



NATIONAL GUIDELINE CLEARINGHOUSE™ (NGC) GUIDELINE SYNTHESIS

SCREENING AND PREVENTION OF SKIN CANCER

Guidelines

1. **Association of Comprehensive Cancer Centres (ACCC).** [Skin melanoma](#). Utrecht, The Netherlands: Association of Comprehensive Cancer Centres (ACCC); 2006 Jul 14. 9 p.
2. **Program in Evidence-based Care (PEBC).** [Screening for skin cancer: a clinical practice guideline](#). Toronto (ON): Cancer Care Ontario (CCO); 2007 Jun 19. 33 p. (Evidence-based series; no. 15-1). [79 references]
3. **Scottish Intercollegiate Guidelines Network (SIGN).** [Cutaneous melanoma](#). A national clinical guideline. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network (SIGN); 2003 Jul. 50 p. (SIGN publication; no. 72). [277 references]

INTRODUCTION

A direct comparison of the Association of Comprehensive Cancer Centres (ACCC), Program in Evidence-based Care (PEBC) and Scottish Intercollegiate Guidelines Network (SIGN) recommendations for skin cancer screening and prevention is provided in the tables below. The PEBC guideline focuses its discussion on screening for melanoma and nonmelanoma skin cancer. The ACCC and SIGN guidelines focus their discussion on melanoma, providing recommendations on screening, diagnosis, management, and treatment. SIGN also addresses prevention. Recommendations concerning diagnosis, management, and treatment of skin cancer are beyond the scope of this Synthesis.

- [Table 1](#) provides a quick-view glance at the primary interventions considered by each group.
- [Table 2](#) provides a comparison of the overall scope of both guidelines.
- [Table 3](#) provides a more detailed comparison of the specific recommendations offered by each group for the topics under consideration in this synthesis, including:
 - [Screening](#)
 - [Prevention](#)
 - [Preventive Counseling/Education](#)
 - [Preventive Interventions](#)
 - [Skin Self Examination](#)
- [Table 4](#) lists the potential benefits and harms associated with the implementation of each guideline as stated in the original guidelines.
- [Table 5](#) presents the rating schemes used by the guideline groups to rate the level of evidence and/or the strength of the recommendations.

A summary discussion of the [areas of agreement](#) and [areas of differences](#) among the guidelines is presented following the content comparison tables.

Abbreviations used in the text and table

- ACCC, Association of Comprehensive Cancer Centres
- PEBC, Program in Evidence-based Care
- SIGN, Scottish Intercollegiate Guidelines Network
- SPF, Sun protection factor
- UV, Ultraviolet

TABLE 1: COMPARISON OF INTERVENTIONS AND PRACTICES CONSIDERED (<i>"✓" indicates topic is addressed</i>)			
	ACCC (2006)	PEBC (2007)	SIGN (2003)
Screening	✓	✓	✓
Preventive Counseling/Education		✓	✓
Preventive Interventions			✓
Skin Self Examination		✓	✓

TABLE 2: COMPARISON OF SCOPE AND CONTENT	
Objective and Scope	
ACCC (2006)	To provide guidance on the management of patients with melanoma
PEBC (2007)	<ul style="list-style-type: none"> • To evaluate whether primary care providers should routinely perform total-body skin examination on members of the general population to screen for melanoma, basal cell carcinoma, and squamous cell carcinoma of the skin • To evaluate whether primary care providers should routinely counsel members of the general population to perform skin self-examination for early detection of melanoma, basal cell carcinoma, and squamous cell carcinoma of the skin • To evaluate whether individuals at high risk for melanoma, basal cell carcinoma, and squamous cell carcinoma of the skin should be offered surveillance by a physician, including total-body skin examination and counselling to perform skin self-examination

