CME CREDIT

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Cancer prevention: what the physician can do

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SUMMARY Our ability to improve the control of cancer today depends more on effective screening and prevention efforts by primary care physicians than on curative interventions at secondary and tertiary levels.

KEY POINTS Although the average family physician sees only one or two new cases of even common types of cancer per year, one in every three Americans eventually will contract cancer. Smoking and diet contribute to perhaps two of every three cases of cancer. Preventive measures can reduce the risk of cancer of the lung, head and neck, skin, and, perhaps, breast, colon, and uterine cervix. The National Cancer Institute estimates that early detection practices could, by themselves, reduce US cancer mortality rates by 25%. Early detection is an accepted approach for cancer of the breast, uterine cervix, skin, mouth, and thyroid gland. Research is underway to establish the role of screening for cancer of the colon, prostate, endometrium, testicles, and urinary bladder. Patients need to take action at the first sign of symptoms, and primary-care physicians should teach patients the early signs of cancer. Simple reminder systems can help patients and doctors comply with prevention and screening recommendations.

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CANCER PREVENTION and detection rarely is cited as a major component of primary care. A family physician with a typical, busy practice likely will encounter only one or two new cases of even common types of cancer per year.

Yet, on average, one in every three Americans, or 85 million current US residents, eventually will contract cancer. Over 1.2 million people nationally will be found to have cancer in 1995, and that number is projected to approach 1.5 million by the end of the decade. These figures do not include carcinoma in situ or basal and squamous cell cancers of the skin, which account for an additional 700 000 cases per year. Cancer incidence for all sites combined has increased 36% over the past 36 years.[1]

Public concern about cancer reflects both its prevalence and its consequence. The National Cancer Institute, in 1990, estimated the total cost of cancer at $104 billion, or 10% of the total cost of disease in the United States. By the turn of the century, cancer care is expected to consume 20% of the country's health care expenditures.

The most distressing consequence of cancer, of course, is its mortality rate. Cancer is one of the major causes of death in the United States. In 1995, approximately 547 000 people will die of cancer—nearly 1500 people each day. Cancer is the leading cause of death in women, and in all people under age 54. For people age 65 and over, the cancer mortality rate increased in the period 1975 to 1987, even if lung cancer deaths are excluded. Given current trends, cancer will replace heart disease as the leading cause of death in the United States by the end of the decade.

On the other hand, for Americans under age 55, the cancer mortality rate actually decreased in the period 1950 to 1985. Further, the overall cancer morality rate decreased in the period 1973 to 1985. This accomplishment is overshadowed, often, by the proportion of deaths caused by cancer, which has risen because of the substantial decline since 1950 in heart-disease mortality. The aging of the American population also has contributed to increases in the cancer death rate.

RATIONALE FOR PREVENTION AND SCREENING

Completely effective technology to control cancer, however, does not yet exist. To date, survival rates have increased significantly only in specific types of cancer, including cancers of the cervix and stomach and Hodgkin's disease[2]; the most prevalent noncutaneous cancers remain resistant to available therapies. In particular, advances in the treatment of well-established cancer have been small.

The combination of increased cancer incidence and limited advances in treatment has stimulated interest in prevention and early detection. If lung cancer, a largely preventable disease, is excluded, cancer mortality for all groups under age 85 has declined since 1950. For many common cancers, such as breast cancer, no known preventive measures exist, but early detection can greatly improve the opportunities for effective treatment.

The potential already at hand to reduce cancer mortality is highlighted by the variability of rates across the United States. Counties in the 10th decile of cancer mortality have rates less than 71% of the national average.[3] This review emphasizes the extent to which our current ability to improve the control of cancer depends on effective health care given by the primary physician, rather than reliance on curative interventions.

