Prevention is better than a cure: we can do better in skin cancer control in New Zealand!

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Every day more than 250 New Zealanders are told that they have a skin cancer, and each week about ten die as a result.[1,2] Urgent societal efforts are needed to curb this epidemic of the most prevalent cancer in Aotearoa New Zealand.[3] The 2,500 annual melanoma diagnoses are only the deadliest tip of an iceberg[2] otherwise swamped by more than 90,000 keratinocytic cancer diagnoses.[1] The sheer volume of keratinocytic cancer diagnoses means they are not routinely recorded in the New Zealand Cancer Registry's statistics.

Although most skin cancers can be effectively treated if detected early, the cost is staggering. In Australia, a very conservative (and now outdated) estimate of the cost of treatment for melanoma and keratinocytic cancer was $900 million per year.[4,5] As New Zealand has similar rates of skin cancer to Australia, a rough estimate, adjusted for population size, would suggest that the treatment cost in New Zealand is likely to be in the vicinity of $180 million. The overall economic burden of skin cancer treatment will likely continue to escalate because of our ageing population, poor past sun protection behaviour and the development of expensive immunotherapies to treat advanced stage melanoma.

The funding and implementation of evidence-based primary prevention strategies has been largely neglected by government. For example, Te Hiringa Hauora/Health Promotion Agency (HPA), which is tasked with promoting health and wellbeing, had an annual budget for the 2020/2021 financial year of $500,000 (including salaries) for addressing skin cancer control.[6] When this token investment in primary prevention is contrasted with the annual cost of skin cancer treatment, the lack of importance placed on skin cancer prevention in New Zealand is highlighted, especially when the high preventability of the disease is taken into account. There is a need for an official acknowledgement that, in addition to the personal costs for affected individuals, the high incidence of skin cancer has critical economic implications for our public health system, and in the long term, the costs of treating this highly preventable cancer could be used elsewhere.

The implementation of primary prevention strategies has enormous potential to reduce the human and treatment burden of skin cancers for future generations. There is consensus that skin cancer usually arises as a result of cellular DNA damage triggered by exposure to ultraviolet radiation (UVR).[7] The intent of primary prevention is to avoid the onset of skin cancer development by reducing excessive exposure to UVR, the main potentially modifiable risk factor. In contrast to many other cancers, more than 90% of skin cancers are thought to be avoidable through primary prevention.[7] Most New Zealanders already understand that too much sun exposure is a risk for skin cancer and, at least in general terms, know how to prevent it. However, knowledge alone is often not sufficient to change behaviours. In 2018, nearly half of New Zealanders reported having been sunburnt in the past summer.[8] Sunburn is a known modifiable risk factor for cellular DNA damage of the skin.[9]

Investment in skin cancer prevention provides excellent value for money.

Economic modelling in Australia demonstrates that $1 invested in their comprehensive SunSmart programme yields a $2.32 return.[10] In order to achieve similar returns and prevent skin cancer in New Zealand, sustained investment is required at both a governmental and societal level. It will take long-term action to impact morbidity and mortality rates. In Australia, it took over 30 years of investment in the comprehensive SunSmart programme before a decline was observed in the rate of skin cancers among the younger age groups, who have benefited from the SunSmart programme from the start of their lives.[11]

Past efforts in the primary prevention of skin cancer in New Zealand have emphasised the importance of exercising individual responsibility to use personal sun protection to reduce exposure to UVR. However, achieving sustained individual behaviour change in any area is exceedingly difficult, and sun protection is no exception. This approach also requires the use of sustained "reminders" through widespread public education campaigns, but there has not been a national campaign in New Zealand for over a decade. Coupled with this is that exposure to UVR, in some settings, may not be under individual control (eg, while at work).

Rather than focusing solely on individual behaviour change, it makes more sense to build healthy public policy and implement structural changes that create supportive environments. This should apply to all sectors of our community, including educational institutions, workplaces, sport and recreational facilities and public spaces where outdoor activities occur. Sun protection policies, procedures and practices should be mandated and, where necessary, legislation should be strengthened.

Legislative changes

Examples of healthy public policy changes include legislation to ensure that UVR is systematically recognised as a workplace hazard requiring mitigation, testing and correctly labelling sunscreens and removing solariums from our community.