	<ul style="list-style-type: none"> To determine the characteristics clinicians should assess in order to determine risk for melanoma, basal cell carcinoma, and squamous cell carcinoma of the skin
SIGN (2003)	To provide advice at all stages of the patient's pathway of care, from primary prevention to early recognition, treatment, and follow-up
Target Population	
ACCC (2006)	<ul style="list-style-type: none"> The Netherlands Patients with pigmented skin lesions and skin melanoma
PEBC (2007)	<ul style="list-style-type: none"> Canada Members of the general population
SIGN (2003)	<ul style="list-style-type: none"> Scotland Individuals at risk for and/or diagnosed with cutaneous melanoma
Intended Users	
ACCC (2006)	Physician Assistants Physicians
PEBC (2007)	Physicians
SIGN (2003)	Advanced Practice Nurses Allied Health Personnel Nurses Physician Assistants Physicians Public Health Departments

TABLE 3: RECOMMENDATIONS	
SCREENING	
ACCC (2006)	<p>Screening</p> <p>Is Screening for Skin Melanoma Useful?</p>

	<p>The working group is of the opinion that routine checking for pigmented lesions warrants recommendation in cases with a known familial increased risk of melanoma. One check-up every 6 to 12 months is considered sufficient.</p> <p>According to the working group, increased attentiveness is advisable for individuals with a combination of risk factors resulting in a substantially increased risk of melanoma.</p> <p>The working group is of the opinion that population-based screening for melanoma is not warranted in the Netherlands.</p>
<p>PEBC (2007)</p>	<p><i>Very High Risk of Skin Cancer</i></p> <p>Individuals with <u>any</u> of the following risk factors have a <u>very high risk</u> of skin cancer (approximately 10 or more times the risk of the general population):</p> <ul style="list-style-type: none"> • On immunosuppressive therapy after organ transplantation • A personal history of skin cancer • Two or more first-degree relatives with melanoma • More than 100 nevi in total or 5+ atypical nevi • Have received more than 250 treatments with psoralen-ultraviolet A radiation (PUVA) for psoriasis • Received radiation therapy for cancer as a child <p>Individuals at very high risk should be identified by their primary health care provider and offered total body skin examination by a dermatologist or a trained health care provider on a yearly basis. They should also be counseled about skin self-examination and skin cancer prevention by a health care provider (e.g., physician, nurse practitioner, or public health nurse). In the case of childhood cancer survivors, the site of radiation therapy should be monitored.</p> <p><i>High Risk of Skin Cancer</i></p> <p>Individuals with <u>two or more</u> of the main identified susceptibility factors are at a <u>high risk</u> for skin cancer (roughly 5 times the risk of the general population):</p> <ul style="list-style-type: none"> • A first-degree relative with melanoma • Many (50-100) nevi • One or more atypical (dysplastic) nevi • Naturally red or blond hair • A tendency to freckle • Skin that burns easily and tans poorly or not at all <p>Other factors that may influence the risk of skin cancers that are environmental include an outdoor occupation, a childhood spent at less than latitude 35°, the use of tanning beds during teens and twenties,</p>

	<p>and radiation therapy as an adult.</p> <p>Individuals at high risk should be identified by their primary health care provider and <u>counseled about skin self-examination</u> (specifically focused on the site of radiation for those having had therapeutic radiation) and skin cancer prevention by a health care provider (e.g., physician, nurse practitioner, or public health nurse). High risk individuals should be seen once a year by a health care provider trained in screening for cancers.</p> <p><i>The General Population Not at Increased Risk of Skin Cancer</i></p> <ul style="list-style-type: none"> • There is at this time no evidence for or against skin cancer screening of the general population at average risk of developing skin cancer. • Based on the limited evidence available at present, <u>routine total body skin examination</u> by primary care providers is <u>not recommended</u> for individuals at <u>average or low risk</u> for skin cancer (i.e., those not included in the increased risk groups described above). • Based on the limited evidence available at present, <u>routine counseling on skin self-examination</u> by primary care providers is <u>not recommended</u> for individuals at <u>average or low risk</u> for skin cancer.
<p>SIGN (2003)</p>	<p>The available evidence is insufficient to recommend for or against the use of routine screening of individuals at higher risk of melanoma. Interventions to promote the awareness of risk factors and skin self awareness are probably warranted.</p> <p>No randomised controlled trials on mass screening were identified. Two American systematic reviews of screening for melanoma (and other skin cancers) have identified observational data to suggest that screening in high-risk groups might be effective. (Evidence level 2++)</p> <p>Good Practice Point: A formal programme of mass screening for melanoma in Scotland is not recommended.</p> <p><i>Although mass screening is not recommended, the following recommendation is offered with respect to "Delay in Diagnosis":</i></p> <p>D - Health professionals should be encouraged to examine patients' skin during other clinical examinations.</p>
<p>PREVENTION</p>	
<p>Preventive Counseling/Education</p>	
<p>ACCC</p>	<p>No recommendations offered.</p>