TABLE 1
PRIMARY CANCER PREVENTION GUIDELINES FOR PATIENTS*

Stop smoking and use of smokeless tobacco

Maintain a desirable weight (< 40% overweight)

Eat a varied diet

Include a variety of vegetables and fruits in the daily diet (at least five servings daily)

Eat more high-fiber foods such as whole-grain cereals, breads, and pasta; and vegetables and fruit (20 to 30 grams daily)

Cut down on total fat intake (< 30% of total caloric intake)

Limit consumption of alcohol to no more than two drinks daily

Limit consumption of salt-cured, smoked, and nitrite-cured foods

Keep exposure to the sun at a minimum

*From the American Cancer Society, reference 5

PREVENTING CANCER

Carcinogenesis can result from any of a combination of chemical, physical, biologic, or genetic insults to individual cells. Geographic and temporal variations in cancer incidence lead investigators to believe that environmental factors contribute to as many as 80% of all cases of cancer. Unfortunately, the actual contribution of individual factors is difficult to isolate. Socioeconomic factors (eg, educational level) may affect an individual's occupation, living quarters, nutritional status, or access to health facilities. Despite the interdependency of these factors, the risk of cancer clearly varies among segments of the population. For example, Mormons and Seventh-Day Adventists have substantially lower rates of cancer incidence and mortality than the overall US population,[3] and the cancer death rate for African-Americans is 27% higher than for whites.[4]

Emerging evidence indicates that the way people live can affect their chances of contracting cancer (*Table 1*).[5] The most obvious example is the dramatic increase in lung cancer rates that occurred after the introduction of cigarette smoking in the early part of this century. Some causes of cancer are associated with exposure to factors in the environment over which an individual has no control, such as ultraviolet radiation and radon gas. But the highest levels of exposure, particularly of the digestive and urinary systems, reflect voluntary life-style choices. Studies indicate that perhaps two of every

TABLE 2
ROLE OF PRIMARY CANCER PREVENTION BY CANCER TYPE

Accepted role	Possible role
Lung	Breast
Mouth	Colon
Skin	Uterine cervix
	Other digestive tract
	Other urinary tract

three cases of cancer are attributable to smoking (25% to 40% of cases) or diet (10% to 70% of cases). Further, even involuntary exposures can be reduced. For example, staying out of the sun during the high-intensity hours of 10 AM to 3 PM and using sun screens with a sun protection factor (SPF) of 15 or higher can reduce one's risk of skin cancer. Ambient urban air pollution, food contaminants or additives, water pollution, and waste disposal, although of public concern, have yet to be shown to be as significant as other risk factors for cancer.

Tobacco use

The causal link between smoking and cancer is firmly established, and primary prevention strategies are available to reduce smoking prevalence. Cigarettes are far and away the most important cause of tobacco-related cancer, but other forms of tobacco, notably chewing tobacco and snuff, are also well-established carcinogens. Smoking is estimated to cause 430 000 deaths each year due to cancer, heart disease, and chronic obstructive lung disease.[6] Recommendations to patients can be very specific: abstaining from smoking and avoiding second-hand smoke clearly reduce cancer risk.

Diet

Doll and Peto[7] have "guesstimated" that 35% of cancer deaths—more than 150 000 per year—are related to diet; the National Cancer Institute estimates more conservatively that 30 000 lives could be saved in the United States in the year 2000 if Americans would modify their dietary habits.[3]

Former dietary guidelines were vague and in essence recommended moderation and variety; more recent guidelines are more specific. Five daily servings of fruit or vegetables now are recommended, an increase from the current US average of 2.5. The intent is to increase the consumption of foods rich in vitamins A and C, which protect against cancers of the esophagus, prostate, colon, and stomach. The recommended diet also includes six or more daily servings of cereals, especially whole grains and legumes (up from the current US average of three), to provide 20 to 30 g of dietary fiber.

Dietary fat, which has been linked to risk of cancer of the breast, colon, pancreas, and prostate, should account for less than 30% of total calories, (the current average is 35%). Moderation in alcohol consumption (no more than two drinks per day) is advised to reduce the risk of oral and esophageal cancer. Avoiding salt-cured, smoked, or nitrate-preserved foods can reduce exposure to carcinogens associated with stomach and esophageal cancer. Finally, dietary changes combined with a program of physical exercise can reduce obesity and maintain a desirable body weight, factors associated with a reduced risk of breast, colon, and uterine cancer.

