Overcoming Obstacles to Skin Cancer Examinations and Prevention Counseling for High-Risk Patients: Results of a National Survey of Primary Care Physicians

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Objective: **Primary care physicians are in a unique position to perform skin cancer examinations and provide prevention counseling, given that approximately 40% of office visits to physicians in the United States are to a family practitioner or internist. Compared with family or self-detection, physician detection is associated with an increased probability of detecting thinner melanomas. However, little research has attempted to identify the major obstacles to performing a skin cancer examination and recommending prevention practices.**

Methods: **In the spring of 2002, we surveyed primary care physicians from all 50 states, including family medicine physicians, internists, and general practitioners sampled from the American Medical Association's Medical Marketing Services' database. There were 4 primary outcome variables related to early detection and prevention practices for average-risk patients and patients with risk factors: performing a full-body skin examination; recommending regular skin self-examination; and recommending sun protection practices and avoidance of tanning booths for patients younger than age 35.**

Results: **We received surveys from 380 (60%) of 632 eligible physicians. Nearly 60% of physicians routinely performed full-body examinations with their high-risk patients. In the regression analysis of factors influencing physician examination of high-risk patients, lack of time was the strongest barrier [odds ratio (OR) 0.3 (95% confidence interval (CI) 0.2 to 0.6)]. Physicians using the most information sources [OR 2.5 (95% CI 1.3 to 4.8)] were the most likely to examine their high-risk patients. Physicians whose patients requested a skin examination were more likely to examine their patients compared with physicians whose patients did not request such an examination ($P < .01$).**

Conclusions: **Concerted public and professional education efforts must be made to provide resources that help physicians efficiently weave skin cancer examinations and prevention counseling into routine practice while also motivating high-risk patients to request full-body examinations and counseling. (J Am Board Fam Pract 2004;17:416–23.)**

Incidence and mortality rates for melanoma are rising faster than those for nearly all other cancers.[1] Invasive melanoma, which occurs in more than 50,000 Americans each year,[2] is a potentially fatal malignancy for which cure depends critically on early diagnosis.[3] In general, screening and early diagnosis are greatly facilitated by the tumor's visibility from its onset, its highly characteristic clinical features, and the existence of a minimally invasive, definitive diagnostic test (skin biopsy).[3] Visual examination by a qualified health care provider should improve early detection.[3,4]

Primary care physicians are in a unique position to perform cancer screenings and to provide prevention counseling, because approximately 40% of office visits to physicians in the United States are to a family practitioner or internist.[5] Almost all physician-detected melanoma is discovered by primary care physicians rather than specialists.[6] Compared with family or self-detection, physician detection is

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associated with an increased probability of detecting thinner melanomas.[7] However, although most melanoma patients have at least one primary care visit in the year before diagnosis, only 20% report receiving a skin cancer examination.[6] Thus, primary care physicians are an appropriate group to target for new interventions and educational campaigns designed to increase skin cancer examination and prevention practices.

It is clear that skin cancer examination and prevention comprise only one of many areas of activity that primary care physicians must focus on today as part of their routine office procedures.[8] The frequency of skin cancer examination rates lag well behind screening for breast, cervical, and colorectal cancer.[5] Numerous barriers to cancer screening[9,10] have been cited, but little research has been done to understand the major obstacles against the skin cancer examination. Furthermore, no clear consensus exists among medical organizations regarding skin cancer screening and prevention recommendations. Some organizations endorse screening of all adults;[11] others promote screening of those at high risk only,[12] and others do not endorse screening at all.[13,14]

In light of the inconsistent guidelines, we conducted a national study of primary care physicians' skin cancer examination and prevention practices. Given the greater incidence of skin cancer among persons at high risk,[15,16] we focused on physicians' obstacles and their practices used with these patients and explored strategies for improvement.

Materials and Methods

Sample

We surveyed primary care physicians, including family medicine physicians, internists, and general practitioners from all 50 states. We identified primary care physicians from the American Medical Association's Medical Marketing Services' database (n = 30,000). This database included only office-based practicing physicians and is a representative, proportionate sample by specialty and by state. We surveyed 1000 physicians randomly chosen from the sampling frame. Eligibility for inclusion in the study sample required having an updated working telephone and fax number and/or mailing address and devoting more than 50% of practice time to primary care.

