



The Australasian College of Dermatologists

Skin cancer prevention: A blue chip investment in health

Cancer Council Australia

&

The Australasian College of Dermatologists



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A RATIONALE FOR FURTHER INVESTMENT IN SKIN CANCER PREVENTION CAMPAIGNS

Introduction

Skin cancer is an enormous health problem in Australia. It causes around 1,600 deaths each year and costs the health system more to treat than any other form of cancer. Yet almost all cases are preventable, through appropriate protection from ultraviolet radiation. The good news is we have evidence that shows how public health programs can encourage SunSmart behaviour that will save lives, reduce morbidity and generate major health system costs savings.

As Australia prepares for an unprecedented rise in cancer cases due to population ageing alone (as well as the other systemic challenges of demographic change), now, more than ever, government needs to invest in measures that will ease pressure on an increasingly strained health system. Prevention is the key.

Evidence from SunSmart (as well as other public health programs, such as the National Tobacco Campaign) highlight that health promotion programs with a mix of strategies built around social marketing are fundamental to effecting behaviour changes that improve health outcomes. **There is clear evidence that investment in social marketing to encourage SunSmart behaviour can significantly reduce the social and economic costs of skin cancer.**¹ If social marketing investment declines, so does people's sun protective behaviour. This evidence supports that further action by government is required to prevent avoidable skin cancer and related deaths. The data highlights that sustained investment is important, because when campaign activity decreases so too can the rate of change towards sun protection.¹ Epidemiological data is also presented in this paper, as is a

This evidence supports further action to prevent avoidable skin cancer and related deaths.

summary of the compelling economic evidence for return on investment.

This evidence supports the need for an ongoing national SunSmart program. To fund this program,

Cancer Council Australia is requesting support from the Australian Government, in the amount of at least \$8.3 million per annum for a period of five years, for a comprehensive national SunSmart program. This investment will provide the Australian Government excellent value for money.

This paper outlines the evidence to support the continuation of skin cancer prevention programs in Australia - particularly an Australian Government commitment to an ongoing national skin cancer awareness campaign. The detailed economic analysis underpinning the recommendations in this summary report is available in a separate, report prepared by Deakin University.

Size and dimension of the problem

At least two in three Australians will be diagnosed with skin cancer before the age of 70: it is the most common cancer in Australia.² Australians are four times more likely to develop a skin cancer than any other form of cancer.³ This high prevalence results in over 1,600 Australians dying from skin cancer each year.⁴ Most of these deaths are from melanoma, the incidence and mortality of which is shown in Figure 1. The burden of this disease among Australians living in rural, regional and remote populations is even greater than in major cities. Indeed 60% of new cases of cancer outside major cities are due to melanoma.⁵

At least two in three Australians will be diagnosed with skin cancer in their lifetime.

