

Position statement

Population-based screening for melanoma

Purpose: To provide information on the current evidence-base for population screening for melanoma in Australia.

Audience: Community

Acknowledgements: ACD would like to thank Prof H Peter Soyer FACD; A/Prof Stephen Shumack FACD; and Prof Monika Janda for their review of this position statement.

Endorsement: This position statement has been approved by The Australasian College of Dermatologists Expert Advisory Committee.

Disclaimer: This position statement reflects the general views of the Australasian College of Dermatologists at the date of release and may be subject to amendment to reflect emerging clinical and scientific evidence. This information provides educational information and is not intended as a substitute for individual patient assessment. Practitioners are advised to interpret and apply recommendations according to the needs and circumstances of each patient.

First endorsed by ACD: January 2024

Current: January 2024

Endorsed by

melanoma.
patients
australia

MSCAN
MELANOMA & SKIN CANCER
ADVOCACY NETWORK

Key messages and recommendations

- Australia has one of the highest rates of skin cancer in the world, placing significant health and financial burden on both the population and healthcare system.
- Melanoma is the most common cancer in Australians aged 15-39 years.¹
- Melanoma accounts for nearly two-thirds of all skin cancer deaths.¹
- Five-year relative survival from melanoma is associated with stage at diagnosis; thin tumours are more likely to be (or remain) localised and able to be treated. Cancer survival can be used as an indicator of cancer prognosis at a population level and the effectiveness of treatments.
- Screening involves the identification of unrecognised disease. There are many different forms of screening, such as population-based, opportunistic or targeted screening. The cost-effectiveness of screening must be considered.
- The Australasian College of Dermatologists (ACD) does not recommend population-based screening for melanoma because of insufficient evidence demonstrating that it reduces mortality.
- ACD suggests that further investment in cost-benefit analysis to Australia's health system is needed to assess whether opportunistically screening individuals at high-risk of skin cancer by a health professional may be beneficial.
- ACD recommends ongoing government investment in research and programs to improve and standardise risk stratification, early detection and diagnosis of skin cancer, including optimal use of new diagnostic technologies, and to inform an evidence-based, equitable targeted screening program for melanoma.
- ACD encourages individuals to regularly conduct skin self-examinations and become familiar with their skin. Individuals should consult their health professional if they notice any changes to their skin.

ACD Position Statement – Population-based screening for melanoma

Background

Australia has one of the highest rates of skin cancer (melanoma and keratinocyte cancers (KCs)) in the world,² placing significant health and financial burden on the population and healthcare system. The majority of skin cancers are preventable, yet it is one of the most expensive cancers for Australia's healthcare system, costing an estimated \$1.7 billion each year (including diagnosis, treatment and pathology).³

Since 1982, incidence rates of melanoma have continued to increase in Australia,¹ with incidence peaking at 85-89 years of age. It is the most common cancer in Australians aged 15-39 years.¹ This increase may be largely attributed to improvements in diagnostic methods. More than 28,000 Australians are diagnosed with *in situ* melanoma (may or may not develop into melanoma) each year.⁴

Melanoma accounts for nearly two-thirds of all skin cancer deaths.¹ Mortality rates for melanoma have remained relatively stable over the last 5-years, with an estimated 1,314 individuals to die of melanoma in 2023.¹ The survival rate of melanoma is among the highest of all cancers in Australia, and the 5-year relative survival rate has markedly improved since 1990-94.¹ In 2015-19, the 5-year relative survival rate was 93.6%,¹ but survival rates vary considerably by stage at diagnosis.¹ Several factors may be contributing to these improvements in survival including advancements in therapies.

As prognosis is worse and the extent and costs of treatment are much higher due to longer duration of therapy for later stage melanoma,¹ early detection is critical. However, there is no formal population-based melanoma screening in Australia due to insufficient evidence that it reduces mortality.

There has been increasing interest in melanoma screening, which has been largely driven by rising health system costs for adjuvant therapies, advancements in diagnostic technologies and artificial intelligence (AI), the availability of validated risk stratification tools and consumer-driven digital technologies.

