Despite the potentially increased skin cancer proportion of ever using a tanning bed, yet the rate is still high compared with state-wide statistics on skin cancer screening.

For most skin cancer screening and sun protection practices, firefighters with a history of skin cancer had higher rates of adherence than firefighters without a history of skin cancer. This firefighter sample showed a higher rate of skin checks compared with state-wide statistics on skin cancer screening. Despite the potentially increased skin cancer risk, skin cancer screening and sun protection habits could be improved for firefighters with and without skin cancer diagnoses. Future research is warranted to further investigate skin cancer risk and mortality among firefighters and to identify occupational hazards associated with this excess risk.

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aid of a ruler has not been previously described. This study seeks to determine the accuracy with which medical students, internal medicine residents, and dermatology residents, fellows, and faculty can estimate the diameter of skin lesions in clinical photographs.

**Methods** Study participants included medical students; internal medicine residents; and dermatology residents, fellows, and faculty at Northwestern University Feinberg School of Medicine. Survey response implied informed consent for inclusion in the study, and study approval was obtained from the Northwestern University institutional review board. Survey data was collected anonymously using online Research Electronic Data Capture surveys (Vanderbilt) and paper surveys from August 4 to August 27, 2017. Participants responded to a survey on their use of rulers in the clinic and their confidence in size estimation of skin lesions, and then selected the diameter of 12 lesions in clinical photographs as follows: 4 lesions that included a ruler in the image, 4 lesions that included an anatomic landmark, and 4 lesions that included neither a ruler nor landmark (Figure).

All statistical analyses were performed in R 3.4.1 (R Foundation). The Kruskal-Wallis test was performed to assess group differences between medical students, internal medicine residents, and dermatology residents, fellows, and faculty for 3 sets of images with post hoc pairwise comparisons conducted with the Dunn test for multiple comparisons (Table). Post hoc analysis used the Bonferroni correction and set significance at \( P = .05 \).

**Results** The dermatology cohort was more likely to carry rulers and measure suspicious lesions in clinic compared with the internal medicine and medical student cohorts (Table). Initial confidence in estimating lesion diameter prior to the test was similar among the 3 groups with mean Likert scale values of 2.7, 3.1, and 3.9 for the medical student, internal medicine resident, and dermatology participants, respectively.

For images that included a ruler, 39 medical students estimated the diameter of 107 of 156 lesions (69%) correctly within 1 mm; 27 internal medicine residents 79 of 108 lesions (73%); and 12 dermatology participants, 34 of 48 lesions (71%). There was no statistically significant difference among groups \( (P = .73) \). For images with an anatomic landmark, medical students scored 71 of 156 lesions (46%) correctly within 1 mm; internal medicine, 55 of 108 lesions (51%); and dermatology, 23 of 48 lesions (48%); there was no significant difference among groups \( (P = .82) \). For images with no ruler and no anatomic landmark, medical students scored 36 of 156 lesions (23%) correctly; internal medicine 20 of 108 lesions (19%); and dermatology, 25 of 48 lesions (52%), and there was statistical significance between groups \( (P = .003) \) (Table). Pairwise post hoc analysis shows a significant difference between the dermatol-
ogy cohort and internal medicine cohort (P = .003) and between dermatology and student cohorts (P = .02). After receiving the correct responses, participants indicated that they were more likely to measure suspicious lesions with a ruler, with mean (SD) Likert scale score of 3.8 (0.9) (P = .04).

Discussion | All participants in this study were most accurate in assessing diameter in images with a ruler, and most participants were accurate estimating the diameter in images with an anatomic landmark and no ruler. The dermatology cohort was most accurate in assessing diameter in images with no landmark and no ruler but only estimated 52% of lesions correctly within 1 mm. Prior studies have investigated the ability of general practitioners and dermatologists to assess and triage pigmented lesions using photographs that did not include a ruler, but that we know of, this is the first to evaluate estimation accuracy of providers for skin lesions.

The ABCDEs have become a well-established grading system for the evaluation of suspicious skin lesions. The diameter criterion of 6 mm for pigmented lesions is a clinically useful guideline to assess for malignant potential, and assessing diameter is crucial for both dermatologists and nondermatologists to appropriately triage lesions. Furthermore, accurate size estimation also underpins the clinician’s ability to accurately assess lesion evolution. This study shows that an accurate clinical assessment of lesion size requires the use of a ruler for all physicians, including dermatologists, and that by simply increasing physician awareness of this potential pitfall is sufficient to compel change.

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Administrative, technical, or material support: Choi, Jacob, Robinson.

Study supervision: Choi, Robinson.

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OBSERVATION

Noninvasive Gene Expression Testing in Amelanotic Melanoma

Not missing melanomas in daily practice keeps dermatologists up at night and is a challenge even for dermatologists who see pigmented lesion cases regularly. Ferris et al describe the utility of a noninvasive gene expression test capable of differentiating primary melanomas from nonmelanoma pigmented skin lesions. However, neither the article by Ferris et al nor the underlying validation study by Gerami et al describe scenarios where the LINC00518 and PRAME gene expression test, termed pigmented lesion assay by the authors, is used in even more difficult cases to diagnose amelanotic melanomas.

Report of a Case | A woman in her 20s with a family history of melanoma presented with a 10 × 11-mm pink papule close to her medial right ankle (Figure). She had no clear recollection of how long the lesion had been present or if it had changed. A suggested surgical biopsy was refused, but the patient agreed to a noninvasive adhesive patch biopsy and gene expression testing. This test revealed detectable levels of LINC00518 consistent with the gene expression observed in melanoma. The test’s second target gene, PRAME, was not detected.

After being informed that the detection of 1 or both of these target genes was consistent with melanoma, the patient agreed to undergo a shave biopsy to confirm the diagnosis and provide information on desirable excision margins. Histopathologic analysis established a diagnosis of malignant melanoma with a Breslow thickness of 0.6 mm. The nonulcerated melanoma was found arising over an intradermal nevus and blending with it. Under staining, the tumor was found to be positive for HMB45. To further corroborate these findings, a second gene expression test from tissue block samples was performed, the Myriad myPath Melanoma test, a 23-gene algorithmic gene expression test...