

Melanoma Screening Behavior Among Primary Care Physicians

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The incidence of malignant melanoma is rising concomitantly with dramatic changes in our healthcare system. Primary care physicians (PCPs) are responsible for an increasing number of skin-related healthcare visits. Therefore, PCPs must be on the forefront of early detection of suspicious pigmented lesions. Understanding the PCPs' screening and referral patterns for pigmented lesions is the first step in ensuring that atypical pigmented lesions will be properly evaluated within the confines of the present healthcare system.

To develop a better understanding of how PCPs (internists, family practitioners, and pediatricians) manage pigmented lesions in their practice, we mailed a 28-question survey to 999 PCPs in Connecticut. Fewer than half of the 248 respondents indicated they "often" performed full skin examinations. However, when suspicious lesions were found, most PCPs referred patients to a dermatologist for a biopsy of the lesion. PCPs did not feel pressure from managed care companies to limit these referrals. However, many PCPs did not feel highly confident in their ability to recognize melanoma and thought their training was not adequate to prepare them to diagnose and manage pigmented lesions. Family practitioners were more likely than internists and pediatricians to manage suspicious pigmented lesions and to perform a biopsy on their own. Family practitioners also were more confident in performing these tasks and were more likely to think their training in these areas was adequate. Very few PCPs reported sending their biopsy

specimens to a dermatopathology laboratory. In fact, many PCPs seemed unaware of who interpreted the histopathology.

PCPs do not emphasize full skin examinations in their practice and seem unaware of the advantages inherent in using dermatopathologists in the histopathologic interpretation of pigmented lesions. Furthermore, lack of confidence on the part of PCPs, as well as their concern about adequate training in the management of pigmented lesions, suggest there is need for improvement in the education of primary care residents and physicians.

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Over the past 20 years, there has been a dramatic rise in the incidence of malignant melanoma (MM). Approximately 53,600 new cases were projected to occur in the United States in the year 2002.¹ This reflects a 21% increase in incidence from 1999.² An individual born in 2001 has an estimated risk of 1 in 71 for developing an MM during his or her lifetime.¹

Interestingly, this anticipated rise in MM incidence is occurring concomitantly with one of the largest economic healthcare delivery revolutions in modern history. Managed care companies and health maintenance organizations in the 21st century are rapidly changing the way dermatologic care is delivered. Primary care physicians (PCPs) are now responsible for an increasing number of skin-related healthcare visits. PCPs currently manage 39% of all skin-related outpatient medical visits,³ and many gatekeeper managed care systems were designed to minimize the number of referrals made to dermatologists. Despite concerns regarding the appropriateness of the gatekeeper model for dermatologic disease,³ the primary care setting is believed by some to be the ideal venue for addressing skin cancer prevention.⁴ With this in mind, it is important to understand the behavior of PCPs in the diagnosis and management of pigmented lesions, particularly MM. Furthermore, because dermatologists play a pivotal role in the evaluation

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Table 1.

Frequency of Performing Full Skin Examinations*

Reported Frequency	Internists, n (%) n=45	Family Practitioners, n (%) n=87	Pediatricians, n (%) n=92
Often [†]	17 (38)	38 (44)	56 (61)
Occasionally	21 (47)	37 (43)	26 (28)
Rarely/never	7 (16)	12 (14)	10 (11)

*Not all physicians who returned the survey completed this question.

[†] $P=.074$.

of pigmented lesions, an understanding of how PCPs approach, screen, and refer pigmented lesions is essential to developing an interdisciplinary relationship that will foster high-quality patient care.

Little is known about the management of patients with MM and other pigmented lesions in the primary care setting. The objective of our study was to develop a better understanding of how internists, family practitioners, and pediatricians screen for and manage pigmented lesions in their practices. In addition, we attempted to evaluate the relationship between the degree of physicians' training in dermatology and their level of confidence regarding the diagnosis and management of pigmented lesions.

Methods

A random sample of PCPs was obtained from the membership files of the Connecticut State Medical Society. A 28-question survey was mailed to 333 members of each of the following PCP specialties: internists, family practitioners, and pediatricians. Physicians were asked to provide anonymous information about their medical specialty, type of practice, year of graduation from medical school, and association with a teaching hospital. Compiled data included the number of pigmented lesions encountered in a given period, referral patterns, decisions to perform a biopsy, use of pathology or dermatopathology laboratories, managed care constraints, specific training in dermatology, and self-reported confidence levels.