Process

Physicians were mailed a brief survey in the spring of 2002, along with an explanatory letter of introduction. Four weeks after the first mailing, all nonrespondents were sent another. Three weeks later, remaining nonresponders were faxed yet another copy of the survey. A $5.00 check and a $5.00 gift certificate, respectively, were provided in the two mailings to enhance physician response.

Survey Instrument

The 20-question survey was divided into (1) primary outcomes related to early detection and prevention practices, (2) covariates, including demographics, office practices, awareness of and attitudes toward early detection, sources of cancer information, and (3) treatment practices.

Primary Outcome Variables

There were 4 primary outcome variables related to early detection and prevention practices for average-risk patients and patients with risk factors: (1) performing a full-body skin examination (excluding buttocks and genitalia); (2) recommending regular skin self-examination; (3) recommending sun protection practices (eg, shade, clothing, sunscreen, sunglasses), and (4) recommending avoidance of tanning booths for patients younger than age 35. Risk factors specifically described in the survey included: fair skin, many moles, a few atypical moles, family and/or personal history of skin cancer, and excessive sun exposure.

Descriptive Variables/Covariates

Additional study variables included demographics and personal practices. Establishing basic information on the physicians, the survey first asked what percentage of their practice was primary care. The demographics and personal practices section further asked whether their primary office setting was solo private, group private, HMO, academic, etc; whether their practice was rural, suburban, or urban; what the age range of their patients was, and what percentage of them were white or light-skinned Hispanic. Physician's state of residence was categorized into high and low ultraviolet radiation (UV) areas as defined in earlier studies.[17] They were also asked who in their offices (themselves or other professional staff) usually performed skin exams, and the percentage of their patients who requested skin cancer exams. Respondents were

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also asked how long it had been since they had personally undergone a skin cancer examination by a clinician.

Awareness of and Attitudes Regarding Early Detection

The survey featured several other questions related to early detection. Physicians were asked about the major obstacles against their performing skin exams or recommending skin self-exams. Obstacles included lack of time, lack of training, lack of confidence in recognizing lesions, lack of reimbursement or training, and patient reluctance or patient comorbidities. Physicians were also asked about their familiarity with the ABCD rule (asymmetry, borders, color, diameter) for melanoma detection, their opinion about the effectiveness of physician skin exams and self-exams, and their confidence in their ability to identify a suspicious lesion.

Sources for Cancer Information

The survey also asked physicians their preferred sources (eg, medical journals, media coverage, conferences, Internet, and discussions/consults with colleagues) for learning more about new cancer screening and prevention recommendations, and the types of skin cancer educational materials (newsletters, brochures, posters, Internet, videos, and CD-ROMs) that they would be most likely to use in their office.

Finally, to gauge the extent of skin cancer-related treatment that the physicians performed themselves, the survey asked what percentage of the time they referred out patients with suspected nonmelanoma skin cancer, whether they primarily treated or referred patients with actinic keratoses, and what methods they used if they treated actinic keratoses.

Statistical Analysis

Frequency distributions were calculated for each of the survey variables. In addition to descriptive statistics, univariate statistics were calculated to assess the association between each variable (covariate) of interest and primary outcomes. For average-risk patients, we defined examination and prevention recommendations as routinely performed if they were completed with at least 76% of the physician's patients. For patients with risk factors (defined as high-risk patients), we defined examination and prevention recommendations as routinely performed if they were completed with at least 76% of the patients. This last outcome serves as the major focus of this study.

Logistic regression was used to assess the relationship between covariates, such as obstacles noted above and physician examination of high-risk patients, controlling for potential confounding factors, such as patient age and race. Variables that were significant to $P < .05$ in univariate analysis were included in the regression model. All analyses were conducted using the SPSS version 10.1.

Results

Of 1000 physicians, 663 had updated working telephones, mailing addresses, and fax machines. Thirty-one respondents had practices that were less than 50% primary care and were thus excluded from the study, leaving 632 eligible physicians.

We received surveys from 380 (60%) of the 632 remaining physicians. Their specialties included family practice (48%), internal medicine (45%), and general practice (7%). Primary office settings were as follows: group private, 49%; solo private, 31%; HMO, 6%; other group practice, 6%; academic, 4%; and other type of practice, 4%. The practices were located in suburban (44%), urban (31%), and rural (25%) areas. Seventy-six percent of physicians stated that more than half of their patients were white or fair-skinned Hispanics, and 51% reported that more than half of their patients were 51 years of age or older. Physicians practicing in group office settings and those practicing in suburban and rural areas proved more likely to perform full-body exams; those with a higher proportion of white patients also had a modestly higher tendency to do so. Physicians from all 50 states participated in the survey, and 40% practiced in areas with high UV levels. No differences were found in examination or prevention recommendations based on whether the physician practiced in a high- or low-UV area.