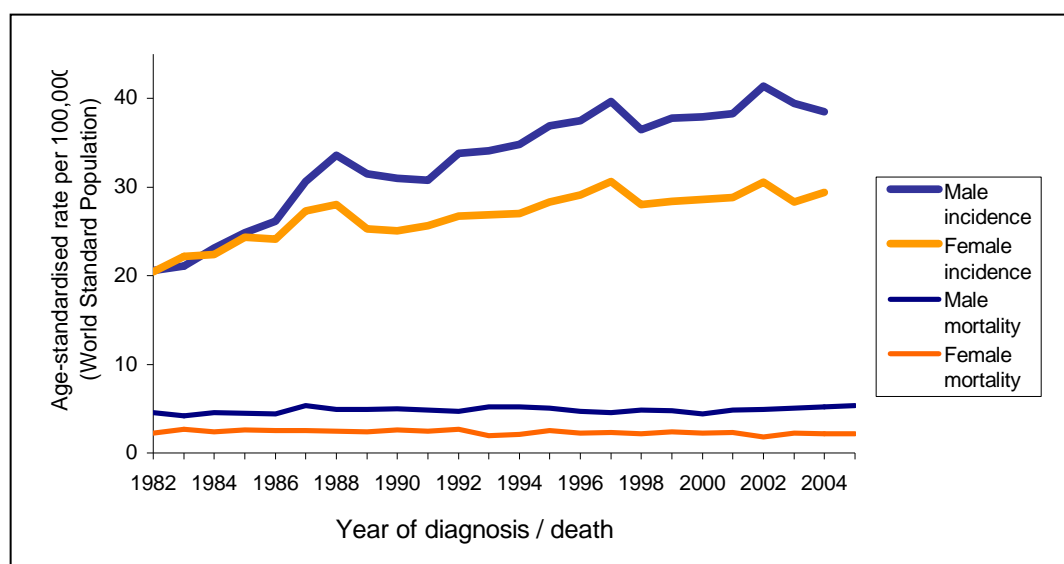


Figure 1: Melanoma incidence and mortality; Australia 1982-2005³⁰

The magnitude of this disease places great demand on healthcare resources. More than 380,000 Australians are treated for skin cancer each year^{3,6}; that equates to over 1,000 people every day. In Australia general practitioners (GPs) have almost one million patient encounters every year for skin cancer.⁷

Skin cancer is the most expensive cancer in Australia. In excess of \$294 million is spent annually.

The economic impact of this is significant. Skin cancer is the most expensive cancer in Australia. In excess of \$294 million is spent annually on the diagnosis and treatment of skin cancers: non-melanoma skin cancer (\$264 million) and melanoma (\$30 million).⁸ Economic losses go beyond diagnosis and treatment, with significant production losses also impacting Australian society.⁹

Skin cancer in Australia at a glance

Over 1,600 Australians die from skin cancer each year.⁴

At least 2 in 3 Australians will be diagnosed with skin cancer before the age of 70.²

Sun exposure has been identified as the cause of around 99% of non-melanoma skin cancers and 95% of melanoma in Australia.^{10,11}

Over 380,000 Australians are treated for skin cancer each year³: that's over 1,000 people every day.

In 2002, skin cancers accounted for over 80% of all cancers diagnosed in Australia.³

Skin cancer costs the health system around \$300 million annually, the highest cost of all cancers.⁸

Each year, Australians are four times more likely to develop a common skin cancer than any other form of cancer.³

GPs in Australia have nearly one million patient encounters per year for skin cancer.⁷

It has been estimated that regular use of sunscreen during the first 18 years of life could reduce the incidence of non-melanoma skin cancer by around 60%.^{12,13}

1,900 premature deaths will be prevented by the SunSmart program over the next 20 years.⁹

SunSmart programs have the potential to reduce the number of cases of melanoma by 20,000 and NMSC by 49,000 over the next 20 years (based on the success of SunSmart programs since 1998).⁹

The program is extremely cost-effective with a \$2.32 net saving for every dollar spent.⁹

EVIDENCE SUPPORTING A NATIONAL SKIN CANCER PREVENTION PROGRAM

232% return on investment over 20 years

A rigorous cost-benefit analysis by Melbourne's Deakin University shows that investment in a national SunSmart program to prevent skin cancer would return \$2.32 to government for every \$1 invested.

The detailed analysis, including methodology and discussion, is available in a separate report. The researchers applied a number of models and used conservative figures for their analysis. The 232% return on investment is based on an optimal outlay of 28 cents per capita each year over 20 years, which, on the basis of the effectiveness of the Australian Government's current SunSmart program (see following), would prevent 80,000 melanoma and 111,000 NMSC cases, when compared with a national SunSmart program running at a lower level of investment of 7c per capita (a figure based on the lower SunSmart investment in some jurisdictions).

In terms of incidence and mortality, the analysis shows that, based on the success of SunSmart programs since 1988, an ongoing commitment to a national SunSmart program over the next 20 years would result in 20,000 fewer melanoma cases and

An ongoing national SunSmart program would provide strong value for money, not only from a health sector perspective, but also from a broader societal perspective.

49,000 fewer NMSC cases. Using the same framework, a SunSmart program would prevent 1,900 premature deaths over the same period.

Further extrapolation of historical data from the effectiveness of SunSmart programs indicates that

341,000 years of life would be lost to melanoma in Australia over the next 20 years if the per capita investment was limited to 7c per capita. Increasing this investment to 28c per capita would reduce years of life lost to melanoma deaths to 250,000 over the same period - a net reduction of 91,000 years of life lost over the period

In today's money, this equates to an annual commitment of around \$8 million. This would deliver savings to government through reduced healthcare costs of more

than \$266 million over 20 years. The economic analysis also shows the investment would generate net production gains in the general economy of around \$90 million.

