized breast cancer in the control group, suggesting that a significant proportion of the women in the Shanghai textile industry were highly responsive to new breast symptoms without formal instruction in BSE. Further, the authors have been careful to distinguish that they were measuring the effect of BSE instruction, not BSE per se. Thus, while the prognostic advantage of smaller breast tumor sizes is consistently evident, there may be a limit to the potential of BSE to measurably improve on what is achieved through incidental self-detection in a highly aware population. While there are some data that suggest that highly regular and competent BSE is associated with more favorable tumor characteristics among women with self-detected tumors,³¹ it may also be the case that the majority of women will not practice BSE in that manner. It

is also possible that the contribution of BSE is lessened as a population gains increasing awareness about breast cancer and symptoms of breast cancer, and has increasing access to mammography.

SCREENING FOR CERVICAL CANCER

In 2001, the ACS convened an expert panel to review the existing guidelines for cervical cancer screening. The last major review of ACS guidelines for cervical cancer screening took place in 1987, and significant new knowledge related to the underlying etiology of cervical neoplasia has accumulated since then. New guidelines for cervical cancer screening were published in late 2002, and are summarized in Table 1.⁴

Previously, the ACS recommended that annual screening for cervical cancer begin at age 18, or the age of onset of sexual intercourse, based on whichever was first. After three consecutive normal tests, screening could then be done less frequently. The new guideline reflects the current understanding of the underlying etiology of cervical intraepithelial neoplasia, and takes into consideration new screening and diagnostic technologies that have emerged since the late 1980s. The ACS now recommends that cervical cancer screening should begin approximately three years after the onset of vaginal intercourse, but no later than 21 years of age. Cervical screening should be performed annually with conventional cervical cytology smears, or every two years using liquid-based cytology, until age 30. Starting at age 30, women who have had three consecutive, technically satisfactory, normal/negative cytology test results may continue screening every two to three years; women who do not meet these criteria should continue screening as they have before age 30.

Women with an intact cervix who are age 70 and older may elect to cease cervical cancer screening if they have had both three or more documented, consecutive, technically satisfactory, normal/ negative cervical cytology tests, and have had no abnormal/positive cytology tests within the 10-year period prior to age 70. Women with a history of cervical cancer, in utero exposure to diethylstilbestrol (DES), and/or who are immunocompromised (including HIV+) should continue cervical cancer screening for as long as they are in reasonably good health and do not have a life-limiting chronic condition. However, with these recommendations in mind, women over the age of 70 should discuss their need for cervical cancer screening with a health care professional, and make an informed decision about continuing screening based on the potential benefits, harms, and limitations of screening.

Women who have had a subtotal hysterectomy should continue cervical cancer screening according to the recommendations for average-risk women. Cervical cancer screening is not indicated for women who have had a total hysterectomy (with removal of the cervix) for benign gynecologic disease. Women with a history of CIN2/3, or for whom it is not possible to document the absence of CIN2/3 prior to/or as the indication for the hysterectomy, should be screened until three documented, consecutive, technically satisfactory, normal/negative cervical cytology tests and no abnormal/positive cytology tests (within a 10-year period) are achieved. Women with a history of in utero DES exposure and/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.

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 underwent a complete review in 2001 (Table 1), and received a small modification in 2002.^{2,32} Adults at average risk should begin colorectal cancer screening at age 50, utilizing 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 (DCBE) every five years; or (5) colonoscopy every 10 years. Combining flexible sigmoidoscopy with FOBT can increase the benefits beyond those of either test alone, more so in the instance of adding flexible sigmoidoscopy every five years to annual FOBT. Thus, although either test alone represents an acceptable option for colorectal cancer screening, the ACS guidelines state that if either test is chosen, combining the two represents a better option.

More intensive surveillance is recommended for individuals at increased risk due to a history of adenomatous polyps, a personal history of curative-intent resection of colorectal cancer or a family history of either colorectal cancer or colorectal adenomas diagnosed in a first-degree relative before age 60, or for individuals who are high-risk due to a history of inflammatory bowel disease of significant duration or the presence of one of two hereditary syndromes (Table 2).