Forty-seven percent of physicians referred out patients with suspected nonmelanoma skin cancer, and 95% referred out treatment for actinic keratoses. The findings showed that examinations were performed almost exclusively by physicians (97%); nurse practitioners, physician assistants, and nurses performed fewer than 3%. Nearly 80% of physicians were aware of the ABCD rule for melanoma detection.

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Table 1. Percentage of Physicians (n = 380) Routinely* Performing Skin Cancer Screening and Prevention for Average-Risk and High-Risk Patients

	Average-Risk Patients	High-Risk Patients†
Screening		
Full-body examinations‡	32%	59%
Counseling Recommendations		
Recommend skin self-exam	24%	58%
Recommend regular sun protection	33%	68%
Recommend avoidance of tanning booths	50%	68%

* Routinely defined as performing the practice with ≥76% of patients.
† High-risk patients include those with fair skin, many moles, a few atypical moles, family and/or personal history of skin cancer, and excessive sun exposure.
‡ All counseling and screening differences between average and high-risk patients, $P < .05$.

Skin cancer examination and prevention counseling rates for average-risk patients and high-risk patients are described in Table 1. Thirty-two percent of physicians routinely performed full-body examinations on their average-risk patients; 59% said they routinely examined their high-risk patients. Fifty-eight percent routinely recommended regular skin self-examination for their high-risk patients. More than two thirds reported that they routinely counseled high-risk patients about sun protection and tanning bed avoidance.

Forty-four percent of respondents (169 of 380) considered the physician skin examination to be very effective. As shown in Table 2, 65% of these physicians screened high-risk patients, compared with only 54% of physicians who considered the examination less than very effective ($\chi^2 = 4.0$, $P < .05$). Thirty-eight percent of respondents (145 of 379) stated that they were very confident in their ability to identify a suspicious lesion; patient screening rates were significantly higher among these physicians ($\chi^2 = 24.3$, $P < 0.001$).

Thirty percent of physicians (114 of 380) reported that more than a quarter of their patients asked for a skin cancer examination, and examination rates were significantly higher for physicians whose patients made such a request compared with those whose patients did not request exams (63% v. 46%) ($\chi^2 = 6.0$, $P = .05$).

Sixty-three percent of physicians had ever received a personal examination for skin cancer; among these, 64% examined high-risk patients, compared with only 49% of those who had not been personally examined ($\chi^2 = 7.0$, $P < .001$). Physicians who had been personally examined were also 14% to 21% more likely to offer skin cancer prevention recommendations.

Obstacles to Early Detection and Prevention Recommendations

Seventy percent of respondents cited lack of time as the major impediment—a rate twice as high as that for each of the obstacles, competing comorbidities and patient reluctance and more than 4 times higher than that for lack of reimbursement. Fewer physicians cited lack of confidence (7%) or lack of scientific evidence (3%) as obstacles.

Eight percent of physicians reported no obstacles to screening; 66% reported 1 to 2 obstacles,

Table 2. Skin Cancer Examinations and Counseling for High-Risk Patients by Physician Attitudes

	Perform Full-Body Exams		Recommend Skin Self-Exam	
	Yes	No	Yes	No
Belief in the effectiveness of physician skin exam				
Very effective (n = 169)	65%	35%	67%	33%
Somewhat/Not at all effective (n = 211)	54%	46%	52%	48%
χ^2	4.0*		8.1*	
Confidence in ability to identify suspect lesions				
Very confident (n = 145)	75%	25%	67%	33%
Somewhat/Not at all confident(n = 234)	48%	52%	53%	47%
χ^2	24.3†		7.1*	

* $P < .05$.
† $P < .001$.
χ^2 refers to the comparison between performance and recommendations among physicians with and without reported attitude.