Worksafe has acknowledged that over-exposure to UVR is a potentially serious health risk for outdoor workers and radiation appears in the list of occupational diseases in schedule 2 of the Injury Prevention, Rehabilitation, and Compensation Amendment Act (2008).[12] Over-exposure to UVR results in injury from the transfer of energy in amounts or at rates that exceed the threshold of human tolerance.[13] Damage to the skin caused by UVR exposure fits this definition of an injury event, but it differs from what many people might regard as "injury" in that the effect is not immediately apparent. In fact, two types of injury can result to the skin from UVR exposure: either acute damage (visible as sunburn)[14] or longer-term damage from chronic exposure. Both injuries can cause DNA mutation.[15] Therefore, having suffered an injury, people with skin cancer should be eligible for compensation from the Accident Compensation Corporation. In the 2020/2021 financial year the total cost of ultraviolet related claims to ACC was $1.8 million.[16]

The New Zealand Cancer Action Plan 2019–2029 Te Mahere mō te Mate Pukupuku o Aotearoa 2019–2029 recommends that *primary* sunscreens should be regulated as therapeutic goods, as they are in Australia.[17] The Minister of Health has publicly been quoted saying that this process is under way.[18] Such a change is long overdue, particularly given the repeated failure of products to meet advertised claims of protection.[19]

A further change would be legislation that requires the removal of commercial solariums from our communities, as has already been done in Australia and Brazil. This would signal that our government considers excessive UVR, whatever the source, a serious health hazard. The potential concern for business closure is overrated, given the evidence that only four solarium operators in New Zealand have not sought to diversify their business to include other services.[20]

Medium- to long-term national targets should be set for the reduction of morbidity and mortality from skin cancers, and the necessary steps should be implemented (including regular monitoring of keratinocytic cancers) to ensure that progress can be monitored.

Environmental strategies

Personal sun protection (such as sunscreen) may be necessary for some outdoor activities, but for localised passive activities, the provision of shade trees and well-designed built structures represents a more practical strategy to support public enjoyment of the outdoors, particularly during summer. As it has a multitude of benefits, the provision of shade is one of most desirable sun protection strategies. This strategy would save individuals money and the need to forward plan and could potentially protect successive generations of New Zealanders. The construction cost is likely to be a one-off expense, but, unfortunately, shade is sometimes either treated as an afterthought in new developments, and/or it is the first element to be "chopped" in budget cuts. State governments in Australia have acknowledged the benefit of shade through federal shade grants. For example, Victoria (with a similar size population to New Zealand) has $10 million of shade grants available triennially.[21] Further investment has just been announced by the Victorian State premier will all 2,149 schools in Victoria now entitled to a grant for shade of up to $25,000.[22] Schools, community groups and councils are all able to apply for funding to erect structures that create shade in their communities, including at outdoor sports facilities, schools and playgrounds.

Health public policy

In order to achieve broad health gains, healthy public policy needs to be incorporated at all national, provincial and local levels in all organisations, including government, territorial authorities and non-government organisations. New Zealanders need to be protected from excessive UVR whenever it's practicable, whether at work or during daily life and recreation. This requires a concerted effort by local councils, educational settings, workplaces and sporting and recreational organisations to establish UVR-reduction policies.

Local councils: The Local Government Act (2002) highlights the need for territorial authorities to provide healthy and safe environments for their populations. Disappointingly, an audit of council websites in 2021 identified just five local councils with sun protection policies in place. Councils are in a unique position to ensure that sun protection options are provided in shared, outdoor public places, particularly with respect to shade at council-owned or controlled facilities, community events and in the granting of planning and building approvals.

Educational settings: Childhood and adolescence are important exposure periods and also times for developing lifetime sun protection practices that last a lifetime. For nearly two decades, the Cancer Society, a non-governmental charity organisation, has provided national leadership in skin cancer prevention in primary school settings (up to year 8).[24] It has funded, implemented and continues to administer the SunSmart Schools programme, the only evidence-based national skin cancer prevention intervention in New Zealand that focuses on policy development and strategies related to the environment, curriculum and behaviour. We owe a huge debt of gratitude to the Cancer Society and their dedicated health promotion staff who have been pivotal in ensuring that now, after more than 15 years of effort, almost all primary schools have a sun protection policy.[25] Although sun protection practices in schools have improved considerably since the introduction of the programme, shade provision is particularly challenging for schools, especially because of cost. My understanding is that there is currently no routine funding available specifically for shade from the Ministry of Education.