In 2002, the USPSTF updated its recommendations for colorectal cancer screening.³³ The USPSTF recommends that clinicians screen all men and women 50 years of

TABLE 2

American Cancer Society Guidelines on Screening and Surveillance for the Early Detection of Colorectal Adenomas and Cancer—Women and Men at Increased Risk or at High Risk

Risk Category	Age to Begin	Recommendation	Comment
INCREASED RISK			
People with a single, small (< 1 cm) adenoma	3-6 years after the initial polypectomy	Colonoscopy*	If the exam is normal, the patient can thereafter be screened as per average-risk guidelines.
People with a large (1 cm +) adenoma, multiple adenomas, or adenomas with high-grade dysplasia or villous change	Within 3 years after the initial polypectomy	Colonoscopy*	If normal, repeat examination in 3 years; If normal then, the patient can thereafter be screened as per average-risk guidelines.
Personal history of curative-intent resection of colorectal cancer	Within 1 year after cancer resection	Colonoscopy*	If normal, repeat examination in 3 years; If normal then, repeat examination every 5 years.
Either colorectal cancer or adenomatous polyps, in any first-degree relative before age 60, or in two or more first-degree relatives at any age (if not a hereditary syndrome)	Age 40, or 10 years before the youngest case in the immediate family	Colonoscopy*	Every 5-10 years. Colorectal cancer in relatives more distant than first-degree does not increase risk substantially above the average-risk group.
HIGH RISK			
Family history of familial adenomatous polyposis (FAP)	Puberty	Early surveillance with endoscopy, and counseling to consider genetic testing	If the genetic test is positive, colectomy is indicated. These patients are best referred to a center with experience in the management of FAP.
Family history of hereditary non-polyposis colon cancer (HNPCC)	Age 21	Colonoscopy and counseling to consider genetic testing	If the genetic test is positive or if the patient has not had genetic testing, every 1-2 years until age 40, then annually. These patients are best referred to a center with experience in the management of HNPCC.
Inflammatory bowel disease Chronic ulcerative colitis Crohn's disease	Cancer risk begins to be significant 8 years after the onset of pancolitis, or 12-15 years after the onset of left-sided colitis.	Colonoscopy with biopsies for dysplasia	Every 1-2 years. These patients are best referred to a center with experience in the surveillance and management of inflammatory bowel disease.

*If colonoscopy is unavailable, not feasible, or not desired by the patient, double contrast barium enema (DCBE) alone or the combination of flexible sigmoidoscopy and double contrast barium enema are acceptable alternatives. Adding flexible sigmoidoscopy to DCBE may provide a more comprehensive diagnostic evaluation than DCBE alone in finding significant lesions. A supplementary DCBE may be needed if a colonoscopic exam fails to reach the cecum, and a supplementary colonoscopy may be needed if a DCBE identifies a possible lesion, or does not adequately visualize the entire colorectum.

age and older for colorectal cancer. The Task Force concluded that there was fair to good evidence that screening methods (including FOBT, flexible sigmoidoscopy, combined FOBT and flexible sigmoidoscopy, colonoscopy, and DCBM) were effective at reducing mortality from colorectal cancer. It also concluded that the individual tests varied with respect to the quality of the evidence, magnitude of benefit, and that potential for harm varied with each method.³³ The Task Force also concluded that the evidence was insufficient to recommend one test over another based on the balance of potential benefits, cost-effectiveness, and potential harm, but that each test met conventional criteria for cost-effectiveness. Insofar as average-risk individuals 50 years and older are encouraged to be screened for colorectal cancer with a range of acceptable options, the guidelines of the ACS and the USPSTF are essentially the same.