Researchers currently are exploring the potential for chemoprevention of cancer through dietary supplements. A number of studies are underway to determine whether natural or synthetic retinoids can reduce the rate of progression of premalignant changes in the mouth or lung or reduce the rate of recurrent or second primary tumors in patients who have a history of lung and head-and-neck tumors. Another approach is hormonal therapy; the most significant study at this time is the Breast Cancer Prevention Trial of the National Surgical Adjuvant Breast and Bowel Project, to determine whether tamoxifen can reduce the incidence of breast cancer.

In summary, primary preventive steps, such as modifying the life-style or restricting exposure to environmental agents, have proven effective in reducing the risk of lung, head-and-neck, and skin cancer, and some studies indicate these measures contribute toward preventing cancers of the breast, colon, and uterine cervix (*Table 2*).

SCREENING

Unfortunately, in an estimated 50% of cases of cancer in men and 70% in women, no known measures would have prevented the disease.[8] The National Cancer Institute, however, estimates that detecting cancer in its early stages could, by itself, decrease the US cancer mortality rate by 25%. The premise is that most cancers begin with a few cells and that, as the cancer grows, the potential for metastasis to regional lymph nodes increases. In most types of cancer, patients have a much greater chance

TABLE 3
ROLE OF SCREENING BY CANCER TYPE

Accepted role	Possible role	Unproven role
Breast	Colon	Lung
Mouth	Endometrium	
Skin	Prostate	
Thyroid	Testicular	
Uterine cervix	Urinary bladder	

TABLE 4
CANCER SCREENING RECOMMENDATIONS FOR AVERAGE-RISK PATIENTS

Type of cancer	Age	Recommendations
Breast	> 35	Baseline mammogram
	> 40	Mammogram every 1 to 2 years, at physician's discretion
	> 50	Mammogram annually
Cervical	> 18	Annual Pap test (at physician's discretion after three or more normal tests)
Colon and rectum	> 50	Annual fecal occult blood test
		Annual sigmoidoscopy (every 3 to 5 years after two negative tests)
Prostate	> 50	Annual prostate-specific antigen blood test

of surviving if the disease is detected and treated earlier rather than later.

Screening is an attempt to identify, in a population of apparently healthy people, groups who have a high probability of having a particular disease. The efficacy of screening is increased by focusing on people who have a higher risk by virtue of factors such as sex, age, race, or occupation. Several common types of cancer, such as breast cancer, meet many if not all of the prerequisites for effective screening: they are relatively common or prevalent, their consequences are serious, they have an asymptomatic or preclinical period during which they can be detected, effective treatments are available, and, most important, early intervention leads to improved outcome. Necessary or positive attributes of screening tests include simplicity, acceptability, minimal risk, reasonable cost, and accessibility. Further, a screening test should yield a high percentage of true-positive and true-negative results (ie, have a high predictive value), a low percentage of false-negative results (ie, have adequate sensitivity), and a low percentage of false-positive results (ie, have reasonable specificity).

Several fundamental, well-known biases can lead one to overestimate the value of early detection. The reported incidence of a disease generally increases after screening programs are implemented, as more cases are diagnosed early in their course. If the true incidence remains unchanged, however, the greater number of cases detected earlier with the new screening test will be offset later, when they would have been detected without the new test. In addition, when cancer is detected earlier, the survival time calculated from the time of diagnosis will appear to be increased even if treatment does not actually extend life expectancy. This phenomenon is termed "lead-time bias."

Given that a disease may vary among individuals in its natural history, researchers also recognize that people with relatively slow-growing or even non-lethal tumors are likely to be overrepresented in

cases detected by screening tests compared with people with fast-growing tumors, because their "window" for subclinical detection is wider. Because people with slow-growing tumors survive longer, the survival times for cases detected by screening are likely to be longer, even if treatment has no beneficial effect. Researchers refer to this as "length-time bias."

