ASSC Australian Skin and Skin Cancer Research Centre

MELANOMA SCREENING SUMMIT

ROUND TABLE MEETING REPORT

The University Of Queensland AUSTRALIA

QIMR Berghofer Medical Research Institute

This is the meeting report compiled from the ASSC Melanoma Screening Summit 25-26 March, 2019.

The Summit was held at the Translational Research Institute, Brisbane, Australia

Host: Australian Skin and Skin Cancer Research Centre (ASSC), supported by The University of Queensland and QIMR Berghofer Medical Research Institute.

Organising Committee: Joanne Aitken, Peter Baade, Anne Cust, Adele Green, Monika Janda, Kiarash Khosrotehrani, Victoria Mar, Rachel Neale, H. Peter Soyer, David Whiteman, Melissa Kerr

Contributors: Monika Janda, Katie Lee, Rachel Neale.

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1. Background

The Australian Skin and Skin Cancer Research Centre, The University of Queensland and QIMR Berghofer Medical Research Institute, convened a summit in Brisbane in March 2019 to discuss early detection of melanoma in Australia. It covered the evidence of benefits, harms and cost-effectiveness of different approaches to early detection of melanoma in the population, including the options of a population-based screening program, targeted screening, and opportunistic early detection strategies.

The roundtable was attended by international and national leaders in melanoma control from multiple disciplines, including clinicians, researchers, consumers and policy experts. Professor Karen Canfell, Director of Research at the Cancer Council NSW, facilitated the discussions.

The content of the roundtable discussion was documented and subsequently summarised to help inform a potential roadmap to optimising the early detection of melanoma in Australia, including considering current gaps in evidence and related research priorities.

2. Definitions of terms

- **Population-based screening** is defined by the Australian government as a program that offers a test to all individuals in a target group, usually defined by sex and/or age, as part of an organised program[1].
- **Targeted screening** is a formal screening program confined to a high-risk group, with risk defined by phenotypic, genotypic, and/or behavioural characteristics[2].
- **Opportunistic screening** is informal screening, initiated either by a patient or their doctor often in people who are being examined for other reasons, or as part of a routine medical check-up. Opportunistic screening is not done systematically, usually has lower rates of participation, higher disparities in screening uptake, and no quality assurance program[3,4].
- **Overdiagnosis** is defined as diagnosing lesions that, in the absence of screening, would not present symptomatically during one's lifetime[5].
- **Overcalling** is defined as histopathologically incorrectly diagnosing a benign lesion as a cancer[6].

3. Epidemiology and burden of melanoma (including psychological burden)

- More than 15,000 new cases of invasive (Stage 1-4) melanoma are diagnosed each year; it is Australia's fourth most commonly diagnosed invasive cancer (excluding keratinocyte cancers); and the most common cancer diagnosed in Australians aged 15-40 years[7].
- It is estimated that in 2019, there will be 23,741 new cases of melanoma in situ (Stage 0) of the skin diagnosed[7].
- More than 1,700 Australians die from melanoma each year; it is Australia's ninth most common cause of cancer death[7].
- More than 55,000 Australians are now living with a diagnosis of invasive melanoma made in the past five years[7].
- The Australian Cancer Atlas reports variations in geographical patterns in melanoma incidence and excess deaths.
- Changes in incidence and mortality patterns over time vary between Australian states[8,9]. Reductions in incidence and mortality have been observed in younger age cohorts in Queensland[8].
- Melanoma survival is strongly related to stage at diagnosis. Although thin melanomas have an excellent prognosis (5-year survival 98%)) for tumours of less than 0.8 thickness, compared to 54% for tumours greater than 4.0 millimetres)[10], many deaths still occur in those with thin melanomas because of the large proportion of cases in this category[11]. Due consideration of lead and length time biases need to given when estimating the value of a proposed screening program.
- The productivity cost to the Australian society of each premature death from melanoma averages approximately $288,000[12].
- Skin biopsy rates have increased by 66% over the past decade [13]. It is not known what proportion of this increase is due to changed practice and what proportion is due to a true increase in the incidence of skin cancers.
- Fear of recurrence or of a subsequent primary melanoma is common among people diagnosed with in-situ or invasive melanomas[14,15].
- New targeted therapies for advanced melanoma were reimbursed at more than $350 million in the 2017-18 financial year[13].
- In a population-based or targeted screening program for melanoma, concurrently detected keratinocyte cancers[16] will add significantly to the costs of such a program and will need to be managed[17].