In April 2002, the ACS Colorectal Cancer Advisory Group organized a workshop to review emerging technologies in colorectal cancer screening, including CT colonography (also known as virtual colonoscopy); immunochemical FOBT, with a focus on the InSure™ immunochemical test; and stool tests for the detection of altered human DNA in stool. A complete summary of the workshop and the Advisory Group's assessment of these new technologies is published in this issue of the journal (see page 44).³² The report also includes statements related to capsule video endoscopy (the camera in a capsule) due to the high public visibility of this test. The Advisory Group concluded that while CT colonography and stool tests for DNA mutations are promising new technologies, there is insufficient evidence at this time to recommend either test for routine screening for colorectal cancer. Likewise, there is insufficient evidence to support the use of capsule video endoscopy. However, the Advisory Group concluded that the evidence showing improved specificity with

immunochemical tests, and the lack of requirements to adhere to dietary restrictions prior to the test, was sufficiently persuasive to update the guideline statement for FOBT to include immunochemical tests. Thus, the guideline for FOBT in the ACS's Recommendations for Screening and Surveillance of the Early Detection of Adenomatous Polyps and Colorectal Cancer is appended to include the following statement: "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." The ACS guidelines for colorectal cancer screening have been updated to reflect the recommended modification (Table 1).

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 increased risk due to history of unopposed estrogen therapy, late menopause, tamoxifen therapy, nulliparity, infertility or failure to ovulate, obesity, diabetes, or hypertension.² Rather, since early diagnosis of endometrial cancer generally is triggered by the presence of symptoms (usually bleeding), the ACS recommended that at the onset of menopause, women at average and increased risk should be informed about risks and symptoms of endometrial cancer and strongly encouraged to report any unexpected bleeding or spotting to their physicians (Table 1). However, for women at high risk for endometrial cancer due to: (1) known HNPCC-associated genetic mutation carrier status; or (2) substantial likelihood of being a mutation carrier (i.e., a mutation is known to be present in the family); or (3) absence of genetic testing results in families with suspected autosomal dominant predisposition to colon

cancer—annual screening beginning at age 35 is recommended due to the high risk of 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 also should be informed about potential benefits, risks, and limitations of testing for early endometrial cancer detection.

SCREENING FOR PROSTATE CANCER

Guidelines for testing for early prostate cancer detection were last updated in 2001. The ACS recommends that the prostate-specific antigen test (PSA) and digital rectal examination (DRE) should be offered annually beginning at age 50 to men who have a life expectancy of at least 10 years (Table 1).² Prior to testing, men should have an opportunity to learn about the benefits and limitations of testing for early prostate cancer detection and treatment so that they can make an informed decision with a clinician's assistance. Men who ask their clinician to make the testing decision on their behalf should be tested. 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 men of African descent (specifically sub-Saharan African descent) and men with a first-degree relative diagnosed at a younger age should begin testing at age 45. Men at even higher risk of prostate cancer due to multiple first-degree relatives diagnosed with prostate cancer at an early age could begin testing at age 40. However, if PSA is less than 1.0 ng/ml, no additional testing is needed until age 45. If PSA is greater than 1.0 ng/ml but less than 2.5 ng/ml, annual testing is recommended. If 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 so that they can make an informed decision with a clinician's assistance.

Leading organizations' current recommendations related to testing for early prostate cancer detection reflect the limits of current knowledge of the benefits of testing as well as potential harms associated with treatment. At this time, the accumulation of evidence from observational studies, surveillance data, and natural experiments provides sufficient supporting evidence to endorse informed decision making about prostate cancer screening. Two large randomized trials of prostate cancer screening are also underway, i.e., the European Randomized Study of Screening for Prostate Cancer (ERSPC), which is being conducted in seven European countries, and the US National Cancer Institute Prostate, Lung, Colorectal, and Ovarian Cancer Trial (PLCO), which is being conducted in ten locations in the United States.^{34,35} Investigators in the ERSPC and PLCO trials also have entered into a collaboration to increase statistical power above that which exists with either study alone, carry out subgroup analysis, and work together on the common goal of "sound and efficient evaluation of the screening programs."³⁴ Results from these trials are expected in 2005 to 2008.