A total of 122,000 disability adjusted life years (DALYs), including years of life lost (YLL) and years lived with disability (YLD), would be averted - the majority (73,000 DALYs) from health gains in melanoma prevention.

In the sensitivity analysis documented in the economic report, the intervention remains compellingly cost-effective even if the demonstrated effectiveness of SunSmart programs is reduced by 50%.

Health system gains based on the level of effectiveness achieved by the SunSmart program since 1988:

- 20,000 fewer melanoma cases over the next 20 years
- 49,000 fewer NMSC cases in the next 20 years
- A reduction of 1,900 premature deaths
- For every \$1 invested, \$2.32 returned

This represents 'strong value for money'. (Shih & Carter 2008, unpublished)

A recent study compared production gains/losses of many major preventive health interventions and this also highlights the cost-effectiveness of the SunSmart program.²⁵ The losses and gains examined include absence from paid work due to premature death or retirement and/or short-term absences from paid work due to ill-health. The SunSmart program scored a very high ranking of 2, out of the 21 interventions being reviewed (see Table 2, over page).

Risk factor	Intervention	Ranking before production gains	Ranking after production gains
CVD risk factors	Community Heart Health Program	1	1
UV exposure	SunSmart program	2	2
Smoking	Call back counselling	2	3
Alcohol use	Brief GP intervention	4	8
Depression	Maintenance CBT for five years with public psychologist	5	5
Depression	Maintenance CBT for five years with private psychiatrist	6	6
Smoking	Bupropion	7	7
CVD risk factors	Beta blockers targeted at 15% risk group	8	11
Smoking	Nicotine replacement therapy	9	9
CVD risk factors	Dietary counselling targeted at 10% risk group	10	12
Alcohol use	Random breath testing	11	4
Cervical Cancer	Screening (current practice)	12	10
Physical Inactivity	Active GP script	13	14
Depression	Maintenance SSRIs for 5 years	14	13
CVD risk factors	Dietary counselling targeted at 5% risk group	15	15
CVD risk factors	ACE inhibitors targeted at 10% risk group	16	17
CVD risk factors	Beta blockers targeted at 5% risk group	17	16
CVD risk factors	ACE inhibitors targeted at 5% risk group	18	18
CVD risk factors	Combination targeted at 15% risk group	19	19
Physical inactivity	Exercise physiologist	20	20
Depression	Opportunistic screening + CBT	21	21

Table 2: Comparative ranking of interventions on cost-effectiveness ratios before and after inclusion of production gains²⁵

Skin cancer prevention programs in Australia

Since the early 1980s skin cancer prevention programs have operated in all Australian state and territory jurisdictions, mostly under the brand of SunSmart. Exposure to UV (mostly sunlight) causes around 99% of non-melanoma skin cancers (NMSC) and 95% of melanoma cases in Australia.^{10,11}

Therefore, skin cancer prevention has focused on motivating people to adopt sun protection behaviours and advocating for environmental and legislative change. There has been considerable variance, year to year, in investment on such skin cancer prevention programs; they have often operated below optimal levels for a comprehensive campaign.⁹

In 2006-07 the Australian Government funded the first national mass media campaign on skin cancer awareness, with approximately \$6 million.⁹ This consisted of television, print and radio advertisements aimed at educating Australians about the importance of protecting themselves from skin cancer (see Appendix 1). The national campaign was extended in January 2008 for one additional year. This phase of the campaign focused on the risks associated with cumulative sun exposure. It also aimed to increase awareness among young Australians of the seriousness of skin cancer, and promoted multiple sun protection behaviours as normal and socially acceptable (see www.skincancer.gov.au).

Currently there is no commitment to ongoing funding, yet there is a body of evidence that points to the effectiveness of broad-based sustained programs.

There is now a solid body of evidence collected by Cancer Council Australia that points to the effectiveness of both the previous national campaign, as well as other state-wide, broad-based sustained programs. A summary of this evidence is outlined in the following sections.