4. Current policy and practice

- Formal population-based screening is currently available in Australia for breast, cervical and colorectal cancers, but not melanoma, as it is not supported by current evidence [1].
- Population-based melanoma screening in Australia, the United States and other countries is not currently supported by governments or most non-government organisations due to insufficient evidence that screening reduces melanoma mortality[18]. A population-based screening program exists in Germany but differs from how a Australian population-based program would be run[19].

- The introduction of a new screening program in Australia would be considered by the Standing Committee on Screening, which advises the Clinical Principal Committee of the Australian Health Ministers' Advisory Council on national population-based screening activities.
- The introduction of a centrally organised population-based or targeted melanoma screening program would require strong evidence of benefit outweighing harms at a population level, of cost-effectiveness, and of support from all nine governments in Australia's federated political system.
- The Royal Australian College of General Practitioners recommends that Australians at increased risk of skin cancer including melanoma should have opportunistic clinical skin examinations[20].
- The Australian *Clinical Practice Guidelines for Management of Cutaneous Melanoma*[21] recommend that people at high risk of melanoma, which would optimally be assessed using a validated risk score that integrates relevant demographic, phenotypic and genotypic information[22], should have regular surveillance and should be educated about skin self-examination and sun protection.
- Some clinicians already use risk assessment tools to assist them in directing patients towards the best surveillance schedule.
- The United States Preventive Services Taskforce advises: "Future research on skin cancer screening should focus on evaluating the effectiveness of targeted screening in those considered to be at higher risk for skin cancer"[18].

5. Gaps in knowledge and issues to be considered

- The frequency, patient population, benefits, costs and harms of opportunistic skin examinations conducted in Australia are not well understood;
- The proportion of the increase in melanoma incidence due to overdiagnosis or overcalling is unclear.
- When considering the implementation of a population-based or targeted screening program, clear guidelines are required for managing equivocal or precancerous lesions including by sequential imaging to minimise the number of unnecessary excisions.
- There is a lack of knowledge about which thin melanomas are likely to progress, leading to death and/or significant morbidity.
- Validated risk assessment tools and approaches, including those that integrate germline genetic information or a polygenic risk score, could enable stratification of risk in the population to improve the efficiency and benefit-to-harm ratio of early detection programs, but the net impact is unknown[23].
- New and emerging risk assessment tools, imaging technologies such as total body photography supported by artificial intelligence[24], and liquid biomarkers have the potential to improve the accuracy of diagnosis, minimise excision of benign lesions and inform a more systematic approach to early detection of melanoma in the future, but their utility in practice need further evaluation.

6. Research priorities and opportunities

Short- to medium-term (within 5 years)

- Systematic evaluation and analysis of the potential benefits and harms, including cost-effectiveness of organised population-based or targeted approaches to the early detection of melanoma, compared with the status quo (recognition of suspicious lesions by clinicians and the public, and opportunistic screening), taking into account the impact of managing keratinocyte cancers on melanoma early detection programs.
- In-depth analyses of potential benefits and harms of population-based screening versus risk-stratified melanoma targeted screening as new and emerging tools and technologies become available.
- Study the comparative effectiveness of current best practice follow-up compared to current best practice follow-up plus total body photography (TBP) and sequential dermoscopy imaging (SDI) for early detection of melanoma.
- Analysis of melanoma mortality according to phenotypic and genotypic patient characteristics, clinical/dermoscopic and histopathologic tumour characteristics, and all various treatment modalities received. Investigation of current clinical pathways to melanoma diagnosis and treatment, and analysis of variation in clinical outcomes.
- Audit of workforce training needs.
- Develop a better understanding of quality of life, psycho-social, behavioural and economic impacts of the detection of melanoma and keratinocyte cancers.
- Undertake and maintain a formal review of current melanoma screening / early detection research, analysis activities and published grey literature, clinical practice guidelines, and current and emerging risk-stratification tools and technologies applicable to Australia.
- Study emerging opportunities for AI to increase the precision of melanoma early diagnosis, especially to better detect early forms of nodular and/or amelanotic melanoma [25].
- Modelling future economic burden of melanoma based on current and predicted trends.

