

What is the risk of developing carcinomas?

PHOTOPROTECTION

FOCUS

Carcinomas, basal cell carcinomas (BCC) and squamous cell carcinomas (SCC) are the most common cancers in humans.



The highest rates are observed in Australia (>1000/100,000 person-years for BCC)¹



The lowest rates in parts of Africa (< 1/100,000 person-years for BCC)¹

Average 1.05% of the American population is estimated to receive treatments for Keratinocyte carcinomas.²

The most important risk factor³

- Hazardous exposure to solar ultraviolet (UV)

The strongest predictors of future risk⁴

- A past history of an excised skin cancer,
- A destroyed actinic skin lesion,
- An advanced age

The use of sunscreen to prevent carcinomas?

Carcinomas⁵ are primarily caused by exposure to ultraviolet (UV) radiation. The process involves UVB and UVA radiation, which leads to DNA damage, suppression of cutaneous immunity, production of reaction oxygen species (ROS), inflammation, and cell dysregulation.⁵ An overwhelming body of evidence exists in support of sunscreen for protection against carcinomas. Its chemoprotective benefit can be enhanced with the addition of DNA repair ingredient or antioxidants. Daily application of sunscreen with at least SPF-30 is recommended to decrease photo-induced damage and carcinomas.⁵

How to calculate the risk of developing carcinomas?

An algorithm developed by a prospective cohort study⁶, using self-reported patient data have high accuracy for predicting risks of carcinomas. The average risk depend on the incidence of carcinomas within a given population.

TWO SITUATIONS CAN BE DISTINGUISH ACCORDING TO THE SELF-REPORTED HISTORY OF THE PATIENT⁶

No history of skin cancer	At least one prior skin cancer excision
10 items are needed to evaluate the risk:	8 items are needed to evaluate the risk:
• Age superior of 70	• Previous skin cancers excised
• Male	• Previous actinic skin lesions destroyed
• White skin	• Age superior of 70
• Medium or fair skin colour	• Male
• Tanning ability (moderately, lightly, no tan)	• Current smoking
• High freckling tendency	• Medium or fair skin colour
• History of sunburns less than 10 years ago in adulthood	• High freckling tendency
• History of sunburns more than 20 years (in childhood)	• History of 10 sunburns less than 10 years ago in adulthood
• Number of previous skin lesions destroyed	
• Family history of melanoma	

Overall, a past history of an excised skin cancer or a destroyed actinic skin lesion, and advanced age are the strongest predictors of future risk. Current smoking status, white skin colour and freckling tendency also improve the risk. For patients with no self-reported history of skin cancer, the strongest factors are sunburns in childhood, sunburns in adulthood, and family history of melanoma.⁶

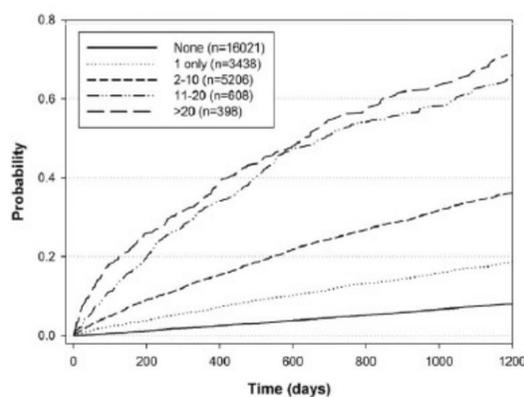


Figure 1. Cumulative incidence of keratinocyte carcinoma by category of the self-reported number of excised skin cancers before enrolment (171 participants had missing data for this item). The x-axis denotes time in study from date of consent and the y-axis denotes cumulative incidence (risk) of first excision of cancer. Separate cumulative incidence curves are presented for each of five groups of participants according to their self-reported prior history of skin cancer.⁶

What's to be done in practice currently?

A web-based application developed by Professor David Whiteman, a medical epidemiologist from Australia, helps to calculate a personal risk.

From a drop-down menu, a person selects the most appropriate response for each of the 10 items that are found to significantly predict risk of carcinomas.

The algorithm sums the beta-coefficients of the selected response items to generate a risk score, and then determines where that person's score lies relative to the distribution of all risk scores in the QSkin cohort.⁶

For clinical utility, and to avoid perceptions of spurious precision, the tool reports a risk category rather than the actual score, as follows :

PERCENTILE OF THE RISK DISTRIBUTION	Bottom 20%	21st to 40th	41st to 60th	61st to 80th	top 20%
AVERAGE RISK	Very much below	Below	About	Above	Very much above

Although the subsequent management of each patient will depend on his or her own particular circumstances, this tool will aid clinicians and their patients in quantifying risk and deciding on an appropriate course of action.

Calculating the risk of developing carcinomas in practice can help the triage of patients with low risk to direct them to their routine care provider (general practitioner or family physician) for tailored recommendations about safe behaviors and sun protection.



It helps to predict current or future risk of a cancer diagnosis to enhance physician decision-making and improve patient outcomes.⁷

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