Evidence for effect on knowledge, attitudes and beliefs

A survey conducted in the middle of the first National Skin Cancer Awareness Campaign, during summer of 2006-07, involved interviews with 652 adolescents (12-17 years) and 5085 adults (18-69 years). This research identified that awareness

A study conducted in the middle of the first National Skin Cancer Awareness Campaign showed improvements in Australians' skin cancer prevention attitudes and beliefs.

of the campaign message was generally high. It also showed significant improvements in Australians' skin cancer prevention attitudes and beliefs since the previous survey, conducted in 2003-04 prior to the Australian Government's national skin cancer campaign.¹⁴ In particular there were significant improvements in the number of people who no longer desired a tan and most importantly a reduction in the number of adults who reported getting sunburnt.¹⁵

The national campaign reached a large cross section of the population with 64% of adolescents and 58% of adults able to recall the campaign television advertisement. Notably, the highest level of campaign awareness was among adults with sensitive skin and among younger adults. For example 93% of adolescents who had seen the Australian government campaign advertisements could also recall at least one of the key messages. Thirty-five percent of adults and 44% of adolescents who reported seeing the advertisement were able to recall its main slogan 'protect yourself from the sun in five ways: with a hat, clothing, shade, sunglasses, and sunscreen'.¹⁴

Most respondents reported the advertisement would make them think about what

Most respondents reported the advertisement would encourage them to protect their skin.

it would be like to get skin cancer in the future, as well as encourage them to protect their skin. Importantly, compared to the previous national survey conducted in 2003-04, there were increased beliefs among both adolescents and adults that skin cancer could be avoided with regular sun protection. There was also a decrease in desire for a suntan (see Table 1).¹⁴

	2003-04 (n=5073)	2006-07 (n=5085)	Adjusted Odds Ratios p-value *<.05, **<.01, ***p<.001
Like to get a tan			
Yes	39%	32%	0.73***
Attempted a suntan this season			
Yes	15%	11%	0.67***

Table 1: Adults' desire for a suntan and intentional tanning - decreased⁸¹

Evidence for effect on behaviours

Most of the evidence relating to behaviour change associated with skin cancer prevention messages comes from Victoria, where the SunSmart program has been in place for many years. Regular population surveys by The Cancer Council Victoria show that campaign messages have impacted on behaviour through changes such as improved sunscreen and hat wearing during outdoor activity.^{1,16}

Messages have reached many Australians and have impacted on their behaviour.

A recent Victorian study also showed significant gains in sun protection behaviour, which coincide with the ongoing conduct of the SunSmart skin cancer prevention campaign. This study involved observing teenagers and adults to determine their sun protection behaviour while they were engaged in outdoor leisure activities on summer weekends. Data collected over more than a decade showed significant improvements in people's use of sun protective clothing over time.¹⁷

Further analysis of the Victorian data examined whether trends in behavioural risk factors for skin cancer over a 15-year period (1987 to 2002) were associated with the extent of SunSmart television advertising. This identified that sun protection behaviours changed over time in concert with fluctuations in the amount of television advertising broadcast. So where survey participants were exposed to

Sun protection behaviours changed over time in concert with fluctuations in the amount of television advertising broadcast.

higher levels of SunSmart advertising in the four weeks before being interviewed, there was an increase in their preference for no tan, hat and sunscreen use, and the proportion of body surface they protected from the sun (see Figure 2). These data highlight that sun protective behaviours are amenable to change. A population's behaviours and attitudes toward sun protection can improve or decline in response to prevailing influences; this underlines the value of long-term commitment and adequate resources for population-based skin cancer prevention programs, that include televised media campaigns and strategies to monitor and evaluate outcomes.¹

