

The Ultraviolet Index: Health Promotion Tool or “Poisoned chalice”?

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Abstract. At NIWA’s 2006 workshop on ultraviolet radiation (UVR) and its effects, Billingsley and Milne (2006) outlined how the Ultraviolet Index (UVI) was used to communicate SunSmart behaviour and skin cancer risk to the New Zealand public. While the process of communicating the UVI both to the media, who were relied on to communicate the UVI, and to the public was described as ‘challenging and complex’, this effort was nevertheless described as having ‘bridged the gap between science and health promotion’. However, evaluation and experience have since brought about a critical reappraisal of the UVI’s effectiveness for communicating sun-protection messages. This paper compares the history of the UVI’s development as a health promotion tool in New Zealand and Australia. The paper concludes the trans-Tasman ‘standardisation’ of health promotion advice and messages based on the UVI needs to be considered.

Background

In the 1990s, burn time – a time-based measure of how long it would take fair skin to burn if exposed unprotected to direct sunlight – was used to communicate potential UVR risk to the New Zealand public. However, burn time came to be seen as an unscientific, poorly defined, and potentially dangerous concept (Bulliard & Reeder, 2001). Pressure grew to replace burn time with the UVI to avoid confusion and align with international practice.

In 2002, the World Health Organization (WHO), together with the World Meteorological Organization, United Nations Environment Programme, and International Commission on Non-Ionizing Radiation Protection, launched a practical guide to the UVI (WHO et al, 2002). The organisations recommended that the UVI be adopted as a national and international measure to promote the ‘global standardisation’ of solar UVR risk behavioural messages. They also recommended the most effective ways of presenting UVI information, for example by categorising different levels using colours and category names and adding behavioural cues.

UVI launched in New Zealand and Australia

Following the publication of the international guide, Kime and Reeder (2002) tested the UVI in the New Zealand context. The media, which would be relied on to communicate the UVI, initially expressed a preference for burn time. However, the media eventually accepted the need to follow international recommendations, particularly once shown graphical examples of how the UVI could be communicated.

In 2003, the Health Sponsorship Council, the Cancer Society of New Zealand, NIWA, the MetService, and the University of Otago’s Social and Behavioural Research in Cancer Unit formed an inter-agency working group. The group was to develop and promote the UVI as a communications tool for the New Zealand public. The

group’s objectives were to revise the WHO’s UVI concept to ‘fit’ the New Zealand context; depict risk based on New Zealand’s UVR levels; recommend sun-protective behaviours; and develop graphics for media weather reports and forecasts.

This collaboration resulted in the development of a UVI graphic (Figure 1) based on the familiar New Zealand fire-risk sign. This UVI graphic was then incorporated into TV One and TV Three’s summer weather reports.

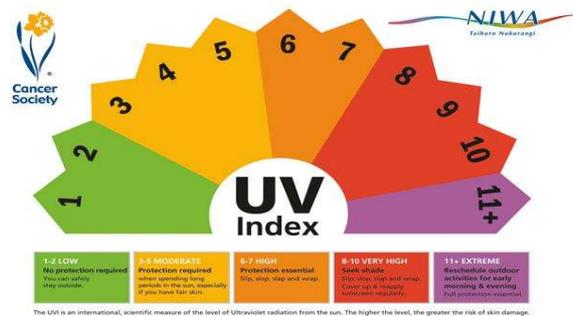


Figure 1. The new Zealand UVI display.

In contrast to New Zealand’s UVI, the Australian SunSmart UV Alert is an indicator of risk that alerts people to the need for SunSmart behaviour (Figure 2). It identifies the specific period during which the UVI is forecast to reach 3 or above and includes an approximate ‘real-time’ component by indicating forecast UVI levels throughout the day. Evaluation of the bell curve graph (shown in Figure 2) in the context of Victoria, Australia, has nevertheless shown mixed results (Makin et al, 2007).