Even with these inherent biases, screening technology has advanced to the extent that early-detection programs are now accepted for a number of cancer types, including cancer of the breast, uterine cervix, skin, mouth, and thyroid gland. Currently available screening techniques for lung cancer have not demonstrated merit. However, given the natural history of other common types of cancer, research is underway to establish the role of screening for cancer of the colon, prostate, endometrium, testes, and urinary bladder (*Table 3*).

Detecting breast cancer

Studies have established that if all women between the ages of 50 and 69 would undergo physical examination and mammography on an annual basis, the mortality rate would decline 30% to 40% in this group (*Table 4*).[9] Research has been less conclusive in women ages 40 to 49[10] or over age 69,[11] but delay in diagnosing breast cancer has become the second most frequent reason for negligence suits and the leading grounds for monetary awards. A number of trends suggest the value and impact of mammography. Between 1972 and 1988, the per-

TABLE 5
ROLE OF PHYSICAL EXAMINATION
FOR MAJOR TYPES OF CANCER IN PATIENTS WITHOUT SYMPTOMS

Type of cancer	Age	Monthly self-examination	Physician examination
Breast	> 20	Yes	Every 3 years
	> 40	Yes	Annually
Pelvic	> 18	—	Annually
Colon and rectum	> 40	—	Annually
Oral	—	Yes	Annually
Prostate	> 50	—	Annually
Skin	> 20	Yes	Every 3 years
	> 40	Yes	Annually
Testicular	—	Yes	Annually
Thyroid	> 40	—	Annually

cent of breast cancers diagnosed in situ rose from 2% to 13%, while regional cancers fell from 42% to 28%, and distant metastases declined from 7% to 4%.[12] These trends have contributed to the increasing use of partial mastectomy and radiation therapy (up from 3% to 33% of cases) and a decline in the need for radical mastectomy (down from 50% to 2%) in the same period. The increase in 5-year relative survival from 75% in 1977 to 1980 to 78% in 1981 to 1986 likely is due, in part, to mammographic screening.

Studies have found wide variations in the use of mammography. Between 1987 and 1989, the percentage of women over age 40 who reported ever having a mammogram rose from 49% to 63%.[13] By 1992, 74% of women in this same age group had had at least one mammogram, but only 58% of African-American women had,[14] and in other studies as few as 35% of women age 65 to 74 had.[15] Two thirds of the women who ever underwent mammography had not done so on a regular basis. This observation is consistent with other reports that only 38% of women over age 40 underwent mammography in the previous year,[16] and only 42% underwent mammography more than once in their lives.[17]

Primary-care physicians have an established role in encouraging women to comply with mammography recommendations. However, studies consistently have reported that, except for obstetricians and gynecologists, physicians do not routinely recommend mammography. They should—one study found that women were 29 times more likely to undergo mammography if a physician recommended it.[18]

As noted earlier, mammography should be part of an overall effort to detect breast cancer early. Only 87% of women recall ever having a physical examination for breast cancer.[19] During this examination, women need to be instructed to perform a monthly breast self-examination, ideally on a routine basis, in the shower, 3 to 5 days after the menstrual period ends (*Table 5*). Women also should be advised of early warning signs of breast cancer: a lump, thickening, a change in size or shape, nipple discharge, or a change in feel or color.

Detecting cancer of the cervix

In a report in 1992, in only 17% of households had someone undergone cancer screening other than mammography in the previous 2 years.[20] After breast cancer screening, the next most commonly accepted practice by far is the Papanicolaou ("Pap") test and pelvic examination for cervical cancer. Human papillomavirus (HPV) has been strongly implicated in the pathogenesis of cervical cancer, but 25% of patients who initially test HPV-positive on a screening test such as ELISA prove negative on a gold-standard test such as culture, and only 3% of patients with true-positive results actually develop invasive cervical cancer.