(2006)	
PEBC (2007)	<p><i>Very High Risk of Skin Cancer</i></p> <p>Individuals at very high risk should be counseled about skin self-examination and skin cancer prevention by a health care provider (e.g., physician, nurse practitioner, or public health nurse).</p> <p><i>High Risk of Skin Cancer</i></p> <p>Individuals at high risk should be identified by their primary health care provider and <u>counseled about skin self-examination</u> (specifically focused on the site of radiation for those having had therapeutic radiation) and skin cancer prevention by a health care provider (e.g., physician, nurse practitioner, or public health nurse).</p> <p><i>The General Population Not at Increased Risk of Skin Cancer</i></p> <p>Based on the limited evidence available at present, <u>routine counseling on skin self-examination</u> by primary care providers is <u>not recommended</u> for individuals at <u>average or low risk</u> for skin cancer.</p>
SIGN (2003)	<p>Public Education to Promote Primary Prevention</p> <p>D - Brochures and leaflets should be used to deliver preventive information on melanoma to the general public.</p> <p>Leaflets, brochures, and educational packages can significantly influence increased short term user-knowledge of sun awareness measures and can assist in the early detection of melanoma.</p> <p>Insufficient evidence was identified to enable recommendations to be made about the style or content of leaflets and brochures.</p> <p>Education to Promote Early Detection:</p> <p>B - Healthcare professionals and members of the public should be aware of the risk factors for melanoma.</p> <p>C - Individuals identified as being at higher risk should be:</p> <ul style="list-style-type: none"> • Advised about appropriate methods of sun protection • Educated about the diagnostic features of cutaneous melanoma
Preventive Interventions	
ACCC (2006)	No recommendations offered.

PEBC (2007)	No recommendations offered.
SIGN (2003)	<p>Primary Prevention</p> <p>There is indirect evidence that sun avoidance and other sun-protective measures (e.g., clothing, hats and opaque sunscreens) are likely to reduce the risk of melanoma. Sunscreen effectiveness is difficult to demonstrate for a number of reasons. High risk individuals are more likely to use sunscreen, although sunscreen use may be associated with greater sun exposure. It may be that sunscreens offer a false sense of security and lead to increased time in the sun. Most sunscreens offer greater protection from UVB, reducing the risk of sunburn, but not of exposure to UVA. Some ingredients found in sunscreens may be carcinogenic. Case control studies and clinical trials have shown no reduction or increase in melanoma incidence with broad spectrum sunscreen use. Little is known about the potential long term effects of sunscreen use. Given these potentially adverse effects of sunscreens in relation to risk of melanoma, physical protection measures should be regarded as more important than sunscreen use.</p> <p>There may be theoretical risks associated with sun avoidance, e.g., a lack of vitamin D, but the balance of evidence in terms of risks and benefits favours a cautious approach to sun exposure. In the absence of evidence to support recommendations about specific aspects of protection measures in Scotland, the advice listed below is based on Australian guidelines on melanoma, interpreted in the light of the Scottish climate.</p> <p><u>Prevention of Melanoma</u></p> <ul style="list-style-type: none"> • Use clothing as the primary means of protecting against the sun. • People of fair complexion should be especially careful about sun exposure. • Avoid using sun beds, tanning booths, and tanning lamps as an increased risk has been reported in some studies. • Use broad spectrum sunscreens with a minimum SPF of 15 as an adjunct to sun avoidance and other sun protective measures, providing this does not lead to increased time spent in the sun. • Avoid exposure to direct, intense sunlight, especially around midday (e.g., seek out shade). • Provide children with appropriate sun protection for outdoor activities.
Skin Self Examination	
ACCC (2006)	No recommendations offered.