In 2002, results were published from a Swedish trial designed to determine whether radical prostatectomy for localized disease was associated with a survival advantage compared with expectant management (i.e., watchful waiting).³⁶ Between 1989 to 1999, Holmberg and colleagues randomized symptomatic men with localized prostate cancer (UICC Stage T1b, T1c, or T2) to receive either radical prostatectomy or watchful waiting. After an average 6.2 years of follow-up, there was a statistically significant difference in the rate of distant metastases (relative hazard 0.63, 95% CI, 0.41 - 0.96), and disease-specific mortality (relative hazard 0.50, 95% CI, 0.27 - 0.91) in

the group randomized to radical treatment compared with the group randomized to watchful waiting. In an accompanying editorial, Walsh³⁷ applauded the results and claimed that they were the first concrete evidence to answer the dilemma posed by Whitmore in 1990:³⁸ “Is cure necessary in those in whom it may be possible, and is cure possible in those in whom it is necessary?” However, Walsh also noted that while these results answered a fundamental question about whether or not treatment reduced prostate cancer mortality, men still will be well served by careful consideration of treatment options based on tumor characteristics and expected longevity.

The results from the Swedish study add to the body of evidence supporting the conclusion that treatment of early-stage prostate cancer reduces mortality.^{39,40} However, the men in the Swedish study all were symptomatic, and many policy makers and groups that issue guidelines will choose to await results from RCTs of asymptomatic men randomized to a group invited to screening versus usual care. One important finding in the Swedish trial is that men in both groups experienced diminished quality of life due either to treatment or (in the case of the watchful waiting group) due to the effects of progressive disease.⁴¹ The implications of these findings and other evidence of treatment-related harms indicate that despite growing evidence of the efficacy of screening, men still should participate in a process of assisted informed decision making about testing for early prostate cancer detection.

TESTING FOR EARLY LUNG CANCER DETECTION

In 2001, the ACS updated its narrative on testing for early lung cancer detection.² Presently, the ACS does not recommend testing for early lung cancer detection in asymptomatic individuals at risk for lung cancer. However,

because of the limitations of the existing data on lung cancer screening as well as more favorable survival rates associated with the diagnosis of resectable tumors detected during case finding, the ACS historically has maintained that patients at high risk for lung cancer (due to significant exposure to tobacco smoke or occupational exposures) and their physicians may decide to have these screening tests done on an individual basis.⁴² The challenge associated with these individual decisions is more complicated today due to favorable findings from investigations using low-dose helical CT for testing for early lung cancer detection,⁴³ and promotion of these tests to individuals at risk. To meet the needs of individuals and health care professionals faced with additional options for testing for early lung cancer detection, the ACS revised the narrative related to lung cancer screening to emphasize informed decision making and to recommend that, ideally, testing should only be done in experienced centers that also are linked to multidisciplinary specialty groups for diagnosis and follow-up. Further, current smokers should be informed that the more immediate preventive health priority is the elimination of tobacco use altogether, since smoking cessation offers the surest route, at this time, to reducing the risk of premature mortality from lung cancer.⁴⁴

In last year’s guideline update, we described planning for a large RCT of lung cancer screening in the United States. In September 2002, the NCI launched the National Lung Screening Trial, which will enroll 50,000 men and women at high risk for lung cancer, to evaluate the efficacy of lung cancer screening. The trial centers represent the collaboration of two groups, i.e., 10 PLCO centers and 20 American College of Radiology Imaging Network (ACRIN) centers. Men and women are eligible to participate if they are current or former smokers between the ages of 55 and 74, in good general health, with lifetime exposure

to cigarette smoking of at least 30-pack years, no chest or lung scan with CT within 18 months, and not participating in any other cancer screening trial (with the exception of melanoma skin cancer). Former smokers must have stopped smoking within the previous 15 years. Individuals must have no prior history of lung cancer, and must not have been treated for any other cancer in the past five years with the exception of non-melanoma skin cancer and most in situ cancers. Individuals who meet eligibility requirements will be randomized to either a group invited to three rounds of spiral CT or a group invited to three rounds of standard chest x-ray. There will be no out-of-pocket costs for the screening tests, and participants who are current smokers can receive referrals to smoking cessation resources if they desire to quit.

The most immediate challenge to any large trial is rapid enrollment, and slow recruitment into a trial delays the completion of the study. The ACS is collaborating with the NCI at the national and local level to assist with recruitment in order to accelerate accrual of study participants. More information about the trial can be found on the NLST Web site at <http://www.nci.nih.gov/nlst/>.

THE CANCER-RELATED CHECK-UP

The ACS historically has viewed periodic encounters with clinicians as having potential for health counseling and a cancer-related check-up.⁴² These encounters may include case-finding examinations of the thyroid, testicles, ovaries, lymph nodes, oral region, and skin. Also, 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 the benefits and risks of undergoing various screening tests.

