

# Photoprotection Prevents Skin Cancer: Let's Make It Fashionable to Wear Sun-Protective Clothing

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## PRACTICE POINTS

- Routine wear of wide-brimmed hats is the simplest, most inexpensive, and only reusable form of photoprotection for the head and neck and should be an everyday practice for reducing the risk for preventable skin cancers.
- The regular wear of clothing and head cover with adequate UV protection factor is equally as important to utilize in the prevention of UV-induced skin cancers as the application of topical sunscreens and sunblocks.
- The medical community should make a concerted effort to dispel any public policy or fashion trend that does not promote personal protection from sun-induced skin cancers. Policies that restrict wearing photoprotective garments, such as in schools and in the military, need to be changed.

*Protection from UV radiation (UVR) is of paramount importance in preventing skin cancers, the majority of which occur on sun-exposed areas of the face, ears, and neck. A reusable, inexpensive, and truly simple measure of personal protection that greatly reduces exposure to UVR, thereby reducing the risk for developing skin cancers, can be achieved simply by regularly wearing a wide-brimmed hat. In some areas of the world where sunny climates are pervasive and exposure to UVR is part of everyday life, fashion trends, policy, and public health initiatives are in sync, and photoprotection with wide-brimmed hats is embraced as a common and*

*fashionable practice. Unfortunately, the wearing of wide-brimmed hats is not universally accepted. A change in policy, culture, and fashion to one that more widely embraces this simple photoprotective garment is needed.*

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Photoprotection is the foundation of all skin cancer prevention, as UV radiation (UVR) exposure is the only known modifiable risk factor for skin cancer. With the majority of UVR exposure-induced skin cancers found on the scalp, ears, face, and neck, public health initiatives call for wise choices in personal fashion that emphasize the importance of covering these areas.<sup>1-3</sup> From a science of fashion perspective, research has shown that wide-brimmed hats provide better means of ensuring the largest area of coverage compared to standard baseball-style hats.<sup>4</sup> Thus, for maximum protection, wide-brimmed hats should be favored. However, in academic and military settings, individual style is not optional and is instead influenced or directed by policy, which may not be aligned with the goal of providing photoprotection and raises

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additional concern for individuals working in environments with longer periods of peak daylight UVR exposure.

In all military branches, service members don uniforms that include head coverage when operating outdoors; however, the choice of headgear is not always aimed at reducing UVR exposure. Similarly, in our counterpart civilian populations, wearing hats that provide the best photoprotection may be influenced by school policies, which frequently mandate clothing choices for children, or by the press or fashion industry in the general public, which might portray sun-protective garments as unfashionable or in some cases threatening if perceived as demonstrating gang affiliation.<sup>5</sup> This article serves to encourage health care providers to not only discuss the use of sunscreen when educating patients on sun protection but also to emphasize the benefits of wearing photoprotective garments, particularly wide-brimmed hats given their simplicity, reusability, and affordability. Hat use is particularly important for men with comorbid androgenetic alopecia.<sup>6</sup>

### **Skin Cancer Risk**

Unfortunately, the incidence of most common types of skin cancer, specifically nonmelanoma skin cancers such as basal cell carcinomas and squamous cell carcinomas (ie, keratinocyte carcinomas [KCs]), is difficult to estimate properly, as these cases are not required to be reported to worldwide cancer registries. However, more than 5.4 million cases of skin cancers were diagnosed among 3.3 million Americans in 2016, with an estimated 13,650 deaths associated with skin cancers (not including KCs).<sup>3</sup> Tracking and data analyses of cases diagnosed in the active and reserve component populations of the US Armed Forces reflect parallel findings.<sup>7</sup> Keratinocyte carcinomas could be considered largely preventable, as most are the result of UVR exposure.<sup>1</sup> Additionally, it has been suggested that the vast majority of mutations in melanoma skin cancers (up to 86%) are caused by UVR exposure.<sup>8</sup>

### **Prevention**

United States–based national public health services such as the American Cancer Society, the Centers for Disease Control and Prevention, and the American Academy of Dermatology embrace photoprotection as the central practice in reducing risk factors for skin cancers. Guidelines put forth by these and other national preventive medical institutions specifically recommend the use of wide-brimmed hats as the best option for protection of the face, head, ears, and neck, in addition to more common recommendations such as seeking shade, avoiding sunlight

during peak hours of the day, and using sunscreen.<sup>1-3</sup> At state and local levels, policies should be adapted from these recommendations to support protective practices and skin cancer education that begins early for school-aged children. Unfortunately, in some school districts, wearing hats of any kind may be perceived as disruptive or in some cases baseball hats may be a sign of gang affiliation and are therefore banned in the schoolyard.<sup>5</sup> The opposite is true in certain parts of the world where sun protection is embraced by the population as a whole, such as Australia where the widely accepted “slip, slop and slap, seek and slide” campaign has extended to some school policymakers who have considered adopting a “no hat, no play” policy.<sup>9,10</sup>

Sunscreen use as a primary component of photoprotection has its disadvantages in comparison to wearing protective clothing, as sunscreen cannot be reused and proper usage requires reapplication after swimming, when sweating, and following 2 hours of application.<sup>1-3</sup> The need for reapplication of sunscreen can lead to considerable expense as well as time spent in application and reapplication. Additionally, for individuals who are physically active (eg, operationally engaged service members, outdoor athletes), sunscreen applied to the face may become a hindrance to function, as it may drip or enter the eyes with excessive sweating, possibly impairing vision. Some individuals may be averse to applying lotions or creams to the skin in general, as they do not prefer the textural changes or appearance of the skin after application. The application of sunscreen also could impair use of lifesaving military gear (eg, gas masks, helmets) from fitting or securing appropriately.