Evidence-base for population-based screening for melanoma

The purpose of this position statement is to provide evidence-based information of the benefits and risks of population-based screening for melanoma. Future evidence will be considered and incorporated into this position statement as it becomes available.

Population-based screening is where a screening test is offered systematically to all individuals in an identified target population who do not have symptoms of the disease or condition being screened.⁵ The aim of screening is to detect disease at an early stage before symptoms develop to prevent mortality and maintain quality of life (QoL).⁵ According to the Australian Population Based Screening Framework, for a screening program to be implemented in a defined target population, it must meet the following criteria:⁵

- Be a condition that has a pre-symptomatic stage that can be found by screening;
- A suitable test to identify the condition is available;
- Systems are in place for evidence-based follow-up assessment of all individuals with a positive screening test;
- Treatment is effective, available, accessible and acceptable for people who are diagnosed through screening; and
- There are facilities available for testing and treatment.

In 2023, the US Preventive Services Task Force (USPSTF) released updated skin cancer screening recommendations and concluded that the current evidence is insufficient to assess the balance of benefits and harms of visual skin examination by a clinician to screen for skin cancer in adolescents and adults.⁶

Existing peer-reviewed literature has highlighted the benefits of screening for melanoma in Australia.⁷⁻⁹ However, these studies have mostly been observational and have a lack of high-quality evidence from randomised controlled trials (RCTs) to demonstrate a reduction in mortality from melanoma.

A 2015 systematic review found that clinical whole body skin examination leads to detection of melanoma tumours at an earlier stage and improved survival,⁹ suggesting that screening may be cost-effective if targeted towards high-risk populations. While cost-benefit analysis of this to Australia's health system would need to be conducted, opportunistically screening individuals at high-risk of skin cancer by a health professional may be beneficial. For this statement, opportunistic screening is defined as individuals who are at high-risk of skin cancer who should be screened, when they present to a healthcare practitioner for reasons unrelated to skin cancer.

Other individuals should regularly conduct skin self-examinations and those who notice any changes to their skin, should consult their health professional.

Population-based screening for melanoma, however, is not recommended.

Evidence to support this statement is summarised below.

Overdiagnosis

Overdiagnosis is the identification of abnormalities that were never going to cause symptoms or harm in a patient's lifetime.

Evidence demonstrates that individuals who undergo skin screening subsequently experience higher rates of skin biopsies and diagnoses of *in-situ* melanoma.¹⁰ The diagnosis of indolent lesions (those that would not become symptomatic in a patient's lifetime and would not contribute to mortality) can cause several harms, including morbidity from unnecessary treatment, psychological distress and financial burden for both the individual and health system.¹¹

Cost of treatment and screening

Melanoma is the most serious form of skin cancer, with health expenditure in Australia for these skin lesions costing an estimated \$0.4 billion per year.³

Targeted and immunological therapies for later stage melanoma are increasingly used to improve disease-free survival,¹² but these therapies are costly, can cause significant side effects for some patients.

It is estimated that the productivity cost to the Australian society for each premature melanoma death is \$288,000.¹³

Studies suggest that targeting high-risk groups for screening and surveillance appears most cost-effective compared to an untargeted approach.⁹ This has resulted in a number of research projects focusing on developing a targeted approach to melanoma screening, such as *Roadmap Options for Melanoma Screening in Australia*.¹⁴

Advancements in technology

Identifying those at high-risk

Cancer Council Australia's clinical practice guidelines recommend that patients are assessed for future risk of melanoma using a validated risk-prediction tool, and that people at high-risk of developing melanoma have 6-monthly full skin examination supported by total body photography (TBP) and dermoscopy.¹⁵

A prospective cohort study demonstrated that risk prediction tools can discriminate whether a person will develop a melanoma and stratify levels of risk.¹⁶ The study also found that to ensure efficacy and cost-effectiveness of early detection, these tools need to be well-calibrated to estimate absolute risk and identify individuals who are likely to benefit from screening.¹⁶

Targeting individuals at high-risk of melanoma is essential as incidence rises amongst those who are screened, and thus the number needed to screen to prevent one melanoma death reduces.