Since 1980, the ACS has recommended a cancer-related check-up every three years for individuals aged 20 to 39, and annually for individuals aged 40 and older. In the past, it was likely assumed that routine check-ups would be an opportunity to include case-finding examinations and discussions with patients that were specific to cancer. However, as recommendations for routine check-ups have been replaced by recommendations that apply to specific conditions (including cancer screening) and populations, the periodicity of a general health check-up when these case-finding examinations might take place has become less clear. It also would make very little sense for a cancer-related check-up to take place as a separate visit apart from other preventive health measures such as measuring blood pressure, testing for diabetes, etc., as well as health counseling that is relevant to cancer, and other chronic conditions such as guidance about diet, alcohol consumption, and physical activity. Thus, the ACS now recommends that the cancer-related check-up occur on the occasion of a general, periodic health examination, rather than as a stand-alone exam done at a specific interval based on an individual's age (Table 1).

CANCER SCREENING: COLORECTAL, BREAST, AND CERVICAL CANCERS

Data Sources

This section presents surveillance data on the estimated proportion of the US adult population that undergo specific tests for early cancer detection (Table 3). These data are from the Centers for Disease Control's (CDC) Behavioral Risk Factor Surveillance System (BRFSS) for 2000 and 2001. The BRFSS provides state-specific estimates of behavioral risk factors from ongoing, statewide telephone surveys of civilian, non-institutionalized adults

TABLE 3

Prevalence (%) of Recent Cancer Screening Examinations Among US Adults, BRFSS, 2000, 2001

	Age	Males		Females		Total	
		Median	(Range)	Median	(Range)	Median	(Range)
Colorectal Cancer							
Either a Flexible Sigmoidoscopy or Colonoscopy*	50+	38.7	(27.4 – 60.0)	36.6	(28.4 – 52.2)	37.4	(29.4 – 53.6)
Fecal Occult Blood Testing (home kit)†	50+	23.6	(7.2 – 33.5)	23.0	(6.7 – 35.2)	23.4	(6.9 – 34.4)
Breast Cancer							
Mammogram‡	40-64	—	—	62.5	(49.1 – 74.0)	—	—
	65+	—	—	65.3	(45.4 – 79.3)	—	—
Mammogram and Clinical Breast Exam (CBE)§	40-64	—	—	56.9	(45.0 – 67.9)	—	—
	65+	—	—	54.3	(37.3 – 69.0)	—	—
Cervical Cancer							
Pap Test¶	18-44	—	—	89.0	(83.6 – 93.0)	—	—
	45+	—	—	83.9	(75.2 – 90.7)	—	—
	65+	—	—	74.4	(62.7 – 86.7)	—	—
Prostate Cancer							
Prostate-specific Antigen (PSA)#	50+	56.7	(49.2 – 66.2)	—	—	—	—
Digital Rectal Exam (DRE)**	50+	55.8	(45.1 – 69.5)	—	—	—	—

*Recent sigmoidoscopy or colonoscopy test within the preceding five years. Source: BRFSS 2001.

†Recent fecal occult blood test using a home kit test performed within the preceding year. Source: BRFSS 2001.

‡Women 40 and older who had a mammogram in the last year. Source: BRFSS 2000.

§Women 40 and older who had a mammogram in the last year and a clinical breast exam. Source: BRFSS 2000.

¶Women who had a Pap test within the preceding three years. Source: BRFSS 2000.

#A prostate-specific antigen test (PSA) within the past year. Source: BRFSS 2001.