### **Patient Education**

From a military perspective, a review of a recent targeted pilot study in which skin cancer patients at a US Veterans Administration hospital were surveyed on personal knowledge of UVR protection showed that respondents who had a history of skin cancer diagnosis did not feel that they had ever been at an increased risk for skin cancers and did not receive skin cancer prevention education during their tours of service. The overwhelming majority of all participants in this study agreed that the military should issue sun-protective clothing and sunscreen to active-duty personnel.<sup>11</sup> Another 2015 survey of 356 current US Air Force flight line personnel noted that active-duty service members tend not to use sunscreen when at work or while at home, and 43% of participants reported using no sun-protective methods while working outdoors.<sup>12</sup> Although these studies focused on military personnel, the data mirror findings within the general public, as it was shown in a survey by

the Centers for Disease Control and Prevention that Americans do not fully take advantage of the benefits of UVR protection, specifically with regard to sunscreen use. Little to no usage was correlated with low socioeconomic status, suggesting that a reusable form of protection could be preferred.<sup>13</sup>

Public health initiatives typically promote education on the use of sunscreen in populations that spend a considerable amount of time working outdoors (eg, construction workers, farmers, military personnel); however, we feel emphasis should be placed on the benefits of wearing hats, as the UVR exposure protection they provide does not wear off, is cost effective, does not require reapplication, and has the advantage of being a recyclable and affordable form of photoprotection.

### History of the Military-Grade Wide-Brimmed Hat

One military-specific example of a sun-protective hat is the boonie hat, known at the time of its inception as the tropical or hot-weather hat, which first became popular during the Vietnam War. This hat option was initially proposed on April 7, 1966, when it was realized that a full-brimmed field hat was needed to protect soldiers' faces and necks from rain and sun in harsh tropical climates.<sup>14</sup> Unfortunately, despite the protective advantages of this style of head covering and favorable support from service members themselves, the boonie hat was not widely accepted, as commanders disliked its "unmilitary appearance." Fervent protests by units throughout Vietnam eventually led to a compromise in policy that allowed unit-level commanders to authorize the use of boonie hats for units in combat or combat support field operations.<sup>14</sup> Today, the boonie hat continues to garnish mixed emotions from unit commanders, as wearing this garment often is interpreted as not being in line with an appropriate military appearance, which is similar to the public fashion zeitgeist that also does not openly endorse the use of sun-protective garments. A change in fashion culture and policy (both military and civilian) that promotes sun-protective measures is needed.

### Wide-Brimmed Hats Are Superior to Baseball Hats

The distribution of skin cancers across anatomic sites is consistent and proportional with the level and frequency of chronic UVR exposure, with the occurrence of most skin cancers being greatest on the nose, forehead/temples, cheeks/perioral areas, and ears.<sup>15</sup> Additionally, higher incidences of skin cancers have been noted in chronically sun-exposed areas of the head and neck in men versus women. It

is thought that hair distribution in these areas may be the causal factor.<sup>6</sup>

Baseball-style hats are worn by all branches of the US military as part of standard training and work duty uniform requirements, primarily for the sake of tradition by maintaining a standard appearance and uniform dress code but also to provide photoprotection to these vulnerable areas of the body. Standard, nonmilitary, baseball-style hats have been shown to provide UV protection factor (UPF) equivalents ranging from 2 to 10 on sites known for the highest levels of exposure.<sup>16</sup> Military "patrol caps," fashioned similar to the baseball-style hat but constructed from military-grade textiles, provide greater levels of photoprotection with UPF ratings from 35 to 50 and higher depending on the fabric color.<sup>17</sup> Although patrol caps have a favorable UPF rating and are advantageous compared to former military headgear styles (eg, berets), wide-brimmed hats would provide greater overall coverage.<sup>4,6</sup> Studies in school environments also revealed that wide-brimmed hats come out ahead in side-by-side testing against baseball hats and are shown to provide greater photoprotection for the cheeks, chin, ears, and neck.<sup>16</sup>

### Final Thoughts

The battle to educate the public about adequate photoprotection to prevent skin cancers caused by UVR exposure applies to all providers, both military and civilian. Our ongoing initiatives should not only sustain current practices but should further stress the importance of wearing wide-brimmed hats as a vital part of coverage of the skin and protection from UVR. We must combat the public perception that wearing wide-brimmed hats is a detractor of personal fashion and that instead it is desirable to reduce the risk for skin cancer. The wide-brimmed hat is a simple, reusable, and easily executed recommendation that should be made to all patients, both military and civilian, young and old. In conclusion, by improving patients' perceptions and acknowledgment of the importance of photoprotection as well as making a concerted effort to integrate our knowledge in the fashion industry, in policies at schools, in the military, and in popular culture, we will undoubtedly come to agree that it is not unfashionable to wear a wide-brimmed hat, but it is unfashionable to risk developing skin cancer.

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