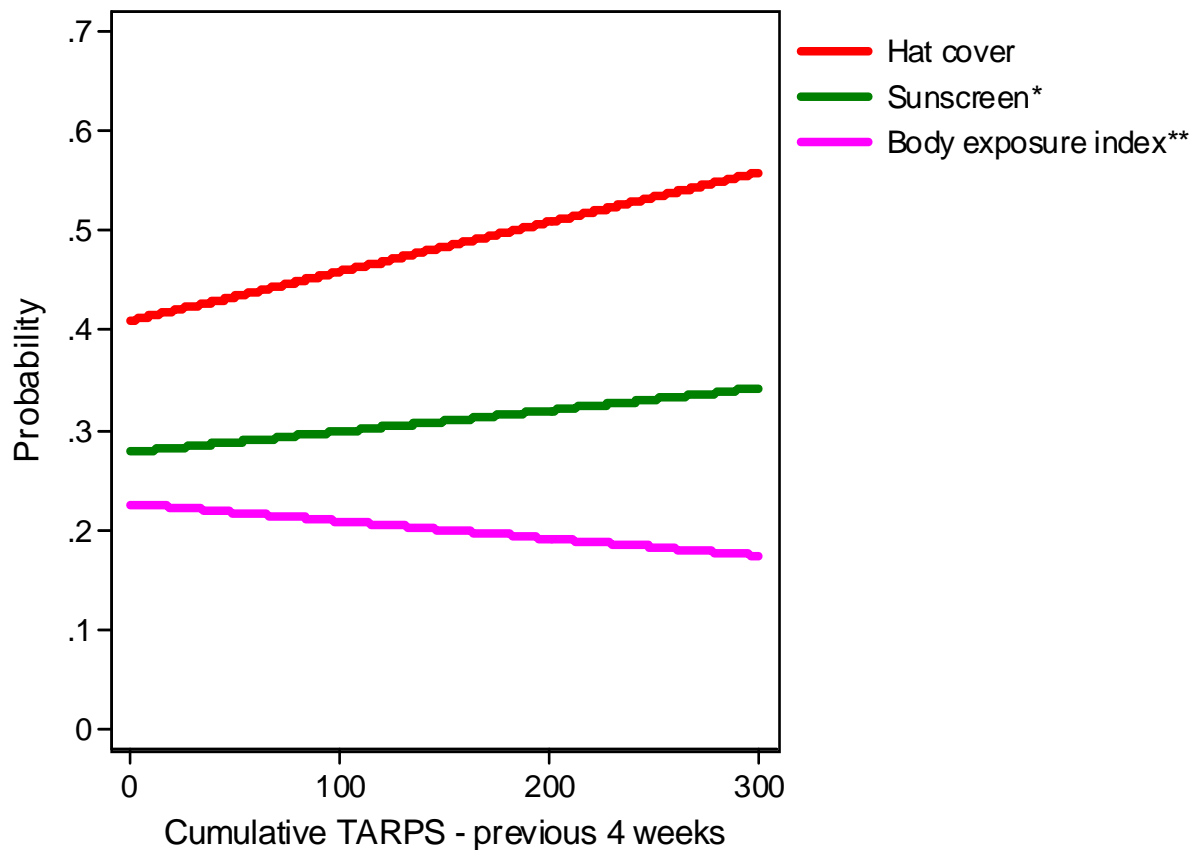


Figure 2: Effect of TARPS on sun protection behaviour¹

Evidence for effect on sunburn

Sunburn has been linked to increased melanoma risk,^{10,18} and UVA and UVB exposure from the sun and sun tanning equipment is the only recognised modifiable risk factor for melanoma.¹⁹ As melanoma outcomes produced from behaviour change due to prevention programs are often not available in the timeframe during which most programs are evaluated, sunburn incidence is commonly used as a proxy indicator to assess skin cancer prevention programs.²⁰ Analysis of nine cross-sectional surveys conducted between 1987 and 2002 showed a significant reduction in sunburn incidence across most survey years when the SunSmart program was being implemented, compared with the pre-SunSmart baseline.¹