**A digital rectal examination (DRE) within the past year. Source: BRFSS 2001.

(i.e., persons 18 years of age or older living in households with a telephone). The BRFSS is conducted annually by state health departments in collaboration with the CDC in all 50 states, the District of Columbia, and Puerto Rico. The BRFSS survey methodology includes standardized core-questionnaires, complex multi-stage 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. From its inception,

the goal of the BRFSS has been to establish a surveillance system for the collection of population-based health behaviors, socio-demographics, and related health care factors (i.e., access to health care) known to affect chronic diseases (i.e., including cancer) and the health status of the general population.⁴⁵

The second source of population-based national data is from the National Health Interview Survey (NHIS), conducted by the National Center for Health Statistics of the Centers for Disease Control. The NHIS has

been conducted continuously since 1957, and was designed to provide national prevalence estimates on personal, socioeconomic, demographic, and health characteristics. The NHIS is the principal source of information on national health indices in the civilian, non-institutionalized, household population of the United States, and therefore data are weighted to provide prevalence estimates representative of the US adult and child civilian population.⁴⁶ Time trends during the period of 1987 and 2000 on specific cancer screening rates are now available and depicted in Figure 1 (Panels A to D). Direct comparisons of estimates derived from the BRFSS and the NHIS cannot be made because of the different methodologies.

Cervical Cancer Screening

High rates of participation in cervical cancer screening reflect high acceptance of the Pap test among women and their providers as well as the convenience of testing. However, the frequency of testing declines with increasing age. In 2000, women in the 18-to 44-year-old age group were more likely to have had a Pap test in the preceding three years compared with women 45 and older (89.0% versus 83.9%). Among women 65 and older, recent cervical cancer screening is 16% lower compared with women aged 18 to 44 (Table 3).

Breast Cancer Screening

In the 2000 BRFSS survey, the proportion of US women aged 40 to 64 reporting having had a mammogram in the last year was 62.5 percent, and among women 65 and older, the proportion reporting a recent mammogram was slightly higher (65.3%). The proportion of women who reported having had both a mammogram and clinical breast exam in the previous year was 56.9 percent among women aged 40 to 64, and 54.3 percent among women aged 65 and older (Table 3).

Prostate Cancer Screening

The 2001 BRFSS survey was the first occasion where national data on testing for early prostate cancer detection with the prostate-specific antigen (PSA) test and digital rectal examination (DRE) were collected. Among men aged 50 and older, 56.7 percent reported having had a PSA test, and 55.8 percent reported having had a DRE (Table 3).

Colorectal Cancer Screening

In the 2001 BRFSS survey, less than 40 percent of adults aged 50 and older reported having had a recent screening exam for colorectal cancer. Men were slightly more likely than women to have received an endoscopic exam (flexible sigmoidoscopy or colonoscopy) within the preceding five years (38.7% versus 36.6%). Less than one in four men and women reported having had a recent fecal occult blood test (FOBT) using a home kit (23.6% and 23.0%, respectively) (Table 3).

Trends in Cancer Screening by Racial and Ethnic Patterns

Because there are disparities in risks for cancer among racial and ethnic groups in the United States, comparison of the utilization of cancer screening tests between major racial and ethnic groups is important. National trend data representative of the US adult civilian population from the NHIS provides the most comprehensive compilation of cancer screening utilization data across three major racial and ethnic groups—Whites (non-Hispanic), Blacks or African Americans (non-Hispanic), and Hispanics.⁴⁶ According to the US Census Bureau, in 2000, 75.1 percent of the US population was White, and the other two major race/ethnic groups were Black or African American (12.3%) and Hispanic (12.5%). Other racial and ethnic groups are much smaller, e.g.,

American Indians or Alaska Natives (0.9%), Asians (3.6%) and Native Hawaiians and other Pacific Islanders (0.5%).⁴⁷

In this section, results on cancer screening trends for cervical, breast, prostate, and colorectal cancer are presented for all race/ethnic groups combined, and separately for Whites, African Americans, and Hispanics. Recent trend data for American Indian/Alaska Native, Asian, Native Hawaiian/Pacific Islander are not available due to insufficient sample size, but comparisons for the period 1988 to 1992 are available from the NCI.⁴⁸

Between 1987 and 2000, the proportion of women aged 25 and older who had a recent Pap test (within the last three years) increased by 11 percent in all race/ethnic groups combined. The lowest rate of increase occurred among African-American women (4%) and the highest rate of increase occurred in Hispanic women (13%) (Figure 1 - Panel A).

