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Q/ Does screening by primary care providers effectively detect melanoma and other skin cancers?

EVIDENCE-BASED ANSWER

A/ POSSIBLY. No trials have directly assessed detection of melanoma and other skin cancers by primary care providers.

Training a group comprised largely of primary care physicians to perform skin cancer screening was associated with a 41% increase in skin cancer diagnoses but no change in melanoma mortality.

Visual screening for melanoma by primary care physicians is 40% sensitive and 86% specific (compared with 49% and 98%, respectively, for dermatologists and plastic surgeons).

Melanomas found by visual screening are 38% more likely to be thin (≤ 0.75

mm) than melanomas discovered without screening, which correlates with improved outcomes.

Visual skin cancer screening overall is associated with false-positive rates as follows: 28 biopsies for each melanoma detected, 9 to 10 biopsies for each basal cell carcinoma, and 28 to 56 biopsies for squamous cell carcinoma. False-positive rates are higher for women—as much as double the rate for men—and younger patients—as much as 20-fold the rate for older patients (strength of recommendations for all foregoing statements: **B**, cohort studies).

Evidence summary

No trials have directly assessed skin cancer morbidity associated with physician visual skin screening. A 2018 ecologic cohort study found no difference in melanoma mortality in a population undergoing a national screening program, although screening was associated with 41% more diagnoses of skin cancer.¹ A 2012 cohort study found a reduction in melanoma mortality over 7 years associated with a population-based visual skin cancer screening program compared with similar populations that didn't undergo specific screening.² At 12-year follow-up, however, there was no longer a difference in mortality.

Primary care visual screening doesn't decrease melanoma mortality

German researchers trained 1673 non-dermatologists (64% of general practitioners, obstetrician-gynecologists, and urologists in that region of Germany) and 116 derma-

tologists (98% in the region) to recognize skin cancer through whole-body visual inspection.¹ They recruited and screened 360,000 adults (19% of the population older than 20 years; 74% women) and followed age- and sex-adjusted melanoma mortality over the next 10 years. Non-dermatologists performed most screening exams (77%); 37% of screened positive patients were lost to follow-up.

Melanoma mortality ultimately didn't change in the screened region, compared with populations in other European countries without national screening programs. Screening detected approximately half of melanoma cases (585/1169) in the region and was associated with 41% greater detection of skin cancers compared with other countries.

Researchers recorded age-adjusted increases in incidence per 100,000 of melanoma from 14.2 (95% confidence interval [CI], 13.3-15.1) to 18 (95% CI, 16.6-19.4), melanoma in situ from 5.8 (95% CI, 5.2-6.4) to 8.5

(95% CI, 7.5-9.5), squamous cell carcinoma from 11.2 (95% CI, 10.6-11.8) to 12.9 (95% CI, 12.0-13.8), and basal cell carcinoma from 60.5 (95% CI, 59.0-62.1) to 78.4 (95% CI, 75.9-80.8).

Visual screening by primary care providers vs screening by dermatologists

A cohort study of 16,383 Australian adults found that visual screening by primary care physicians detected melanoma over 3 years with a sensitivity of 40.2% (95% CIs not supplied) and specificity of 86.1% (95% CI, 85.6-86.6%; positive predictive value = 1.4%).³

A second cohort study, enrolling 7436 adults, that evaluated visual screening by dermatologists and plastic surgeons over 2 years found a sensitivity for melanoma of 49% (95% CI, 34.4-63.7%) and a specificity of 97.6% (95% CI, 97.2-97.9%) with a positive predictive value of 11.9% (95% CI, 7.8-17.2%).⁴

Visual screening more often detects thinner melanomas

A 3-year case-control study (3762 cases, 3824 controls) that examined the association between visual skin screening by a physician (type of physician not specified) and thickness of melanomas detected found that thin melanomas (≤ 0.75 mm) were more common among screened patients compared with unscreened patients (odds ratio [OR] = 1.38; 95% CI, 1.22-1.56) and thicker melanomas (≥ 0.75 mm) were less common (OR = 0.86; 95% CI, 0.75-0.98).⁵

A systematic review of 8 observational cohort studies with a total of 200,000 patients found a consistent linear increase in melanoma mortality with increasing tumor thickness.⁶ The largest study (68,495 patients), which compared melanoma mortality for thinner (< 1 mm) and thicker lesions, reported risk ratios of 2.89 for lesion thicknesses of 1.01 to 2 mm (95% CI, 2.62-3.18); 4.69 for thicknesses of 2.01 to 4 mm (95% CI, 4.24-5.02); and 5.71 for thicknesses > 4 mm (95% CI, 5.10-6.39).

The downside of visual screening: False-positives

The 2012 cohort study, which reported outcomes from 16,000 biopsies performed fol-

lowing visual screening exams, found that 28 biopsies were performed for each diagnosis of melanoma and 9 to 10 biopsies for each basal cell carcinoma.² Diagnosis rates (number of skin biopsies performed for each case of cancer diagnosed) were equal in men and women for both types of cancer. However, researchers observed more biopsies for each diagnosis of squamous cell carcinoma in women than men (56 vs 28 biopsies per case).

Younger patients underwent more biopsies than older patients for each diagnosis of skin cancer. Women 20 to 34 years of age underwent more biopsies than women 65 years or older for each diagnosis of melanoma (19 additional excisions) and basal cell carcinoma (134 additional excisions). Women 35 to 49 years of age underwent 565 more biopsies for each diagnosis of squamous cell carcinoma than women 65 years or older. Similar patterns applied to men 20 to 34 years of age compared with men 65 years or older (24 additional biopsies per melanoma, 109 per basal cell carcinoma, and 898 per squamous cell carcinoma).

Recommendations

The US Preventive Services Task Force recommendations, based on a systematic review of mostly cohort studies, state that the current evidence is insufficient to assess the balance of benefits and harms of clinician visual skin cancer screening.^{7,8}

The American Academy of Dermatology states that skin cancer screening can save lives and supports research on the benefits and harms of screening in the primary care setting.⁹

Editor's Takeaway

Skin cancer screening by primary care physicians is associated with increased detection of skin cancers, including melanomas—even though we have no confirmation that it changes melanoma mortality. It is unclear what the appropriate rate of false-positive screening tests should be, but wider adoption of noninvasive diagnostic techniques such as dermoscopy might reduce unwarranted biopsies.



Training a group comprised largely of primary care physicians to perform skin cancer screening was associated with an increase in diagnoses but no change in melanoma mortality.

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