Survey data were processed using the Teleform Reader software program (<http://www.verity.com>). Associations between variables were evaluated using either the χ^2 test or the Fisher exact test.

Mean length of time in practice was compared across specialty types using a one-way analysis of variance and the least significant difference test multiple comparison procedure. All data analyses were carried out using SPSS predictive analytics (<http://www.spss.com>).

Results

Demographics—Of the 999 surveys, 248 were returned (25% response rate). Respondents consisted of 47 internists, 92 family practitioners, and 99 pediatricians. Ten percent of physicians reported rural practice locations, while 26% and 40% described urban and suburban locales, respectively; 24% did not respond. A total of 73% of physicians worked in private practice, and 14% were affiliated with universities or academic institutions; 13% did not respond.

Behavior Patterns—In response to questions about screening behavior, 48% (119/247) of physicians reported that they often performed full skin examinations. Within groups, 38% (17/45) of internists, 44% (38/87) of family practitioners, and 61% (56/92) of pediatricians reported that they often performed full skin examinations ($P=.074$)(Table 1).

When considering the management of suspicious pigmented lesions, 76% (177/233) of physicians surveyed reported that they usually referred patients elsewhere to undergo a biopsy. The remainder of physicians stated they performed the surgical procedure themselves. Only 9% (4/44) of internists and 0% (0/91) of pediatricians performed their own biopsies, while 57% (50/87) of family practitioners selected this as their "usual" management option. When asked about type of referral, 82% of physicians reported sending patients with

Table 2.

Most Likely Types of Referral for Management of Suspicious Pigmented Lesions*

	Internists, n (%) n=46	Family Practitioners, n (%) n=101	Pediatricians, n (%) n=96
Dermatologists	39 (85)	69 (68)	91 (95)
Plastic surgeons	2 (4)	20 (20)	3 (3)
Surgeons	5 (11)	11 (11)	1 (1)
Do not refer	0 (0)	1 (1)	0 (0)
Other	0 (0)	0 (0)	1 (1)

*Not all physicians who returned the survey completed this question.

suspicious pigmented lesions to dermatologists compared with 10% who sent patients to plastic surgeons and 7% who sent them to general surgeons (Table 2). When queried about management of biopsy specimens, only a small percentage of respondents (15%; 17/111) indicated that they sent tissue samples specifically to dermatopathology laboratories.

In all, 97% of respondents reported that they did not feel pressure from managed care companies regarding evaluation and management of pigmented lesions. More specifically, over the past 3 years, 88% of PCPs reported that they have not felt pressure from managed care companies to reduce their number of referrals of suspicious pigmented lesions.

Confidence Level—In all, 48% (114/239) of physicians surveyed reported a moderate level of confidence in managing pigmented lesions; only 3% (7/239) reported they were highly confident. Again, family practitioners had the highest confidence level of the 3 groups ($P<.001$)(Table 3).

A total of 43% (103/238) of physicians surveyed reported a moderate level of confidence in recognizing MM; only 4% (9/238) reported they were highly confident. Overall, family practitioners reportedly felt more confident in recognizing this condition than internists and pediatricians ($P<.001$)(Table 3).

Education—Survey results were mixed regarding the adequacy of physician training in dermatology (Table 4). A total of 36% (16/44) of internists and 11% (10/91) of pediatricians reported one month or more of training in dermatology during their

residency compared with 65% (55/85) of family practitioners ($P<.001$). Only 33% (13/39) of internists and 31% (28/90) of pediatricians reported that they believed their medical school and residency training adequately prepared them for the diagnosis and management of suspicious pigmented lesions compared with 77% (64/83) of family practitioners. χ^2 tests analyzing physician training in dermatology and their level of confidence suggest that those who received more training during their residency may be more confident in their management of pigmented lesions ($P<.001$). Furthermore, those who believed their training was adequate reported significantly higher levels of confidence ($P<.001$ by the Fisher exact test) in their management of pigmented lesions.

