

Sunbed use in youth unequivocally associated with skin cancer

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Background

In October 2004, the [French Ministry of Health](#) contacted Dr Peter Boyle, the [Director of the IARC](#)⁽¹⁾, raising a particular concern about the [continuous increase](#) in incidence of melanoma in France and in the world. Melanoma is the most deadly form of skin cancer. For reference, while Europe registers 10-15 cases per 100,000 population and per year, Australia has an incidence of 50 cases/100,000 population every year. Melanoma is on the increase everywhere in the world and the number of cases doubles every 12-15 years in the most affected areas.

In 1992, an IARC Working Group made a thorough review of the available scientific data and concluded that solar radiation is carcinogenic to humans (Group 1)⁽²⁾. Solar radiation causes cutaneous melanoma and non-melanoma skin cancer. However, there is still uncertainty surrounding the role of exposure to artificial sources of UV radiation, i.e. from the use of sunbeds or sunlamps in tanning parlours, in the aetiology of skin cancer.

IARC Review of the literature

To respond to these concerns, IARC convened an international Working Group⁽³⁾ that assessed the available evidence relating to health effects, both positive and detrimental, of exposure to artificial UV radiation through the use of indoor tanning facilities, in particular whether their use increases the risk for skin cancer.

Assessment

Epidemiologic studies do not provide consistent evidence that use of indoor tanning facilities in general is associated with the development of melanoma or non-melanoma skin cancer⁽⁴⁾. There are various technical explanations for this conclusion. Firstly, knowledge of levels of UV exposure during indoor tanning is very imprecise. Furthermore, early studies published had low power to detect long-term associations with artificial UV exposure that become evident only following a prolonged lag period. "Considering simultaneously all the available data", Dr Boyle said, "made it possible for us to reach a number of clear conclusions."

Conclusions

- Clear increase in melanoma risk associated with use of sunbeds in teens and twenties*
The data showed a prominent and consistent increase in risk for melanoma in people who first used sunbeds in their twenties or teen years: a 75% increase in risk of melanoma was calculated for such users of artificial tanning appliances, while this increase in the general population, although not statistically significant, is still not negligible.
- Increase in risk of squamous cell cancer (SCC) of the skin associated with use of sunbeds in teens*
Limited data suggest that the risk of squamous cell carcinoma is similarly increased after first use as a teenager.
- Immune system affected*
Data also suggest detrimental effects from use of sunbeds on the skin's immune response and possibly on the eyes (ocular melanoma).
- No positive health effects*
Artificial tanning confers little if any protection against solar damage to the skin, nor does use of indoor tanning facilities grant protection against vitamin D deficiency. Data also suggest detrimental effects from use of indoor tanning facilities on the skin's immune response and possibly on the eyes (ocular melanoma).

Public Health message

Dr Boyle concluded that "while IARC's mandate is one of scientific expertise and assessment of epidemiologic risk, in view of the strength and seriousness of the findings, effective action to restrict access to artificial tanning facilities (solariums, tanning salons, tanning parlours) to minors and young adults should be strongly considered."

Notes:

- (1) The International Agency for Research on Cancer (IARC) is part of the World Health Organization. Its mission is to coordinate and conduct research on the causes of human cancer, the mechanisms of carcinogenesis, and to develop scientific strategies for cancer control. The mandate of the world cancer research agency is to coordinate international research to take advantage of synergies and disseminate scientific information through publications, meetings, courses, and fellowships.
- (2) UV radiations A, B and C were all three independently rated as probably carcinogenic to humans by the IARC Working Group in 1992. In addition, they concluded that the "use of sunlamps and sunbeds *entails exposures that are probably carcinogenic to humans (Group 2A)*". While natural UV radiation does indeed stimulate the production of indispensable vitamin D, exposure to natural sun light should be moderate, and in any case artificial UV radiation exposure, as provided by sunbed exposure, should be avoided at all cost.
- (3) The members of the Working Group were: Dr Philippe Autier¹, Dr Mathieu Boniol¹, Dr Peter Boyle¹, Dr Jean-Francois Dore², Dr Sara Gandini³, Dr Adele Green (Chair)⁴, Dr Julia Newton-Bishop⁵, Dr Martin A. Weinstock⁶, Dr Johan Westerdahl⁷, Dr Beatrice Secretan (Coordinator)¹, Dr Stephen Walter⁸. Their conclusions are being published online by the [International Journal of Cancer](#).

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- (4) There are three main types of cancers of the skin: **Basal cell carcinoma** (BCC) is the most common form of cancer and the least aggressive. Basal cells are cells that line the deepest layer of the epidermis. A tumor of this layer is known as basal cell carcinoma. The sun is responsible for over 90 percent of all skin cancers, including BCC, and chronic overexposure to sunlight is the cause for most cases of basal cell carcinoma. BCCs occur most frequently on the face, ears, neck, scalp, shoulders, and back. **Squamous cell cancer** (SCC) is a malignant tumor. It is more aggressive than basal cell cancer, and is more likely than basal cell cancer to metastasize. **Melanoma** is the most dangerous type of skin cancer. It involves the cells that produce pigment (melanin), which is responsible for skin and hair color. The development of melanoma is related to sun exposure, particularly to sunburns during childhood, and is most common among people with fair skin, blue or green eyes, and red or blond hair.