

Are Primary Care Residents Trained to Perform Skin Cancer Examinations?

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INTRODUCTION

Skin cancer remains the most common cancer in the United States (US), with incidence of both nonmelanoma skin cancers and malignant melanoma rising.¹ Visual skin cancer examination (SCE) screening rates remain among the lowest for any detectable cancer.² Lack of training has been identified as a barrier in the performance of SCE.³ We evaluated the level of skin cancer education in primary care residency programs with a survey instrument used by Wise et al. in 2009, which showed infrequent training in SCE.⁴ We chose to assess the impact of Wise's study on current residency education and define possible variations in skills and training based on differences in residency programs. Our study evaluated smaller and less urban residency programs since rural areas have lower population densities of dermatologists and higher melanoma mortality rates.⁵

METHODS

Survey Administration

We invited 25 Internal Medicine (IM) and 22 Family Medicine (FM) Michigan residency programs deemed smaller and less urban than the four programs used by Wise et al.⁴ Eight programs (5 IM and 3 FM) participated in 2016. The anonymous surveys were given exemption status by the institutional review board at the corresponding author's institution.

Survey Instrument Measure and Analysis

We refined and adapted the survey employed by Wise, et al.⁴ This survey was chosen due to prior validation and

implementation.⁴ Survey items asked residents to rate their current skill level for performing SCE using a Likert-type scale: A—very or somewhat unskilled; B—neither skilled nor unskilled; and C—somewhat or very skilled. A frequency table (Table 1) summarizes the response distributions for each survey question, overall and separately for family medicine and internal medicine residents. Statistically significant differences between family and internal medicine residents were identified using chi-square test or Fisher's exact test. *P* values were adjusted for multiple comparisons using Holm's method. Unadjusted odds ratios and 95% confidence intervals from logistic regressions are also reported comparing responses of very or somewhat skilled to the other two possible responses for each survey item (Table 2). All analyses were performed in R 3.4.2.

RESULTS

We recruited 144 out of 238 IM and FM residents for a participation rate of 60.5%. Table 1 summarizes univariate responses to questions regarding training in dermatology and SCE for FM and IM residents. Notably, FM residents were much more likely to perform SCE as well as ask about mole changes and ABCDE of melanoma compared to the IM residents. Self-perceived skill in SCE correlated with dermatology education in medical school or residency, supervision from a dermatologist, and observation of SCE in residency. Discussion of both mole changes and ABCDE of melanoma also correlated with self-perceived SCE skill level. In the logistic regression analysis (Table 2), the strongest predictor for self-reporting somewhat or very skilled performing SCE was having a dermatology elective in medical school or residency.

DISCUSSION

Training on SCE in US primary care residency programs remains inadequate with minimal improvement since the