Cervical cancer is considered largely preventable; known risk factors include young age at first coitus, multiple sex partners, smoking, sexually transmitted diseases, and immunosuppressed states. Still, cervical carcinoma is the sixth most common cause of cancer mortality in women, accounting for 15 000 new cases and 4600 deaths in 1994.

Cervical cancer is now believed to progress through a spectrum of cervical dysplasias before it becomes malignant. In the United States, 50 000 cases of intraepithelial neoplasia are reported each year; if left untreated, a substantial number develop into carcinomas. An estimated 30% to 71% of women with untreated carcinoma in situ develop invasive cervical cancer within 10 years.

Papanicolaou first described the cytologic technique that bears his name in 1928, giving clinicians

the ability to detect and treat preinvasive and invasive lesions early in their course. Since 1947, when the spatula to scrape the cervix and harvest cells directly was introduced, mortality from cervical cancer has declined 70%. Currently, women are advised to undergo an annual pelvic examination and Pap test beginning at age 18 or upon becoming sexually active. After three or more normal Pap tests, the interval between additional tests should be based on the recommendation of the personal physician.

Unfortunately, 25% of elderly patients still report they never have had a Pap test.[21] Even more disconcerting, some studies report that fewer than 50% of women with an abnormal Pap result will make a follow-up visit.[22] It is important that physicians follow up abnormal cytologic results with colposcopic examination and biopsy for definitive diagnosis and treatment. Because cervical cancer can develop in the interval after a negative test, patients should be instructed to take action if they notice abnormal bleeding or increased vaginal discharge.

Skin cancer: common and curable

Skin cancer, which accounts for one third of all cases of malignant disease, in general is readily visible, recognizable, and surgically curable in its early stages.[23] Patient education and screening programs can potentially decrease morbidity and mortality due to melanoma, which in 1994 in the United States accounted for 32 000 new cases and 6900 deaths. Primary-care physicians should examine their patients' skin for suspicious lesions as part of their routine care. For the general population, examinations are recommended every 3 years between the ages of 20 and 40, and annually thereafter. Patients should examine their skin every month and take action upon detecting a new growth, a change in the size, color, or shape of a previous growth, a sore that does not heal, or patchy areas.

Oral cancer: more could be detected earlier

Another common cancer site accessible to visual examination is the oral cavity. Oral cancer accounts for 30 000 cases and 7950 deaths each year—twice as many as cervical cancer.[24] Reducing the use of tobacco and alcohol is known to reduce the risk of cancer. Most oral cancers are diagnosed at an advanced stage, even though 90% of squamous cell cancers arise from sites that lend themselves to routine screening (ie, the floor of the mouth, the tongue, or the soft palate). Routine annual examinations are expected to detect oral cancer in one of every 1000 patients.[25] Patients should examine their mouths every month for any growths or changes in color, and they should report any sores that do not heal, abnormal sensations in the tongue or mouth, sensitive teeth, or trouble swallowing.

Testicular cancer

Although a far less common site of cancer, the testicles also are readily accessible for annual examination by a physician and for monthly self-examination. Patients should be instructed to respond to warning signs including a lump, swelling, accumulation of blood or fluid, or a dull ache.

Colon cancer

Many lives could be saved if cancer of the colon and cancer of the prostate, two common diseases, were detected earlier. In the United States, colorectal cancer accounts for 150 000 new cases and over 56 000 deaths each year. As noted above, the risk of colorectal cancer can be reduced by reducing dietary fat and increasing consumption of fiber. Because removing adenomatous polyps, precursors of colorectal cancer, is a very favorable step toward reducing cancer risk, guidelines have been developed to apply current screening techniques to the general population. Current guidelines recommend an annual digital rectal examination starting at age 40 and an annual fecal occult blood test (although it lacks sensitivity) and sigmoidoscopic examination starting at age 50; the last may be reduced to every 3 to 5 years after two negative examinations. Flexible sigmoidoscopes now provide the ability to screen for polyps in a much longer segment of the colon. Patients should be advised to respond to relevant symptoms, such as frequent constipation or diarrhea, blood in the stool, narrow stool, stomach discomfort, gas pains, inability to empty, unexplained weight loss, and constant fatigue.

