

## RECOMMENDATIONS

### **Term of Reference #1: awareness**

RECOMMENDATION 1: Government investment must be shifted increasingly towards **evidence-based primary prevention** of skin cancer through community awareness campaigns about the harms of high sun exposure to pale-skinned Australians (especially through sunburns) and how they can be prevented from occurring.

RECOMMENDATION 2: Facilitate targeted high-quality research to gain knowledge specifically about the determinants of and barriers to sun-aware, sun-protective behaviour at various stages through the life-course exposure and about the most effective interventions to achieve and maintain sun-aware behaviour outdoors.

### **Term of Reference #2: early diagnosis**

RECOMMENDATION 3: Through Medicare, private medical/healthcare databases and pathology databases, continually **monitor and evaluate the beneficial outcomes against the negative outcomes** of initiatives to **enhance early diagnosis** to ensure that the former (decreased death rates from skin cancer) always outweigh the latter (increase in unnecessary treatment rates of non-malignant skin tumours and the over-diagnosis of 'malignant' skin tumours)

### **Term of Reference #3: management**

- RECOMMENDATION 4: Given that nearly 50% of skin cancer patients develop multiple skin cancers over time, evidence-based best practice management must include **evidence-based primary prevention** of these subsequent skin cancers.

## MAIN POINTS

'Skin cancer' is used to collectively refer to basal cell carcinoma (BCC), squamous cell carcinoma (SCC) and melanoma.

(Terminology note: 'keratinocyte cancer' is the term used in this submission to refer to BCC and SCC collectively rather than 'non-melanoma skin cancers' which defines the two commonest types of skin cancer by what they are not. The keratinocyte is the common skin cell of origin of BCC and SCC as distinct from the melanocyte, the cell of origin of melanomas. )

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It is scientifically established and accepted that solar ultraviolet (UV) radiation causes skin cancer (**International Agency for Research on Cancer 2012**). Exposure to solar UV

radiation is avoidable and the vast majority of skin cancers are therefore preventable. It is therefore illogical to seek to control skin cancer in Australia now and into the future through focussing on treatment and early diagnosis, when these procedures and costs can be rendered increasingly unnecessary over time by prevention of the disease.

-We have shown through Australian community-based intervention research that **evidence-based primary prevention** of skin cancer and its antecedent conditions by regular sunscreen application is not only feasible and achievable but economically viable (Green, Williams et al. 1999, Darlington, Williams et al. 2003, Green, Williams et al. 2011, Hirst, Gordon et al. 2012).

-There has been a cessation of rising incidence and a stabilising of rates of skin cancer in middle-aged people in this country, and in the youngest generations who have been exposed to SunSmart campaign messages from birth there has even been in a downturn in rates (Staples, Elwood et al. 2006, Baade, Green et al. 2011, Fransen, Karahalios et al. 2012)

-We have reviewed the evolution and outcomes of community awareness campaigns and policies in Australia and show they have been successful in raising awareness about the harms of high sun exposure to pale-skinned Australians and dangers of skin cancer (Iannacone and Green 2014). of skin cancer awareness campaigns in Australia but that they need continued investment to maintain their innovation, relevance and appeal.

- Multiple sunburns are one of the few causal factors common to all 3 major types of skin cancer, BCC, SCC and melanoma. There is evidence that not all parts of the community in Queensland are sufficiently aware of the dangers of sunburn in the long term: sunburn is still a public health problem among Queensland residents, especially those under 45 years of age (Green, Marquart et al. 2013). If the target of reducing sunburn rates in the young were set as an objective measure of raising skin cancer awareness it would be directly beneficial because it would result in primary prevention of skin cancer in the long term. It is appealing because it gives people a marker or a boundary limit for sun exposure: any skin redness or sunburn is harmful, so use the standard sun protection measures to avoid being sunburnt. Sun-safe habits reduce sunburn risk in Queenslanders, but advice must be integrated with health promotion messages regarding physical activity to reduce the skin cancer burden while maintaining active wellbeing. (Green, Marquart et al. 2013). Decreasing sunburns should again be the focus of renewed skin cancer awareness campaigns.