Comment

Behavior Patterns—Ultimately, patient survival is contingent on the stage at which MM is diagnosed.⁵ Healthcare providers discover approximately 26% of all melanomas.⁶ Evidence suggests that when physicians diagnose MM, they often detect it at an earlier stage.⁷ The importance of early detection cannot be overemphasized. Because skin cancer screening of the entire US population by dermatologists is not feasible,⁴ PCPs often provide many patients with their first or only contact in the healthcare system; therefore, PCPs are in a unique position to provide this valuable and potentially life-saving service for a large number of patients. A study by Weinstock et al⁴ showed that most patients diagnosed with MM had been seen

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Table 3.

Confidence in Recognizing All Pigmented Lesions and Melanoma*

Confidence Level	All Pigmented Lesions [†]			Melanoma [†]		
	Internists, n (%) n=43	Family Practitioners, n (%) n=89	Pediatricians, n (%) n=94	Internists, n (%) n=44	Family Practitioners, n (%) n=88	Pediatricians, n (%) n=94
Not confident	4 (9)	0 (0)	1 (1)	5 (11)	1 (1)	10 (11%)
↓	6 (14)	5 (6)	17 (18)	5 (11)	6 (7)	26 (28%)
Moderately confident	25 (58)	36 (40)	46 (49)	18 (41)	35 (40)	42 (45%)
↓	8 (19)	45 (51)	27 (29)	15 (34)	40 (45)	15 (16%)
Highly confident	0 (0)	3 (3)	2 (2)	1 (2)	6 (7)	0 (0%)

*Not all physicians who returned the survey completed this question.

[†] $P < .001$.

by their PCP within a year prior to their diagnosis. Consequently, a better understanding of the screening behavior patterns of PCPs is important.

PCPs may not be routinely performing full skin examinations on their patients.⁸ Kirsner et al⁹ report that only 31% of PCPs perform full skin examinations on all of their adult patients. Another study by Feldman et al¹⁰ suggests that family and general practitioners perform skin examinations on only 27% of high-risk patients and on 8.9% of all patients during a given office visit. Pediatricians report an even lower rate, with only 6.7% of children receiving skin examinations during a given office visit.¹⁰ Our results indicate that slightly less than half of all patients (48%) receive full skin examinations by their PCPs. This suggests a somewhat more favorable situation compared with the studies mentioned previously.^{9,10} Many dermatologists would argue that, optimally, all patients should have a full skin examination during routine health maintenance visits. However, it remains unclear whether this would actually decrease morbidity and/or mortality; what's more, the question of how to best screen for MM remains unresolved. Patient outcome studies and screening cost-effectiveness data are needed to supplement the preliminary supporting literature.^{11,12}

When examining screening behavior patterns of PCPs, the majority (76%) are referring patients with suspicious pigmented lesions. Of these referrals, 82% are sent to dermatologists. Additionally, almost all respondents stated they did not feel pressure to reduce their number of referrals of suspicious pigmented lesions based on managed care constraints.

In our study, a disproportionate number of family practitioners (57%) are managing pigmented lesions on their own compared with internists and pediatricians. Some studies demonstrate that family practitioners outperform internists in diagnostic accuracy with respect to skin cancer.⁷

Our results also revealed that relatively few PCPs (17/111) report sending their biopsy specimens to dermatopathology laboratories for histologic diagnosis; however, there is evidence to suggest that when referring physicians have a relationship with a dermatopathologist, the quality of interpretation of biopsy specimens is superior to that of an anonymous general pathology laboratory.^{13,14} PCPs did not seem to be aware of the importance of utilizing known dermatopathologists for the interpretation of pigmented lesion biopsy specimens. In fact, many respondents failed to answer this question, perhaps suggesting that PCPs

Table 4.

Training in Dermatology and Reported Adequacy in Managing Pigmented Lesions*

Training Time	Internists, n (%)	Family Practitioners, n (%)	Pediatricians, n (%)
>1 wk in medical school	23/44 (52)	52/84 (62)	36/90 (40)
≥1 mo in residency [†]	16/44 (36)	55/85 (65)	10/91 (11)
Believed training adequate	13/39 (33)	64/83 (77)	28/90 (31)

*Not all physicians who returned the survey completed this question.

[†] $P < .001$.

may not appreciate the potential importance of this aspect of patient care.

Confidence Level—It appears that PCPs' confidence in diagnosis may be the most significant influence on their management of pigmented lesions. One study has already shown that many physicians in Canada report a paucity of knowledge about skin cancer, as well as a lack of confidence in their ability to detect MM.¹⁵ In the United States, Kirsner et al⁹ found that almost half of all PCPs cite lack of diagnostic confidence as a primary deterrent to screening for skin cancer.