A casual observation of school grounds is enough to recognise that, once students move from primary to secondary school, sun protection practices almost disappear. Addressing sun protection among adolescents is a challenge made more difficult by the majority of secondary schools seeing sun protection not as part of their collective responsibility, but rather as a concern for the individual student. Only 37% of secondary schools report that they have a specific sun protection policy.[27] Overall, all educational institutions and early childhood centres should implement a comprehensive sun protection policy that encompasses the

SunSmart Schools guidelines, which would signal the intention (ie, of the board of trustees) that the institution will provide an environment where staff and students can be safe in the sun.

Workplaces: Under the Health and Safety at Work Act (2015), employers have a clear responsibility to minimise the risk faced by outdoor workers they employ and sub-contractors. Requiring employers to ensure outdoor workers are protected from UVR encourages the development of a "workplace safety culture." Perceived workplace support, provision of protective equipment and a sun-protective work culture are significantly associated with workers' sun protective practices.[28]

Sporting organisations: Many summer sports are conducted over extended periods of time throughout peak UVR hours, around solar noon. Coaches, officials and spectators may also be at increased risk. My research has found that only two out of approximately 75 national sporting organisations that hold sporting events outdoors during times when sun protection is recommended have a sun protection policy.

Ministry of Health: The Ministry of Health influences how policies are implemented by government and non-government agencies, and even which research projects are prioritised to receive funding from government sources. At present, health-related policies, practices and research projects are required to demonstrate a benefit to Māori. This is justified, given the well-known racial inequities in almost all areas of health. However, since skin cancer impacts overwhelmingly on the European population,[3] an exception needs to be made in order for the incidence of this highly preventable disease to be reduced, and so that the substantial treatment costs saved can be allocated to other health priority areas. It is irrational not to implement known primary prevention strategies that would help to reduce health system skin cancer inequalities and high treatment costs in the medium to long term.

Australia, which has comparably high rates of melanoma to New Zealand, is the world leader in skin cancer control. For over 30 years Australian agencies have had a comprehensive primary prevention focus, including SunSmart policies in schools, workplaces and outdoor recreational settings, as well as wide-spread media coverage promoting SunSmart behaviour. Australians are now starting to reap the benefits of this commitment, realising a downward trend in melanoma rates among the younger age groups who have benefited from these SunSmart policies since childhood.[11] New Zealand needs to follow Australia's lead. One cancer control strategy identified in the New Zealand Cancer Action Plan as an important public health goal is reducing the number of people developing skin cancer due to UVR exposure.[17] However, it describes no mechanism to achieve this goal, no provision of funding and no way to monitor progress.

Although skin cancer is a significant public health issue for New Zealand, it can be largely prevented by reducing excessive exposure to UVR. My recommendations for first steps of action in priority areas are as follows:

- Extend current legislation to remove solariums from our community.
- Publicly fund a shade scheme (similar to that in Australia) that allows community groups, schools and other organisations to install appropriate shade. This can potentially benefit generations of New Zealanders.
- The Ministry of Health should commit sufficient funding for the effective promotion of sun protection activities by the new public health administration. The $500,000p.a. is unacceptably low given the estimated cost for treatment is about $180 million and this disease is largely preventable. If 5% of the total budget for skin cancer treatment were allocated for prevention activities, this would equate to $9 million annually.
- Regulate sunscreens as a therapeutic good.
- Investigate ways of reducing the cost of sunscreen, potentially through removal of GST.
- Set national targets for the reduction of morbidity and mortality of skin cancers, and implement the steps necessary to ensure that this is monitored.

- The Ministry of Education should follow World Health Organization recommendations for best practice sun protection and require all educational settings, including preschools, primary schools and secondary schools, to follow the recommended guidelines.
- All schools and early childhood centres should implement a comprehensive sun protection policy that encompasses the SunSmart Schools guidelines and signals that the intent of the board of trustees is for schools to provide an environment where staff and students can be safe in the sun.
- Implement and enforce a comprehensive sun protection policy assessed as part of the regular Education Review Office cycle.
- Fund the Cancer Society to deliver the SunSmart Schools programme in schools.
- All workplaces that employ or contract outdoor works should provide a workplace policy and practical support for sun protection. The addition of UVR to outdoor workplace hazard registers should be required and enforced.
- Sports organisations' health and safety documentation should include sun protection policies that stipulate that clothing and sporting event practices should follow sun protection guidelines.

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