Improving diagnostic accuracy to reduce overdiagnosis and over-treatment

Conventional dermoscopy improves the sensitivity of melanoma detection by health professionals.¹⁷ Advanced imaging technologies, such as TBP, sequential digital dermoscopic imaging (SDDI) and Reflectance Confocal Microscopy (RCM) supported by artificial intelligence (AI) and liquid biomarkers have the potential to further improve the accuracy of melanoma diagnosis and reduce the number of benign lesions excised.¹⁸⁻²⁰ However, their utility in clinical practice and what is needed in terms of upskilling the primary care and the specialist workforce requires further study.

Upskilling primary care workforce

Improved diagnostic accuracy is associated with earlier diagnosis, more appropriate referrals to specialists, fewer unnecessary procedures and therefore, less morbidity and better outcomes for patients at lower cost to the healthcare system.²¹

Dermoscopy is the mainstay of melanoma diagnosis.²² General practitioners (GPs) and other health professionals (i.e., nurse practitioners and melanographers) play an invaluable role along the skin cancer control continuum, particularly in early detection of skin cancer. It is, therefore, important that they are encouraged and supported to undertake high quality training and upskilling in skin surveillance and in use of dermoscopy to improve diagnostic accuracy.

National investment is needed to scale up targeted initiatives and partnerships that have proven to be successful in supporting GPs to detect and diagnose skin cancer more effectively and efficiently.

ACD Position Statement – Population-based screening for melanoma

References

1. Australian Institute of Health and Welfare 2023. Cancer data in Australia. Canberra: AIHW. Available from: <https://www.aihw.gov.au/reports/cancer/cancer-data-inaustralia/contents/cancer-mortality-by-age-visualisation>
2. Ferlay J, Ervik M, Lam F, et al., Global Cancer Observatory: Cancer Today. [homepage on the internet] Lyon, France: International Agency for Research on Cancer; 2018 [cited 2020 Apr 24]. Available from: <https://gco.iarc.fr/today>
3. Gordon L, Shih S, Watts C, et al., The economics of skin cancer prevention with implications for Australia and New Zealand: Where are we now? PHRP 2022; 32(1): e31502119. Available from: <https://www.phrp.com.au/issues/march-2022-volume-32-issue-1/skin-cancer-economics/>
4. Melanoma Institute Australia & Melanoma Patients Australia 2022. State of the nation, A report into melanoma – A national priority. Melbourne: Insight Economics. Available from: [MIA-and-MPA_SoN-Report_Final-Report_28-March-2022.pdf \(melanoma.org.au\)](https://www.melanoma.org.au/MIA-and-MPA_SoN-Report_Final-Report_28-March-2022.pdf)
5. Department of Health 2018. Population based screening framework. Canberra: DoH. Available from: https://www.health.gov.au/sites/default/files/documents/2019/09/population-based-screening-framework_0.pdf
6. US Preventive Services Task Force. Screening for skin cancer: US preventive services task force recommendation statement. JAMA 2023; 329(15): 1290-1295. Available from: <https://jamanetwork.com/journals/jama/fullarticle/2803797>
7. Aitken J, Elwood M, Baade P, et al., Clinical whole-body skin examination reduces the incidence of thick melanomas. IJC 2009; 126(2): 450-458. Available from: <https://onlinelibrary.wiley.com/doi/10.1002/ijc.24747>
8. McPherson M, Elwood M, English D, et al., Presentation and detection of invasive melanoma in a high-risk population. AAD 2006; 54(5): p783-792. Available from: [https://www.jaad.org/article/S0190-9622\(05\)02597-1/fulltext](https://www.jaad.org/article/S0190-9622(05)02597-1/fulltext)
9. Gordon L & Rowell D. Health system costs of skin cancer and cost-effectiveness of skin cancer prevention and screening: A systematic review. Eur J Cancer Prev 2015; 24(2): 141-9. Available from: <https://pubmed.ncbi.nlm.nih.gov/25089375/>
10. Whiteman D, Olsen C, MacGregor S, et al., The effect of screening on melanoma incidence and biopsy rates. BJD 2022; 187(4): 515-522. Available from: <https://onlinelibrary.wiley.com/doi/10.1111/bjd.21649>
11. Janda M, Olsen C, Mar V, Cust A, Early detection of skin cancer in Australia: Current approaches and new opportunities. PHRP 2022; 32(1): e3212204. Available from: <https://www.phrp.com.au/issues/march-2022-volume-32-issue-1/early-detection-of-skin-cancer-in-australia/>
12. Medicare Item Reports. Services Australia. Available from: http://medicarestatistics.humanservices.gov.au/statistics/mbs_item.jsp