Mammography trend data between 1987 and 2000 show impressive progress in breast cancer screening rates across all race and ethnic groups. In 1987, the proportion of women aged 40 and older reporting a recent mammogram was under 30 percent, but by 2000, the proportion of women having a recent mammogram (within the last two years) increased over 140 percent across all race and ethnic groups (Figure 1 - Panel B).

The improving rates of cervical and breast cancer screening utilization among African-American women (and in particular, those who are medically underserved and uninsured) may be a reflection of the positive impact the CDC's National Breast and Cervical Cancer Early Detection Program (NBCCEDP) has had in increasing access and coverage for breast and cervical cancer screening.⁴⁹ The NBCCEDP is improving health care for underserved women through outreach, public

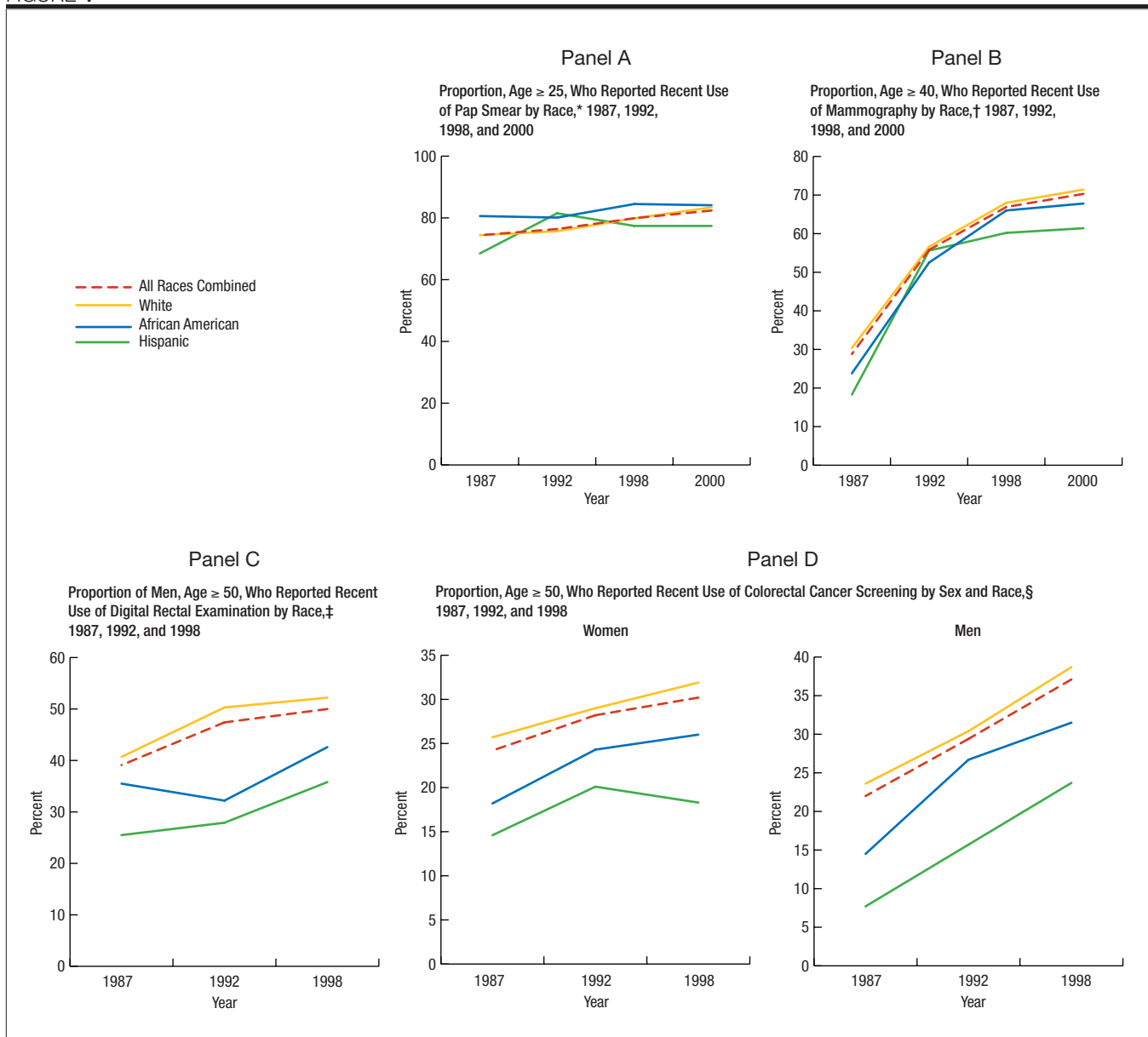
and professional education, improved access to services, diagnostic evaluation, case management, treatment services, and quality assurance measures. Between July 1991 and September 2001, the program served about 1.5 million underserved women, provided more than 3.5 million screening exams, and diagnosed more than 9,000 breast cancers, 48,170 precancerous cervical lesions, and 831 cervical cancers.⁵⁰