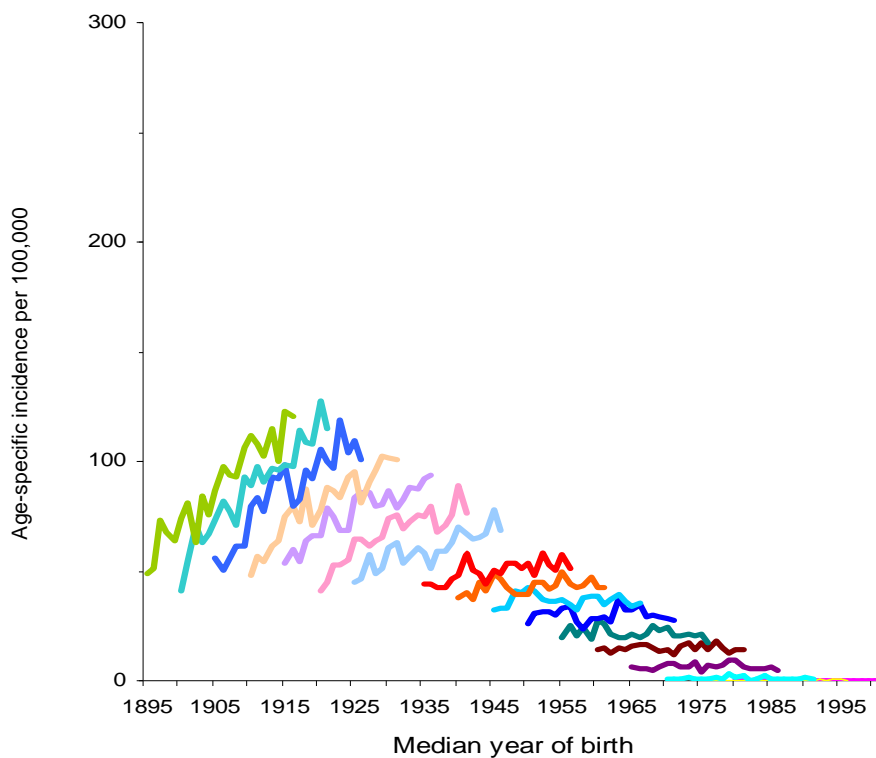
Evidence for effect on trends in incidence of skin cancer

National data on incidence of treated non-melanoma skin cancer in 2002 shows there was more than five times the incidence of all other cancers combined. Although overall non-melanoma skin cancer rates have risen since 1985, rates have stabilised for people younger than 60 years, who were exposed to skin cancer prevention programs in their youth. This highlights the importance of maintaining and strengthening these programs and the influence of prevention campaigns.²

Melanoma incidence in Australia continued to rise between 1982 and 2004, due in part to increased early detection of lesions. However, there is a slower increase than previously among those aged over 50 years, and falling incidence rates in men and women younger than 40 years. These falling rates in younger age groups (who grew up with the SunSmart message) in a context of increased incidence overall, are consistent with a positive effect of the SunSmart program (see Figure 3).²¹ There is also a decline in melanoma mortality in younger age groups.^{22,23} Better treatment and long-term survival rates have been achieved through earlier detection of skin cancer.²⁴

NMSC rates have stabilised for people younger than 60 years, who were exposed to skin cancer prevention programs in their youth.