<p>PEBC (2007)</p>	<p><i>Very High Risk of Skin Cancer</i></p> <p>Individuals at very high risk should be counseled about skin self-examination and skin cancer prevention by a health care provider (e.g., physician, nurse practitioner, or public health nurse). In the case of childhood cancer survivors, the site of radiation therapy should be monitored.</p> <p><i>High Risk of Skin Cancer</i></p> <p>Individuals at high risk should be identified by their primary health care provider and <u>counseled about skin self-examination</u> (specifically focused on the site of radiation for those having had therapeutic radiation) and skin cancer prevention by a health care provider (e.g., physician, nurse practitioner, or public health nurse).</p> <p><i>The General Population Not at Increased Risk of Skin Cancer</i></p> <p>Based on the limited evidence available at present, <u>routine counseling on skin self-examination</u> by primary care providers is <u>not recommended</u> for individuals at <u>average or low risk</u> for skin cancer.</p>
<p>SIGN (2003)</p>	<p>C - Individuals identified as being at higher risk should be encouraged to perform self examination of the skin.</p>

<p>TABLE 4: BENEFITS AND HARMS</p>	
<p>Benefits</p>	
<p>ACCC (2006)</p>	<ul style="list-style-type: none"> • Improved quality of care in patients with melanoma • Better results from treatment • Decreased metastases • Decreased mortality
<p>PEBC (2007)</p>	<ul style="list-style-type: none"> • The pilot phase of a randomized trial demonstrated the feasibility of implementing a screening program consisting of community education, general practitioner education and screening clinics to promote self-screening and whole-body screening by general practitioners. Early results detected an increase in the percentage of subjects reporting whole-body skin examination by a physician. • The randomized trial and a work-place screening study both found that people were more likely to perform skin self-examination if they had undergone a whole-body skin examination by a physician. • A case-control study detected a reduced risk of melanoma and reduced mortality from melanoma associated with skin self-

	examination.
SIGN (2003)	Improved prevention and early detection of melanoma
Harms	
ACCC (2006)	No screening-related harms are provided.
PEBC (2007)	Not stated
SIGN (2003)	<p>Risks Related to Preventive Strategies</p> <ul style="list-style-type: none"> • Sunscreen use may be associated with greater sun exposure • Some ingredients found in sunscreens may be carcinogenic • Risks associated with sun avoidance, such as a lack of vitamin D

TABLE 5: EVIDENCE RATING SCHEMES AND REFERENCES	
ACCC (2006)	The type of supporting evidence is not specifically stated.
PEBC (2007)	The recommendations are based on evidence-based practice guidelines, one case-control study, and two comparative studies.
SIGN (2003)	<p>Grades of Recommendation</p> <p>A: At least one meta-analysis, systematic review of randomised controlled trials (RCTs), or RCT rated as 1++ and directly applicable to the target population; or</p> <p>A body of evidence consisting principally of studies rated as 1+, directly applicable to the target population, and demonstrating overall consistency of results</p> <p>B: A body of evidence including studies rated as 2++, directly applicable to the target population, and demonstrating overall consistency of results; or</p> <p>Extrapolated evidence from studies rated as 1++ or 1+</p>

	<p>C: A body of evidence including studies rated as 2+, directly applicable to the target population and demonstrating overall consistency of results; or</p> <p>Extrapolated evidence from studies rated as 2++</p> <p>D: Evidence level 3 or 4; or</p> <p>Extrapolated evidence from studies rated as 2+</p> <p>Levels of Evidence</p> <p>1++: High quality meta-analyses, systematic reviews of randomised controlled trials (RCTs), or RCTs with a very low risk of bias</p> <p>1+: Well-conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias</p> <p>1-: Meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias</p> <p>2++: High quality systematic reviews of case control or cohort studies; high quality case control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal</p> <p>2+: Well conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal</p> <p>2-: Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal</p> <p>3: Non-analytic studies (e.g., case reports, case series)</p> <p>4: Expert opinion</p>
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GUIDELINE CONTENT COMPARISON

The Association of Comprehensive Cancer Centres (ACCC), Program in Evidence-based Care (PEBC), and Scottish Intercollegiate Guidelines Network (SIGN) present recommendations for skin cancer screening and prevention.

