

## RESEARCH LETTERS

### Evaluation of Medical Students' Knowledge, Attitudes, and Personal Practices of Sun Protection and Skin Self-examination

Patients with premalignant and malignant skin lesions are often under the care of nondermatologists, which suggests that physicians and medical students need to have the clinical skills to diagnose early-stage skin cancer and provide sun protection counseling. Physicians are more likely to "preach what they practice,"<sup>1</sup> and sun protection and skin examination behaviors among physicians are no exception.<sup>2</sup> We investigated the knowledge, attitudes, and personal practices regarding sun protection and skin self-examination (SSE) among the classes of 2003 and 2005 at Boston University School of Medicine. In all, 137 of the 150 students in the class of 2005 and 101 of the 150 students in the class of 2003 completed the survey. The primary outcomes were practices regarding sporadic use of sun protection during the summer of 2002 (defined as never, rarely, or sometimes), history of recent sunburns (at least 1 sunburn during the past summer), and practice of the SSE.

Of the 238 students who participated in this study, 62% were male. Forty-seven percent of students had very fair or fair skin, 36% had olive skin, and 17% had dark or very dark skin. Thirteen percent of students reported having a family history of skin cancer, and 19% reported having at least 6 moles on their body.

Overall, 59% of students used sunscreen only sporadically, 45% had received a sunburn during the past summer, and 43% had never performed an SSE. Sporadic sunscreen use was more commonly reported by male students than female students (65% vs 51%) (odds ratio, 1.78; 95% confidence interval, 1.04-3.05). Second-year students were less likely than fourth-year students to have performed an SSE (52% vs 30%; odds ratio, 2.55; 95% confidence interval, 1.48-4.40). Of the 2 classes combined, 78% of students valued tanned skin (very dark, bronze, or light brown suntan, or a little color from the sun), 58% enjoyed the sun and did not want to limit their exposure, and 44% tried to get a tan while out in the sun. Knowledge was strongest among fourth-year students who graduated in the class of 2003. These students were more likely to know that basal cell carcinoma was not the most dangerous type of skin cancer (88% vs 56%) and that melanoma most commonly occurs on the back in men (70% vs 42%) and on the legs in women (44% vs 16%).

To our knowledge, this is the first published study to evaluate US medical students' knowledge, attitudes, and

personal practices of sun protection and SSE. Strong pro-tanning attitudes, suboptimal sun protection, and SSE practices may be attributed to a number of factors. Prevention practices are likely rooted in habits that were formed well before students began medical school, at a time when they lacked significant knowledge about skin cancer and were exposed to peer pressures that promoted having a tan. In addition, the influence of the media and the cultural appeal for a "healthy tan" has most likely superseded the education and exposure students have to skin cancer education.<sup>3</sup>

Improving rates of SSE among students is a laudable goal because melanoma is one of the most common cancers among young adults, and a single study<sup>4</sup> has shown that performance of SSE significantly decreases melanoma incidence and the development of advanced disease. In this study, fourth-year students, compared with second-year students, possessed greater knowledge of skin cancer and performed more frequent SSEs. These improvements can be attributed to increased time for student exposure to both didactics and workshops on recognition of skin cancer.<sup>5</sup>

These findings are important for a few reasons. First, medical students take personal risks by not practicing effective sun protection. Second, medical students are the health care models of the future who will be clinically diagnosing, educating, and counseling their patients about sun protection and the importance of the SSE.

The present data suggest that medical students have suboptimal sun protection and SSE practices. This study also demonstrates that modest educational interventions between the second and fourth years of medical school can increase future physicians' knowledge and practices in regard to the SSE. However, stemming the tide of the skin cancer epidemic will require a multifaceted approach to educate both the medical profession and their patients.

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## Improving Skin Cancer Prevention and Detection Education in US Medical Schools

Early detection and excision of skin cancers has the potential to significantly improve health outcomes.<sup>1,2</sup> Unfortunately, few primary care physicians perform skin cancer screening routinely. Inadequate training and low confidence in their ability to recognize skin cancer are potential barriers.<sup>3</sup> Educating all physicians regarding skin cancer detection and prevention could have a profound public health impact; however, most medical students graduate without ever performing a skin cancer examination.<sup>4</sup>

This study describes current instruction about skin cancer obtained in discussion groups conducted in 2004 with medical students at Boston University School of Medicine, Boston, Mass; Harvard Medical School, Bos-

ton; Brown Medical School, Providence, RI; University of Massachusetts Medical School, Worcester; and Dartmouth Medical School, Hanover, NH. The chairs of dermatology at each of the 5 New England schools identified a faculty person primarily responsible for medical student dermatology education. Each educator enlisted a medical student to coordinate the student discussion group. The student coordinator was asked to recruit primarily second-, third-, and fourth-year students, including students interested in pursuing a career in dermatology, student leaders, and students not interested in pursuing a career in dermatology. The coordinator led the discussion group at each school.

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A total of 24 students participated in the 5 discussion groups (**Table 1**). Of these, 1 (4%) was in year 1, 7 (29%) were in year 2, 13 (54%) were in year 3, and 3 (13%) were in year 4; 17 (71%) were women, with a mean age of 26 years. At least 1 student not interested in pursuing a career in dermatology participated in each discussion group.

Only school D required clinic time with a dermatologist, for up to 4 half-days during the internal medicine clerkship (**Table 2**). All schools had a 4-week clinical

**Table 1. School and Focus Group Characteristics**

School	Approximate Class Size*	No. of Students in Focus Group	Average Age of Participating Students, y	Percentage of Females in Focus Group	Class Year Distribution of Focus Group, Year (%)
A	155	3	26	100	Second (33) Third (66)
B	65	7	25	71	Second (14) Third (71) Fourth (14)
C	78	4	26	75	First (25) Second (75)†
D	165	6	26	83	Second (33) Third (33) Fourth (33)
E	100	4	26	25	Third (100)

\*Per Association of American Medical Colleges' applicant matriculant file, 2003.<sup>5</sup>

†Communicated with 3 third- and fourth-year students via e-mail.

**Table 2. Current Skin Cancer Education at Participating Schools**

School	Lecture(s) During Preclinical Years	Problem-Based Learning	Live Patient Session(s)	Physical Examination Skills Course		Clinic Time With Dermatologist During Required Clerkships	Formal Lecture(s) During Clinical Years	Clinical Skills Examination
				Didactic Lecture	Demonstration and Practice of Skin Examination			
A	X							
B	X	X*		X†		X‡	X	
C	X	X	X§				X	
D	X		X§	X	X¶	X	X	X
E	X		X§	X	X			

\*Topic of case varies annually and may be skin cancer related.

†New to curriculum in past 1 to 2 years.

‡Elective opportunity during required internal medicine clerkship at certain sites.

§Diagnoses of patients vary each year and may include some patients with skin cancer.

||Half-day review of dermatology during a module between clerkships during third year.

¶Experience varies by course site.