The results of our study suggest that most PCPs in Connecticut rate their confidence level with respect to management of suspicious pigmented lesions at or just above the range of moderately confident. Findings specific for MM were similar (Table 3). This data is similar to those of Brochez et al,¹⁶ who found that 51% of general practitioners in Belgium rated their diagnostic ability as moderate, 26% as good, and 3% as excellent. Our findings were similar, with only 3% (7/239) of all PCPs stating they were highly confident in their management of pigmented lesions.

Interestingly, family practitioners clearly demonstrate a higher level of confidence in their management of pigmented lesions compared with their counterparts in internal medicine and pediatrics. It is unclear whether or not this difference is a result of increased time spent learning dermatology or some other mechanism inherent in their training. It also is unclear whether family practitioners are actually superior diagnosticians with respect to skin lesions. Previous reports questioning the diagnostic skills of family practitioners compared with dermatologists in the diagnosis of skin lesions¹⁷⁻¹⁹ raise the question of how confidence relates to quality of care.

Education—Kirsner et al²⁰ found that among 84 internists in Connecticut and Florida, 60.4% reported receiving less than one month of training in dermatology prior to entering a practice. Not surprisingly, these same study participants rated their own skills in dermatology as only mediocre (2.6 on a scale from 1–5). These results are comparable to our findings that 64% of internists report less than one month of residency training in dermatology. Moreover, the quality and intensity of this training was not addressed.

It is clear from Table 4 that family practitioners in Connecticut report receiving more training in dermatology during residency compared with internists and pediatricians. This survey cannot measure whether or not education directly affects the diagnostic and management behavior of PCPs and/or their confidence level, but our initial data suggests that there is a significant relationship. Of note is that only 11% of pediatricians report receiving one month or more of training in dermatology during their residency and only one third of internists and pediatricians believe their training in dermatology was adequate. If early detection remains the best way to decrease MM mortality rates, then improvement in the education of PCPs might be one way to alter the course of this disease.

Skills and Quality of Care—Several studies suggest that PCPs have difficulty recognizing common dermatoses (including pigmented lesions) when presented with slides and kodachrome color transparencies.^{19,21-23} Similar findings were reported in a study involving real patients in a primary care setting.²⁴ Of particular interest is a study by Cassileth et al,²⁵ who found that PCPs have difficulty recognizing MM. Furthermore, McCarthy et al²⁶ concluded that PCPs do not receive sufficient education to

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manage a variety of dermatologic disorders when compared with dermatologists.

Our study did not attempt to examine actual skill levels with respect to the management of pigmented lesions. Outcome studies would need to be conducted to evaluate whether or not patients are being appropriately managed in the primary care setting. As incidence rates for MM continue to rise and managed care increases its stronghold on modern medicine, an understanding of the behavior of PCPs regarding their diagnosis and management of pigmented lesions is an essential first step in the evaluation of quality of care.

Of course, as in all questionnaire-type studies, there is no feasible way to prove that questionnaire responders accurately represented the population of PCPs as a whole. Of note is that only 47 of 333 internists surveyed sent in a response. However, there is no practical way to assess a large enough number of nonresponders while maintaining anonymity and working within the time constraints of busy practitioners. Nevertheless, a 25% response rate from an anonymous mailing study methodology is considered average and reasonable by the biostatisticians at our institution. Concordance between our data and those of previous studies mentioned here argues in favor of the validity of our findings.

The utility of subjective ratings of confidence also is of concern, though it is not a major focus of this study. Brochez et al¹⁶ recently used the words *insufficient*, *moderate*, *good*, and *excellent* to quantify "self-evaluation of diagnostic ability" with respect to pigmented lesions in a study comparing general practitioners with dermatologists in Belgium. We also believe that subjective measures of confidence are worthwhile to examine, even though they may not translate directly into improved quality of care. A reasonable goal in any healthcare system is for doctors to feel confident performing the tasks required of them.

Although 50% of melanomas are self-discovered, more than 25% are found by medical personnel. Because only 13% of Americans have a dermatologist, it is not surprising that only 3% of melanomas are detected by dermatologists.⁶ Increased public awareness, enhanced education of PCPs, and a better understanding and communication between dermatologists and PCPs regarding the management of pigmented lesions all seem to be reasonable and logical means to improve early detection of MM.

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