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Table 3. Skin Cancer Examinations and Prevention Recommendations for High-Risk Patients by Physician Obstacles for Performance (n = 380)

	Physicians Who Perform Full-Body Exams		Physicians Who Recommend					
			Skin Self Exam		Sun Protection		Tanning Bed Avoidance	
Physician Obstacles	%	χ^2	%	χ^2	%	χ^2	%	χ^2
Lack of time		14.6†		4.3*		2.9		0.2
Yes (n = 265)	52		55		65		68	
No (n = 115)	75		67		74		70	
Lack of training		10.4†		9.7*		17.1†		12.4*
Yes (n = 57)	39		39		44		48	
No (n = 323)	62		62		72		72	
Co-morbidities		9.2*		1.5		0.7		1.2
Yes (n = 129)	47		54		65		64	
No (n = 251)	65		60		69		70	
Patient reluctance		2.0		10.8†		0.2		0.3
Yes (n = 134)	64		70		69		70	
No (n = 246)	56		52		67		67	
Lack of reimbursement		10.7†		1.8		5.8*		0.1
Yes (n = 71)	41		51		55		67	
No (n = 309)	63		60		71		69	

* $P < .05$.
† $P < .001$.
χ^2 refers to the comparison between performance and recommendations among physicians with and without stated obstacle.

and 26% reported ≥3 obstacles. Those reporting ≥3 obstacles screened fewer patients (32%) than those reporting no obstacles (59%) ($\chi^2 = 20.6$, $P < .001$).

The most common obstacles and their association with performing examinations and recommending skin self-examination are delineated in Table 3. Most notably, 75% of the 115 physicians stating that time was *not* an obstacle screened their high-risk patients, compared with 52% of the 265 physicians who stated that time was an obstacle ($\chi^2 = 14.6$, $P < .001$). However, lack of time had less influence on prevention counseling recommendations. Although reported by only 15% of physicians, lack of training was associated with 17% to 20% fewer screenings and prevention recommendations among high-risk patients.

Sources for Cancer Screening and Prevention

'Standard-bearers' such as medical journals (82%), conferences (65%), and discussions with colleagues (48%) were the most common sources for information about cancer screening recommendations, far surpassing the Internet (16%). Likewise, skin cancer brochures (66%), posters (45%), and newsletters (40%) were far more commonly used than CD-ROMs (20%), videos (19%), and the Internet (16%). In general, a positive association was found between the number of information sources on skin cancer screening and the physician's likelihood of offering screening and prevention recommendations. Physicians reporting use of 2 or more sources to learn about cancer screening recommendations were significantly more likely to state that they were very confident in their ability to detect a suspicious lesion, compared with physicians who used less than 2 sources ($\chi^2 = 4.5$, $P < .05$).

In the regression analysis of factors influencing physician examination of high-risk patients, lack of time was the strongest barrier [OR 0.3 (95% CI, 0.2 to 0.6)]. Physicians using the most information sources [OR 2.5 (95% CI 1.3 to 4.8)] and expressing the most confidence in their ability to identify suspect lesions [OR 2.3 (95% CI 1.3 to 4.0)] were the most likely to screen their high-risk patients.

Discussion

Among a sample of physicians from all 50 states, we examined a broad range of skin cancer early detec-

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tion and prevention practices, including full-body skin exams and counseling for skin self-examination, sun protection, and tanning bed avoidance. We considered it especially important to examine these practices in light of key screening and prevention recommendations disseminated in 2000 and 2001.[14,15] Because the majority of melanomas occur in a relatively small portion of the population[16] possessing some or all the risk factors noted, we sought to focus our analysis on high-risk populations.

To the best of our knowledge, this is the first national study to examine physician practices concerning the 4 key measures of early skin cancer detection and prevention noted above. We are encouraged that 59% and 68% of physicians, respectively, examine and provide prevention counseling for their high-risk patients. However, 41% of physicians are not routinely examining their high-risk patients or instructing them in skin self-examination. Seventy percent of physicians cited lack of time as a key obstacle, and physicians citing this obstacle were far less likely to examine their high-risk patients. Although lack of reimbursement and training were also associated with less screening, they were infrequently cited as barriers. Physicians using multiple information sources for cancer education were substantially more likely to screen and counsel their patients on skin cancer detection and prevention. Furthermore, physicians were far more likely to prefer tangible, easy-to-use materials such as posters, brochures, and newsletters as information sources, rather than technologies such as CD-ROMS, the Internet, or videos.

Results of this study strongly suggest that new steps must be taken to ensure that high-risk patients receive at least a baseline, full-body skin cancer examination. Minimizing time burdens and providing more sources of information could significantly boost screening rates among physicians who are not routinely screening their high-risk patients.