Prostate cancer: still a problem

Prostate cancer is the most common cancer and the second leading cause of cancer death in men, and in 40% of cases the disease has spread beyond the prostate at the time of diagnosis. If prostate cancer is detected in its earliest stages, the risk of death can be reduced greatly. Screening clearly has altered the distribution of new cases by stage of disease, but up to 40% of men have been reported to have latent prostatic adenocarcinoma,[26] and it is not

TABLE 6
CANCER DETECTION GUIDELINES FOR PATIENTS[*]

Change in bowel or bladder habits
A sore that does not heal
Unusual bleeding or discharge
Thickening or lump
Indigestion or difficulty in swallowing
Obvious change in a mole or wart
Nagging cough or hoarseness

[*]From the American Cancer Society, reference 5

clear whether screening will alter the natural history of the disease and reduce the death rate. Treatment is not innocuous and involves the risk of incontinence and impotence.

A number of tests are available, but each has limitations. Digital rectal examination, typically recommended for risk-free men over the age of 50, may not detect tumors smaller than 1.5 mL in volume. Blood testing for prostate-specific antigen has greater sensitivity but yields many false-negative and false-positive results. Values greater than 10 ng/mL are indicative of cancer, although measurements should be adjusted for gland volume. Transrectal ultrasonography lacks sufficient specificity. A rationale exists to combine these tests, as doing so markedly improves their predictive value.[27] Patients should be advised to seek medical attention if they have frequent urination, problems in urine flow, pain on ejaculation, blood or pus in urine or semen, or persistent pain.

IDENTIFYING HIGH-RISK SUBPOPULATIONS

Although whether and how to screen the general population remain at issue for many sites of cancer, a consensus has been reached on the merits of screening populations known to be at greater risk of cancer. For example, the probability of oral cancer rises substantially in people over age 50 who have a history of smoking and drinking. Positive findings are expected in one of 200 people over age 40 who smoke and drink heavily (more than two packs of cigarettes and two drinks per day), and rates are as high as one in seven for patients with a history of oral cancer. Oral leukoplakia, a white patch in the oral cavity that cannot be scraped off, is a known precancerous condition warranting close surveillance.

First-degree relatives of patients with melanoma are at increased risk. They should be enrolled in routine surveillance programs in which they are examined for atypical moles and melanoma.

People with a personal or family history of colon disease should be screened at an earlier age and more frequently than the general population.[28] People at high risk include those who have had cancer or an adenoma and those with a first-degree relative with chronic inflammatory bowel disease, familial polyposis, or colon cancer, especially with onset before age 55. These individuals warrant colonoscopic examination of the entire colon every 5 years beginning at age 35 to 40.

Men at risk of prostate cancer because of African-American ancestry or family history should begin annual screening by digital rectal examination and prostate-specific antigen blood tests upon reaching age 40. Routine screening for ovarian cancer by CA-125 blood testing and ultrasonography is cost-prohibitive and unjustified, but may be warranted in women with a family history of ovarian cancer.

EDUCATING AND MOTIVATING PATIENTS

Because early treatment of cancer requires patients to take action when they first notice symptoms, primary-care physicians need to teach patients the early signs of cancer. The American Cancer Society has conveyed this message through their "CAUTION" campaign, which emphasizes developments that warrant physician attention (Table 6).[5]

Patients also need their physicians to motivate them to follow prevention and detection guidelines. Perhaps as many as 40% of smokers and women who never have had a mammogram are in a precontemplative stage, ie, are not even thinking of quitting smoking or having a mammogram.[29] Patients are twice as likely to carry out a health-promoting action within 18 months if a physician advises them even briefly to do so.