The PEBC guideline considers screening for both melanoma and nonmelanoma skin cancer, offering recommendations for three groups: very high risk of skin cancer, high risk of skin cancer, and the general population not at increased risk of skin cancer. The ACCC and SIGN guidelines focus their discussion on

melanoma, providing recommendations for screening, diagnosis, management, and treatment of skin cancer. SIGN also address prevention. Recommendations concerning diagnosis, management, and treatment of skin cancer are beyond the scope of this Synthesis.

Areas of Agreement

Screening Recommendations

All of the guidelines are in general agreement that there is insufficient evidence to support screening of the general population at average risk of skin cancer.

ACCC and PEBC recommend screening of individuals at increased risk of skin cancer. PEBC provides detailed risk factors to facilitate physician identification of individuals at high or very high risk of skin cancer. They recommend that individuals at very high risk have a total body skin examination performed by a dermatologist or a trained health care provider on a yearly basis. Individuals at high risk, PEBC continues, should be seen once a year by a health care provider trained in screening for skin cancers. ACCC states routine checking (every 6 to 12 months) for pigmented lesions warrants recommendation in cases with a known familial increased risk of melanoma (one of the risk factors identified by PEBC). They further note that increased attentiveness is advisable for individuals with a combination of risk factors resulting in a substantially increased risk of melanoma.

Preventive Interventions

SIGN, the only group to address preventive strategies, states that there is indirect evidence that sun avoidance and other sun-protective measures are likely to reduce the risk of melanoma. They also acknowledge that use of sunscreen can lead to a false sense of security, which might lead to individuals spending more time in the sun thereby increasing their risk for skin cancer. They also note that there may be theoretical risks associated with sun avoidance, e.g., a lack of vitamin D, but the balance of evidence in terms of risks and benefits favours a cautious approach to sun exposure.

Preventive Counseling/Education

SIGN recommends that brochures and leaflets be used to deliver preventive information on melanoma to the general public. They further note that individuals identified as being at higher risk should be advised about appropriate methods of sun protection and educated about the diagnostic features of cutaneous melanoma. PEBC recommends counseling about skin self-examination and skin cancer prevention for individuals identified to be at high or very high risk by their health care provider.

Primary Prevention and Interventions to Prevent Skin Cancer

SIGN regards physical protective measures as the most important preventive intervention, noting that use of sunscreen as a preventive measure may lead to a false sense of security and an increase in the amount of time spent in the sun. SIGN also notes that while most sunscreens reduce UVB exposure (thus reducing

the risk of sunburn), they have little impact on UVA exposure, and that ingredients in some sunscreens may be carcinogenic.

Skin Self-Examination

SIGN recommends that individuals identified as being at higher risk should be encouraged to perform self examination of the skin. PEBC cites a single case-control study of skin self-examination as supporting a lower risk of melanoma. Based on this study, PEBC recommends that individuals at high or very high risk be counseled about skin self-examination. ACCC does not provide recommendations.

Areas of Differences

Both ACCC and PEBC recommend screening in individuals at increased risk of skin cancer. SIGN, in contrast, states that the available evidence is insufficient to recommend for or against the use of routine screening of individuals at higher risk of melanoma. They do acknowledge data to suggest, however, that screening in high-risk groups might be effective.

This synthesis was prepared by ECRI on April 19, 2005. The information was verified by USPSTF on May 2, 2005. This synthesis was updated on December 12, 2006 to withdraw USPSTF screening guidelines that no longer meet NGC's date criteria. This synthesis was revised on April 30, 2008 to add PEBC recommendations. The information was verified by PEBC on June 12, 2008. This Synthesis was revised most recently in December 2008 to add ACCC recommendations and remove USPSTF recommendations.

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