Physicians can play one of 3 roles—they can screen their high-risk patients themselves, provide training opportunities for nurses and physician assistants to enable them to do screening, or refer these patients to specialists. Patients with many moles or some atypical moles found in a baseline examination can subsequently be followed by dermatologists.

Time burdens, although onerous, do not have to be insurmountable. First, screening examinations can be brief and woven into the routine physical examination, with particular emphasis on 'hard-to-see' areas such as the back, where at least a third of melanomas are found in men.[18] Second, recent reports from the United States Prevention Services Task Force and the Institute of Medicine highlight the need to develop systems for identifying older white males for skin cancer screening, because melanoma mortality continues to rise in this population.[14,15,19] Many middle-aged and older patients make 5 to 10 physician visits per year,[15] and skin cancer screening can be incorporated into only one of these visits. Screening prompts and chart reminders, successfully used in other health promotion counseling,[20] should be studied as ways to augment skin cancer screening. Triaging higher-risk patients into expert screening is yet another promising strategy to reduce the time burden on primary care physicians.[21]

Professional education campaigns can be bolstered and guided by other findings from this study. In the absence of a randomized trial providing evidence for or against the efficacy of skin cancer screening, we expected that conflicting guidelines for the skin cancer examination and prevention counseling would be strong impediments. We were surprised to find that fewer than 5% of physicians saw such a lack of evidence as an obstacle to performing a skin cancer examination or giving prevention counseling, and almost all respondents believed that the physician skin cancer examination was effective in reducing melanoma mortality. Furthermore, because no differences in the physician's state of residence influenced the delivery of skin cancer examinations or counseling, it would seem that national strategies cutting across all primary care specialties may be possible.

We were also encouraged by the physicians' strong recognition of the ABCD rule for melanoma detection, possibly because of the educational efforts of organizations such as the American Academy of Dermatology (http://www.aad.org), the American Cancer Society,[11] and The Skin Cancer Foundation (http://www.skincancer.org).

The results of this survey indicate that physicians who are personally screened for skin cancer have significantly higher rates of patient screening. We did not have information on the physicians' personal risk for skin cancer, and it is possible that

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those with higher melanoma risk are more apt to seek or receive personal screening and to offer screening to their patients.

Not surprisingly, greater examination rates were reported by physicians whose patients asked to be screened. This study reports important benchmark data on the percentage of patients making such a request and suggests that future public education efforts be designed to motivate high-risk patients to request skin cancer examinations from both primary care physicians and dermatologists.

Other Studies

In the current study, we defined the skin cancer examination as routine if it was performed on at least 76% of high-risk patients. In a survey of 191 primary care physicians in Connecticut and Florida, Kirsner et al[22] reported examination rates of 31% for average-risk patients and 50% for high-risk patients. As in the current study, Kirsner et al[22] found little evidence of reimbursement as an obstacle to examinations. Similar to the current study, nearly two thirds of Australian family physicians believe in the value of the skin cancer examination despite national guidelines opposing formal skin cancer screening.[23] The rates of nonphysician skin cancer examinations in this study were far lower than the rates of 22% to 29% for physician assistants and nurse practitioners found by Oliveria et al.[24]

In a survey of 3032 female nondermatologists and 95 dermatologists in 1994, Saraiya et al[25] found that 27% of nondermatologists counseled their typical patients on sunscreen or screened them for skin cancer at least once a year. They also found higher patient screening and counseling rates among physicians who reported having had a personal skin cancer examination.[25]

Limitations

Study results should be interpreted in light of several limitations. First, physicians may tend to overestimate prevention behavior, although the relatively low examination rates in high-risk patients slightly mitigates this bias. However, future studies should consider validation of self-reports, such as with patient interviews. Second, 40% of eligible physicians did not respond to multiple attempts to reach them, and their screening rates may be lower than those of the respondents. Third, we did not include a full battery of questions regarding predictors of skin cancer examinations, such as office-based prompts or intake forms. Finally, we did not include questions on other cancer screenings that might have been used for comparisons with skin cancer examination rates.

Conclusions

This national survey of primary care physicians finds that nearly 60% of physicians are performing examinations on their high-risk patients. A dual strategy is required to maximize the use of skin cancer examinations and prevention counseling for the nation's high-risk population: concerted professional and public education efforts to help physicians weave the skin cancer examination and counseling into routine practice efficiently and motivation of high-risk patients to request full-body examinations and counseling.

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