## **Term of Reference #2: early diagnosis**

There are the negative outcomes to enhancing early diagnosis of melanoma namely the over-diagnosis of 'malignant' skin tumours (Welch, Woloshin et al. 2005) and this effect needs to be monitored in concert with the benefits of saving lives eg through Medicare, private medical/healthcare databases and pathology databases as the excision of thousands of false-positive skin cancers especially in low-risk groups like the young,

adds enormously to the government's burden of treatment costs (Fransen, Karahalios et al. 2012).

### **Term of Reference #3: management**

Given that a large proportion of skin cancer patients especially BCC patients (Richmond-Sinclair, Pandeya et al. 2009) and immunosuppressed patients develop multiple skin cancers over time (Grulich, van Leeuwen et al. 2007), evidence-based best practice management of affected patients must include **evidence-based primary prevention** of this burden of subsequent skin cancers

### **References**

- Baade, P. D., A. C. Green, B. M. Smithers and J. F. Aitken (2011). "Trends in melanoma incidence among children: possible influence of sun-protection programs." Expert Rev Anticancer Ther **11**(5): 661-664.
- Darlington, S., G. Williams, R. Neale, C. Frost and A. Green (2003). "A Randomized Controlled Trial to Assess Sunscreen Application and Beta Carotene Supplementation in the Prevention of Solar Keratoses." Arch Dermatol **139**(4): 451-455.
- Fransen, M., A. Karahalios, N. Sharma, D. R. English, G. G. Giles and R. D. Sinclair (2012). "Non-melanoma skin cancer in Australia." Med J Aust **197**(10): 565-568.
- Green, A., G. Williams, R. Neale, V. Hart, D. Leslie, P. Parsons, G. C. Marks, P. Gaffney, D. Battistutta, C. Frost, C. Lang and A. Russell (1999). "Daily sunscreen application and betacarotene supplementation in prevention of basal-cell and squamous-cell carcinomas of the skin: a randomised controlled trial." The Lancet **354**(9180): 723-729.
- Green, A. C., L. Marquart, S. L. Clemens, C. M. Harper and P. K. O'Rourke (2013). "Frequency of sunburn in Queensland adults: still a burning issue." Med J Aust **198**(8): 431-434.
- Green, A. C., G. M. Williams, V. Logan and G. M. Strutton (2011). "Reduced Melanoma After Regular Sunscreen Use: Randomized Trial Follow-Up." Journal of Clinical Oncology **29**(3): 257-263.
- Grulich, A. E., M. T. van Leeuwen, M. O. Falster and C. M. Vajdic (2007). "Incidence of cancers in people with HIV/AIDS compared with immunosuppressed transplant recipients: a meta-analysis." Lancet **370**(9581): 59-67.
- Hirst, N. G., L. G. Gordon, P. A. Scuffham and A. C. Green (2012). "Lifetime Cost-Effectiveness of Skin Cancer Prevention through Promotion of Daily Sunscreen Use." Value in Health **15**(2): 261-268.
- International Agency for Research on Cancer (2012). "IARC monographs on the evaluation of carcinogenic risks to humans. Radiation." IARC Monogr Eval Carcinog Risks Hum **100D**: 1-68.
- Richmond-Sinclair, N. M., N. Pandeya, R. S. Ware, R. E. Neale, G. M. Williams, J. C. van der Pols and A. C. Green (2009). "Incidence of basal cell carcinoma multiplicity and detailed anatomic distribution: longitudinal study of an Australian population." J Invest Dermatol **129**(2): 323-328.
- Staples, M. P., M. Elwood, R. C. Burton, J. L. Williams, R. Marks and G. G. Giles (2006). "Non-melanoma skin cancer in Australia: the 2002 national survey and trends since 1985." Med J Aust **184**(1): 6-10.
- Welch, H. G., S. Woloshin and L. M. Schwartz (2005). "Skin biopsy rates and incidence of melanoma: population based ecological study." Bmj **331**(7515): 481.