Yet 45% of adult smokers report they never were advised by a physician to quit.[30] Recent medical trainees express greater confidence in implementing cessation counseling,[31] and studies consistently have shown that physicians can increase the likelihood of patients entering cessation programs.[32,33] The percentage of smokers who try to quit rises from 36% to 47% if a physician advises them to do so.[34] One report concluded that 5 minutes of physician counseling could double the smoking cessation rate.[35]

Studies of compliance with mammography recommendations also have documented the positive

impact of physician advice.[36,37] One study reported that three of four women who underwent mammography acted on a physician's recommendation, while only one in two women who had not undergone mammography had refused a physician recommendation.[38]

Many patients underestimate the time since their last testing procedure.[39] Self-reporting of compliance is likely to be more accurate for the last 2 years' experience and for tests in which a report was sent to the patient.

A number of factors may contribute to patient nonadherence with cancer prevention and early detection recommendations. Refusal is known to correlate inversely with patients' educational level and ability to pay. Potential societal factors contributing to nonadherence include inadequate facilities, limited access to facilities, and lack of insurance coverage.

REMINDING THE PHYSICIAN

Physicians who do not follow prevention and detection guidelines do not necessarily disagree with these recommendations. One recent study found that deviation from recommended guidelines for flexible sigmoidoscopy could be attributed to logistical difficulties in 67% of cases, but lack of compliance with a number of other recommendations (ie, fecal occult blood testing, digital rectal examination, Pap testing, pelvic examination, and breast examination) was more likely to stem from physician forgetfulness than from logistical problems.[34] One survey of the general public found that in 59% of households, someone had been referred by a physician to a cancer screening service within the last 2 years, but only 30% of those referrals included recommendations regarding the Pap test and only 14% included recommendations for a colorectal examination.[20]

Most studies report that physicians think they are doing more prevention and detection services than audits confirm. Generalists are more likely to counsel than specialists.

Needed: a reminder system

Medical practitioners, in general, appear familiar with screening and detection guidelines, but they may need a system to remind them to actually carry them out. One recent study found that behavioral systems (ie, reminders) were more effective than cognitive systems (ie, education), the effect of

which waned over time, or sociological systems (ie, comparison with peer performance).[40]

Reminder systems for physicians can take a variety of forms. In the office, physicians may rely on checklists, flow sheets, stickers, alerts, their nurses, or computers to remind them.[34] One study in house officers demonstrated that reminder systems such as checklists could increase compliance with mammography guidelines from 4% to 32%.[41] A study in residents found similar results for mammography (12% vs 32%) and breast examinations (53% vs 65%), but the impact varied by recommendation; the use of fecal occult blood tests, digital rectal examinations, Pap tests, or pelvic examinations did not increase significantly.[42] Delayed inducements, such as audits, largely have been found ineffective. Physicians, in turn, can remind their patients to schedule appointments through postcards, letters, phone calls, or questionnaires.

WHAT THIS MEANS FOR THE BUSY PHYSICIAN

Primary caregivers must recognize the impact that physician reinforcement has on patient initiatives such as adoption of healthier life-styles, compliance with screening recommendations, and early reporting of symptoms. Even institutionalized office reminders need to be accompanied by personal physician comment, or patients will be distracted by the immediate health issues that trigger a medical contact. Some technical initiatives require physician training and education (eg, provision of Pap tests or flexible sigmoidoscopy, or counseling regarding smoking cessation or diet). Other less technical actions involve time and cost (eg, digital rectal examination or fecal occult blood testing). The rate of positive findings in a given patient or physician service will be very small, but the commitment of the primary-care physician to conveying personally to patients the importance of cancer prevention and early detection, in the absence of spectacular therapeutic breakthroughs, is essential today for any major advance in the control of cancer in our community.

AUTHOR'S NOTE

Professionals and patients seeking additional, and more detailed, information regarding cancer prevention and detection services should contact the cancer information services of the American Cancer Society (1-800-ACS-2345), the National Cancer Institute (1-800-4-CANCER), and the Cleveland Clinic Cancer Answer Line (1-800-862-7798).

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