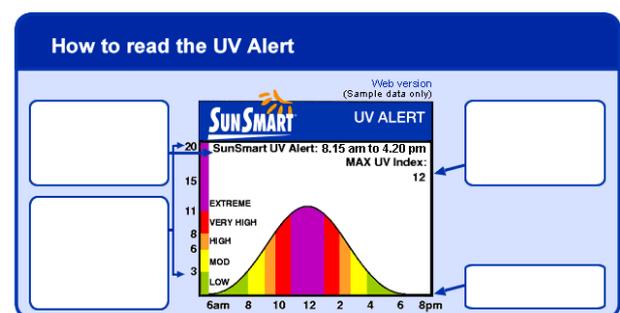


Figure 2. SunSmart UV Alert. BOM website. www.bom.gov.au/announcements/uv/.

Australian / New Zealand comparison

In New Zealand, there was also greater ambivalence among key stakeholder agencies about the appropriateness of broad population advice for sun protection when the UVI is 3 or higher (Galtry, 2007). This was evident in various depictions of the UVI graphic with a static arrow pointing to six, (e.g., www.socialmarketing.co.nz/casestudies/UVIposter.pdf), suggesting that this approximate mid-way point (between low and extreme

levels of 0-11+ in NZ context) is the recommended level for sun protection.

This possible ambivalence may reflect two factors. First is the commonly expressed view that it is unrealistic to advise sun protection when the UVI is 3 or higher, given that this is the situation for a large part of the day in most locations during the New Zealand summer. The WHO's practical guide was developed with particular reference to the European context, where peak summer UVR levels are much lower than those in New Zealand and Australia.

Second was the strongly emerging interest in the potential health effects of vitamin D and the important role of UVR (UVB) in facilitating vitamin D synthesis.

With increased emphasis on vitamin D, concerns have arisen about the need to inform people about safe and healthy sun exposure and, associated with this, the potential role of the UVI.

A key question is whether the UVI can also be used to inform people about appropriate sun exposure thereby moving beyond its historical focus on sun protection (ie, skin cancer risk) alone. Another question is, given evidence that people with different skin pigmentation require different amounts of UVR exposure to synthesise vitamin D, could UVI-related advice also refer to a variety of skin types.

Reassessment of sun-protection advice

Because of the uncertainties about and lack of consistency in UVI-related messages, the Cancer Society of New Zealand convened an interdisciplinary forum in 2008. The forum reassessed sun-protection and sun-exposure advice for New Zealand, including messages based on the UVI. Four key questions emerged.

- Is current advice to protect oneself from the sun when the UVI is 3 or higher correct? What evidence underpins this?
 - Does the current UVI behavioural gradient make sense (ie, if advised to protect oneself when the UVI is 3 or higher, do we need to use all five SunSmart steps at the same level)?
 - Is a UVI under 3 the correct level to recommend increased sun exposure? What evidence supports this?
 - Can the UVI be used to communicate individualised messages about safe and healthy sun-related behaviours for a variety of skin types?

The forum's key recommendations were to:

- maintain broad, time-based, sun-protection advice targeting the general population (ie, to protect oneself between September and April, especially between 11 am and 4 pm)
 - continue advising about the need for sun protection when the UVI is 3 or higher
 - consider adopting the Australian UV Alert for communicating sun-protection messages (although it was agreed this required research, testing, and validation in the New Zealand context)
 - consider a future forum to review advice for winter and for individuals with dark skin
 - support further research on these issues.

In 2009, a UVI Redevelopment Project started in New Zealand with the objective of considering how best to communicate UVI information via the media (Beckman & Grey, 2010). Similar work is also being undertaken in

Victoria with regard to UVI evaluation and redevelopment (Makin, 2010).

Recommendations

This paper concludes it is timely for Australia and New Zealand to consider a standardised trans-Tasman UVI. Aside from our shared high melanoma incidence rates, reasons for standardisation include:

- the high levels of trans-Tasman migration
- the high levels of trans-Tasman tourism
- the potential for campaigns in each country to promote awareness and understanding in both countries (although a 'redeveloped' UVI would need to be tested and refined for its fit in each country)
 - increasing research capacity by harnessing research and evaluation resources and capabilities from both countries
 - facilitating international advocacy for a WHO forum to reassess the UVI's effectiveness as a health promotion tool based on Australian and New Zealand experiences as UVI 'guinea pigs' (and the possible need for international resources to assist with ongoing challenges)
 - assisting the WHO's goal of a globally standardised UVI, for which standardisation between New Zealand and Australia would be a significant development.

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