National trend data pertaining to prostate cancer screening are available for DRE in men aged 50 and older since the late 1980s. During the period of 1987 and 1998, there was a 28% overall increase in DRE use among men (aged 50 and older). In 1998, White men were more likely than African-American and Hispanic men to receive a recent DRE test (52.2% versus 42.6% and 35.8%, respectively) (Figure 1 - Panel C).

Colorectal cancer screening tests consistently have remained underutilized during the period of 1987 through 1998; also, prevalence use of having a recent endoscopy procedure has been consistently lower in women compared with men across all race and ethnic groups (data not shown). During the period of 1987 to 1998, the proportion reporting having had a recent screening exam for colorectal cancer (having a FOBT in the last year or an endoscopy procedure within the last three years) increased in women by 25 percent and in men by 68 percent. Therefore, although colorectal cancer screening rates are still disturbingly low, some modest improvements in the rate of recent screening have been achieved across race and ethnic groups (Figure 1 - Panel D).

Studies have consistently shown that levels of income, education, and presence or absence of health insurance and usual source of health care are all determinants associated with individual use of health services, and are especially strong predictors of the use of

FIGURE 1



Panel A:

*For Pap test, “recent” is defined as during the 3 years preceding the interview.

Source: National Health Interview Survey. Respondent racial/ethnic groups are as follows: Hispanic/Latino, non-Hispanic Black/African American, and non-Hispanic White; Asian/Pacific Islanders and Native American/Alaska Native samples were too few to analyze separately.

Panel B:

†For mammography, “recent” is defined as during the past 2 years preceding the interview.

Source: National Health Interview Survey. Respondent racial/ethnic groups are as follows: Hispanic/Latino, non-Hispanic Black/African American, and non-Hispanic White; Asian/Pacific Islanders and Native American/Alaska Native samples were too few to analyze separately.

Panel C:

‡For digital rectal exam, “recent” is defined as during the past 2 years preceding the interview.

Source: National Health Interview Survey. Respondent racial/ethnic groups are as follows: Hispanic/Latino, non-Hispanic Black/African American, and non-Hispanic White; Asian/Pacific Islanders and Native American/Alaska Native samples were too few to analyze separately.

Panel D:

§For colorectal cancer screening, “recent” is if the respondent reported FOBT for screening during the past 2 years or endoscopy for screening during the past 3 years.

Source: National Health Interview Survey. Respondent racial/ethnic groups are as follows: Hispanic/Latino, non-Hispanic Black/African American, and non-Hispanic White; Asian/Pacific Islanders and Native American/Alaska Native samples were too few to analyze separately.

preventive services, including cancer screening. These differences in the prevalence utilization of cancer screening among racial and ethnic groups have been associated with various factors, including socioeconomic and cultural factors.⁵¹⁻⁵³ Other relevant correlates include lifestyle behaviors (e.g., lack of physical activity, alcohol intake, and cigarette smoking), aspects of the social environment, (e.g., educational and economic opportunities, neighborhood and work conditions), aspects of the affecting health care environment (e.g., access to health care, physician recommen-

dation), and migration trends.⁵⁴⁻⁵⁶ It has been estimated that if health care access were to become more widespread for those race/ethnic groups which comprise most of the underserved population, a 3-to-10% gain in improved use of recent tests for the early detection of cervical and breast cancer, respectively, could be achieved.⁵⁷ While these improvements may seem modest, the predicted gains in screening usage would represent a substantial public health advance for those race and ethnic groups that currently underutilize screening services. CA

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