Table 1 Descriptive Statistics by Practice Type

Variables		N (%)			P value
		FM	IM	Total	
Dermatology elective in medical school or residency					> 0.999
	Yes	12 (35.3)	35 (31.8)	47 (32.6)	
	No	22 (64.7)	75 (68.2)	97 (67.4)	
Skin cancer examination in medical school or residency					> 0.999
	Yes	21 (61.8)	69 (62.7)	90 (62.5)	
	No	13 (38.2)	41 (37.3)	54 (37.5)	
Hours spent under supervision of dermatologist					> 0.999
	None	20 (58.8)	70 (63.6)	90 (62.5)	
	1-3	3 (8.8)	9 (8.2)	12 (8.3)	
	4-10	2 (5.9)	7 (6.4)	9 (6.3)	
	> 10	9 (26.4)	24 (21.8)	33 (22.9)	
Times during residency observing skin cancer examination					> 0.999
	None	16 (47.1)	47 (45.6)	63 (46.0)	
	1-3	11 (32.4)	38 (36.9)	49 (35.8)	
	4-10	4 (11.8)	10 (9.7)	14 (10.2)	
	> 10	3 (8.8)	8 (7.8)	11 (8.0)	
Number of adult patients for whom SCE was performed during residency					0.001
	None	6 (17.6)	59 (57.8)	65 (47.8)	
	1-3	15 (44.1)	23 (22.5)	38 (27.9)	
	4-10	5 (14.7)	13 (12.7)	18 (13.2)	
	>10	8 (23.5)	7 (6.9)	15 (11.0)	
Self-assessed level of performing SCE					> 0.999
	Very or somewhat unskilled	12 (35.3)	39 (38.32)	51 (37.5)	
	Neither skilled or unskilled	16 (47.1)	54 (52.9)	70 (51.5)	
	Somewhat or very skilled	6 (17.6)	9 (8.8)	15 (11.0)	
Routinely examines skin in patients					> 0.999
	Never	5 (14.7)	20 (18.5)	25 (17.6)	
	Sometimes	22 (64.7)	67 (62.0)	89 (62.7)	
	Often	6 (17.6)	17 (15.7)	23 (16.2)	
	Always	1 (2.9)	4 (3.7)	5 (3.5)	
ABCDE of melanoma with patients					0.028
	Never	8 (23.5)	33 (30.6)	41 (28.9)	
	Sometimes	15 (44.1)	66 (61.1)	81 (57.0)	
	Often	9 (26.5)	5 (4.6)	14 (9.9)	
	Always	2 (5.9)	4 (3.7)	6 (4.2)	
Includes changes in moles or skin lesions in the review of systems					0.019
	Never	8 (25.0)	37 (33.6)	45 (44.4)	
	Sometimes	11 (34.4)	61 (55.5)	72 (50.7)	
	Often	8 (25.0)	7 (6.4)	15 (10.6)	
	Always	5 (15.6)	5 (4.5)	10 (7.0)	
PGY year					> 0.999
	I	16 (47.1)	44 (43.6)	60 (44.4)	
	II	11 (32.4)	27 (26.7)	38 (28.1)	
	III	7 (20.6)	25 (24.8)	32 (23.7)	
	IV	0 (0)	5 (5.0)	5 (3.7)	

P values from chi-square and Fisher's exact tests adjusted using Holm's method

2009 study performed by Wise, et al. Despite limitations of the small sample size, we identified statistically significant predictors of self-perceived SCE skills and some differences between FM and IM residents. Finding a correlation between dermatology education or supervision and self-perceived skill in SCE provides support for curriculum reform. To our knowledge, the association between self-reported skill level of residents and having a discussion with patients about either mole changes or ABCDE of melanoma has not been reported elsewhere.

The concept of physician education leading to improved melanoma detection has been established. A recent quality-improvement project showed primary care physicians (PCP) who received a 90-min internet training session, diagnosed 79% (95% CI 15–138%) more melanoma cases, which were also thinner in Breslow depth, compared to the PCP group who did not receive this education.⁶ The success of this program should interest primary care residency program directors in curriculum reform. Differences in FM and IM residents we surveyed should further challenge IM residency

Table 2 Residents' Self-reported Skill Level for the Skin Cancer Examination Relative to Covariates

Variable	OR (95% CI)
Dermatology elective in medical school or residency	2.67 (1.24–6.12)
Skin cancer examination in medical school or residency	1.09 (0.53–2.23)
Hours spent under supervision of dermatologist	1.50 (1.12–2.08)
Times during residency observing skin cancer examination	1.44 (0.97–2.22)
Routinely examine skin in patients	1.66 (0.97–2.98)
Number of adult patients given SCE during residency	1.72 (1.18–2.62)
Discuss ABCDE of melanoma with patients	1.92 (1.15–3.38)
Include changes in moles or skin lesions in review of systems	1.72 (1.1–2.82)
More likely to ask about moles and examine patient's skin	0.68 (0.15–2.68)
Level of training	0.95 (0.64–1.41)

Odds ratios from logistic regressions are reported comparing responses of "Somewhat or Very Skilled" to "Very and Somewhat Unskilled" and "Neither Skilled nor Unskilled" for each survey item. The odds ratios are unadjusted (that is, each odds ratio is calculated without including any covariates in the logistic regression model), as the survey did not collect demographic information

program directors to consider revision. Despite the current US Preventative Services Task Force recommendations, stating the body of evidence is insufficient for screening

asymptomatic individuals to reduce melanoma mortality, we highlight the importance of students and residents to become better educated in identifying both patients and skin lesions at high risk for cancer.

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Compliance with Ethical Standards:

Conflict of Interest: The authors declare that they do not have a conflict of interest.

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