Longer-term

- Comprehensive study of clinical pathways for melanoma diagnosis and analysis of benefits, harms, costs to the economy and the patient, and variations in clinical outcomes.
- Robust implementation and evaluation of new strategies for melanoma early detection in Australia, if appropriate, based on the evidence generated above.
- Prospective assessment and validation of risk assessment tools, biomarkers, imaging technologies and approaches for risk-based, tailored screening and surveillance.
- Work towards non-invasive, cost-effective technologies that reliably detect potentially fatal melanoma and clearly ((this is a dream – there never might be a clear prediction which dysplastic naevus will eventually become an invasive melanoma)) differentiate them from indolent lesions.

Strategic opportunities

- Stronger data linkages (cancer registries, Melanoma clinical outcomes registry (MelCOR), hospitals, Medicare, PBS) to facilitate quicker access to linked data, facilitating improved quality of research and generating more policy relevant outcomes.
- Use data collected by the Australian Centre of Melanoma Imaging and Diagnosis (ACEMID) to increase the understanding of the natural history of melanocytic and keratinocytic precursor skin lesion more broadly.
- Explore/establish new professional networks across disciplines for information sharing and potential collaborations.
- Structured approach to optimise outcomes by use of data from available and concurrent research and analyses, e.g. QSkin study, 45 and up study, Cancer Council clinical practice guidelines, published Optimal Care Pathway for melanoma early detection and diagnosis.

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APPENDIX: Day 2 Closed Roundtable Workshop

Facilitator: Professor Karen Canfell, Cancer Council NSW

Participants:

Joanne Aitken, Cancer Council Queensland
Jodie Antrobus, Queensland Health
Sanchia Aranda, Cancer Council Australia
Bruce Armstrong, University of WA
Peter Baade, Cancer Council Queensland
Victoria Beedle, Melanoma Patients Australia
Katy Bell, The University of Sydney
Megan Chapman, Health Promotion Agency
Anne Cust, The University of Sydney & Melanoma Institute Australia
Jon Emery, University of Melbourne
Pablo Fernandez-Penas, University of Sydney
Louisa Gordon, QIMR Berghofer Medical Research Institute
Adele Green, QIMR Berghofer Medical Research Institute
Paul Grogan, Cancer Council NSW
Lynette Hunt, Skin Cancer College Australasia
Monika Janda, The University of Queensland
Alexander Katalinic, University of Luebeck
Kiarash Khosrotehrani, The University of Queensland
Sancy, Leachman, OHSU Dermatology
Graham Mann, University of Sydney
Victoria Mar, Monash University
Scott Menzies, University of Sydney
Richard Scolyer, Melanoma Institute Australia
Stephen Shumack, The Skin Hospital (Skin and Cancer Foundation Australia)
Craig Sinclair, Cancer Council Vic
Mark Smithers, Queensland Melanoma Project, The University of Queensland
H. Peter Soyer, The University of Queensland
Susan Swetter, Stanford University Medical Center and Cancer Institute
Mei Tam, Skin and Cancer Foundation Inc
Heather Walker, Cancer Council VIC
David Whiteman, QIMR Berghofer Medical Research Institute

Observers:

Magdalena Claeson, QIMR Berghofer Medical Research Institute
Kate Dunlop, Cancer Epidemiology and Prevention Research Group, University of Sydney
Lauren Humphreys, University of Sydney
Richard Johns, Skin Cancer College Australasia
Katie Lee, The University of Queensland
Melissa Kerr, The University of Queensland
Aideen McInerney-Leo, The University of Queensland
Rachel Neale, QIMR Berghofer Medical Research Institute
Liz Payne, The University of Queensland
Paige Preston, Cancer Council Queensland
Gillian Reyes-Marcelino, University of Sydney
Caroline Watts, University of Sydney