FEMALE



MALE

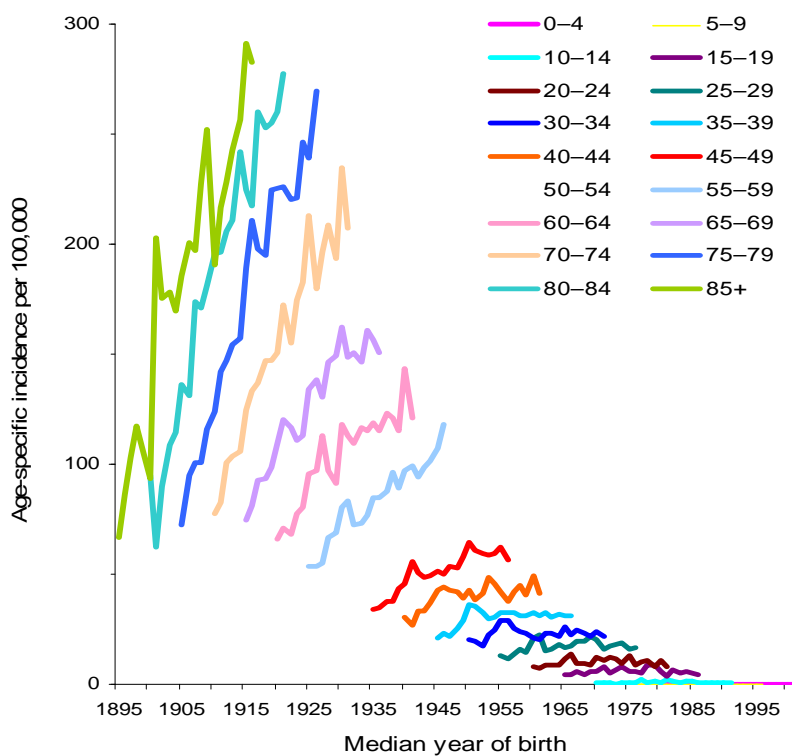


Figure 3: Melanoma incidence trends by age group and sex, Australia, 1982-2004³⁰

WHERE TO FROM HERE?

It is clear that skin cancer prevention messages are reaching and influencing the behaviours of many Australians. Yet new audiences are constantly emerging, such as new parents, new school students and new immigrants, and it is important that the messages reach these people.²⁶

There is also the need to continue to evolve skin cancer prevention efforts to address new evidence and other messages in the media, for example regarding the effect of decreased sun exposure on vitamin D production.^{27,28} It is important to continue to monitor community understanding of the risks and benefits of sun exposure, both in order to ensure that the SunSmart messages are appropriately delivered for groups at higher risk of vitamin D deficiency than of skin cancer, and to ensure that the vitamin D issue is not used as a justification for those at higher risk of skin cancer to increase their summer sun exposure.

Some recent trends in popular media may be counter-productive to the SunSmart message. For example, content analysis of summer issues of popular women's magazines from 1987 to 2005 revealed that the proportion of models depicted wearing hats decreased, and the proportion of models portrayed with moderate to dark tans declined then later increased.²⁹ If we are to maintain momentum in promoting SunSmart knowledge, attitudes and behaviour in the population, evidence suggests a strong media presence for the SunSmart campaign is essential, else the skin cancer prevention message may be dwarfed by contradictory media content.

While gains have been made in attitudes and sun protection behaviour change, health promotion efforts must be strengthened. Only efforts that are ongoing will produce the sustainable change that is greatly needed.

If investment in skin cancer prevention is not maintained, the evidence is clear that there will be a regression in sun protective behaviour and millions of dollars of public health investment will be lost.²⁷

Only efforts that are ongoing will produce the sustainable change that is urgently needed.

Requested budget

Skin cancers and related costs can be significantly reduced with ongoing funding of \$8.3 million per annum for five years. The request of \$7 million per annum for social marketing is reflective of original government budget investments in this area. Hence the request is for this initial amount to be maintained in value on an on-going basis. This would enable a comprehensive national SunSmart program. In addition to this we need to improve monitoring as outlined in the budget below:

1	Social marketing media campaign	\$7 million
2	Promotional activities in schools and workplaces	\$1 million
	TOTAL PER ANNUM	\$8 MILLION
3	National Monitoring Incidence of Non-Melanoma Skin Cancer (every 5 years)	\$500,000
4	National Sun Protection Survey (every 3 years)	\$300,000

The evidence is clear that a sustained skin cancer prevention program will not only save many lives, but provide a positive return on investment.

Cancer Council contribution

State and territory Cancer Councils have a 20-year history in delivering skin cancer social marketing campaigns, but have difficulty in sustaining investment in paid advertising. For this reason, efforts by the Cancer Councils are generally directed to community engagement and 'below the line' social marketing activity that targets schools, early childhood settings, workplaces, local governments and sport and recreation settings. As a conservative estimate, Cancer Councils contribute over \$3 million per year to skin cancer prevention activity and will continue to provide valuable support to future Australian government campaigns.

Unlike other preventive causes of ill-health, we have clear evidence to know how to reduce the enormous human and financial burden of skin cancer; the evidence highlights that a sustained national SunSmart program is critical to address the problem. Turning this knowledge into action is vital and funding at the level requested will enable us to make a significant impact on the human cost of skin cancer in this country.

APPENDIX A - ADVERTISEMENT IMAGES FROM THE NATIONAL SKIN CANCER AWARENESS CAMPAIGN



Surgeon,
Professor Thompson

Real life 22-year-old
melanoma patient



Surgeon operating
on a mole

The five ways to protect
yourself message



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