13. Carter H, Schofield D, Shrestha R. The productivity costs of premature mortality due to cancer in Australia: Evidence form a microsimulation model. PLoS ONE 2016; 11(12): e0167521. Available from: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0167521>
14. Australian Centre of Excellence in Melanoma Imaging and Diagnosis. Synergy Grant: Roadmap options for melanoma screening in Australia. ACEMID: Queensland. Available from: <https://acemid.centre.uq.edu.au/research/synergy-grant-roadmap-options-melanoma-screening-australia>
15. Cancer Council Australia. Clinical practice guidelines for the diagnosis and management of melanoma. CCA: Sydney. Available from: <https://wiki.cancer.org.au/australia/Guidelines:Melanoma>
16. Olsen C, Pandeya N, Thompson B, et al., Risk stratification for melanoma: Models derived and validated in a purpose-designed prospective cohort. J Natl Cancer Inst 2018; 110(1): 1075-1083. Doi: 10.1093/jnci/djy023
17. Bafounta M, Beauchet A, Aegerter P, Saiag P. Is dermoscopy (epiluminescence microscopy) useful for the diagnosis of melanoma? Results of a meta-analysis using techniques adapted to the evaluation of diagnostic tests. Arch Dermatol 2001; 137(10): 1343-50. Doi: 10.1001/archderm.137.10.1343.
18. Topol E. High-performance medicine: The convergence of human and artificial intelligence. Nat Med 2019; 25(1): 44-56. Doi: 10.1038/s41591-018-0300-7.
19. Tschandl P, Codella N, Akay B, et al., Comparison of the accuracy of human readers versus machine-learning algorithms for pigmented skin lesion classification: An open, web-based, international, diagnostic study. Lancet Oncol 2019; 20(7): 938-947. Doi: 10.1016/S1470-2045(19)30333-X.
20. Pellacani G, Pepe P, Casari A, et al., Reflectance confocal microscopy as a second-level examination in skin oncology improves diagnostic accuracy and saves unnecessary excisions: A longitudinal prospective study. BJD 2014; 171(5): 1044-51. Doi: <https://doi.org/10.1111/bjd.13148>
21. Mar V & Soyer HP. Artificial intelligence for melanoma diagnosis: How can we deliver on the promise? Annals of Oncology 2018; 29(8): 1625-1628. Available from: [https://www.annalsofoncology.org/article/S0923-7534\(20\)32544-8/pdf](https://www.annalsofoncology.org/article/S0923-7534(20)32544-8/pdf)
22. Jones S, Walker H, Maitland C. A dermoscopy training program for Victorian GPs to improve skin cancer prevention and detection. PHRP 2022; 32(1). Available from: <https://www.phrp.com.au/issues/march-2022-volume-32-issue-1/dermoscopy-training-for-gps-to-detect-skin-cancer/>

This position statement is also available online. For more topics, visit dermcoll.edu.au or scan the QR code.

About us

Dermatologists are doctors who are the medical specialists in skin health. The Australasian College of Dermatologists (ACD):

- Trains and supports dermatologists
- Advocates for better skin health for our communities
- Sets the clinical standard in dermatology



Legal disclaimer: This position statement reflects the general views of The Australasian College of Dermatologists at the date of release and may be subject to amendment to reflect emerging clinical and scientific evidence. This information provides educational information and is not intended as a substitute for individual patient assessment. Practitioners are advised to interpret and apply recommendations according to the needs and circumstances of each patient.

©January 2024. ACD. This document is copyright and cannot be reproduced in whole or in part without prior permission.