

National Cancer Prevention Policy

2007–09



Screening to detect cancer early

Melanoma



M e l a n o m a

Currently there is no conclusive scientific evidence that population screening for melanoma reduces mortality from this disease.

Melanoma in Australia

Australia has the highest incidence of melanoma in the world. In 2005, an estimated 10,014 Australians (5705 men and 4309 women) were diagnosed with melanoma. Excluding non-melanoma skin cancer, melanoma was the third most common cancer diagnosed in Australian women (after breast and colorectal cancer), and the third most common in Australian men (after prostate and colorectal cancer) in 2005. In 2005 there were 862 deaths from melanoma in men and 411 in women (ABS 2007).

Can melanoma be prevented?

Melanoma is potentially almost totally preventable. Exposure to excess ultraviolet (UV) radiation is the major environmental factor in its development and one which is amenable to behavioural intervention. More information on prevention of melanoma is included in the chapter on ultraviolet radiation.

Screening tests for melanoma

The screening tests proposed for early detection of melanoma include total body skin examination by a health care professional or skin self-examination. Detection of a suspicious lesion constitutes a positive screening test for which further investigation is required. Melanoma is confirmed by skin biopsy (ACN & NHMRC 1999).

Skin examination by a GP or specialist

Although differences have been reported between the effectiveness of specialists and GPs in detecting malignant melanoma (Morrison, O'Loughlin & Powell 2001), a systematic review concluded that there was insufficient evidence to prove an overall difference (Chen et al. 2001). Nevertheless, a number of studies have indicated that the benign-to-malignant ratio of pigmented skin lesions is very high (around 30:1) in the general practice setting in Australia (Del Mar et al. 1994; Marks et al. 1997).

The ability of GPs to conduct screening for melanoma is an important pre-condition for the introduction of a screening program, but little information is available on this. In a large trial of population screening in Queensland using whole-body skin examinations, 2.5% of all suspicious skin lesions detected by GPs were confirmed as melanoma giving an estimated specificity of 86.1% (Aitken et al. 2006). The melanomas detected during that screening program tended to be less advanced, similar to results found in other screening programs (Geller et al. 2003).

Another factor to be considered in screening for melanoma is the proportion of the body examined. Melanoma is more likely than non-melanoma skin cancers to appear on

sites of the body not normally exposed to the sun. One study estimated that detection of melanomas was six times more likely with a total body skin examination (Rigel et al. 1986), but a smaller subsequent study found little advantage in total body examination (De Rooij et al. 1996). While screening of visible areas of the body has been demonstrated to be well accepted (Girgis et al. 1996), a total body skin examination raises the issue of embarrassment as a barrier to repeated screening. However, a recent study found that only 8% of participants said that they agreed or strongly agreed that having a skin examination would be embarrassing (Janda et al. 2004).

A critical issue in regards to screening by GPs or specialists is to determine the significance of including relatively new diagnostic techniques in the screening process. Dermoscopy (surface microscopy) is a well-researched technique that uses inexpensive hand-held surface microscopes allowing a significant increased melanoma diagnostic ability in a specialist setting (Kittler et al. 2002). It has also been shown to improve the sensitivity for melanoma diagnosis by 38% in a study using Australian GPs (Westerhoff, McCarthy & Menzies 2000). There have been a number of computer programs developed to analyse digitalised dermoscopy images. These have been widely promoted by the manufacturers for use in the general community. However, they are still in the research and development phase and there are no data as yet to show they are superior to a well-trained and experienced clinician using dermoscopy. Trials using dermoscopy and hand-held digital monitoring devices within general practice are currently underway in Western Australia. Further research is required to determine their value in community screening for melanoma.

Self-examination

Studies have shown a tendency by subjects to under-report or demonstrate poor self-assessment of pigmented skin lesions (Borland, Marks & Noy 1992; Hanrahan et al. 1995), which may have significant ramifications for self-referral to screening (Eiser et al. 2000; Melia et al. 2000). Most studies examining detection of melanoma have found that the majority of melanomas are first detected by the patient (Koh et al. 1992; McPherson et al. 2006). However, in one of these studies only about 4% of patients who detected the melanoma themselves did so during a deliberate skin self-examination (McPherson et al. 2006).

Rationale for screening for melanoma

Interest in screening for melanoma is based on the potential for detection and treatment of significantly thinner melanomas, since people in whom thinner melanomas are detected and excised experience a better outcome than those detected with more advanced disease.

For non-melanoma skin cancer, early detection of squamous cell carcinoma can also reduce the rate of deaths if treated early, while for basal cell carcinomas for which the rates of death are much lower, the benefits of screening would relate to reductions in illness, costs and inconvenience (NHMRC 1997).

This discussion will focus on screening in relation to melanoma.

Would screening be of benefit at this stage?

Despite no formalised screening program in Australia, mortality from melanoma in younger cohorts is improving. This may reflect either earlier presentation of tumours or increased detection of clinically irrelevant indolent melanomas (AIHW & AACR 2004).

Existing community awareness is leading to successful screening and early detection both at the request of individuals and opportunistically from their health care providers. To reduce mortality further, an organised screening program would need to significantly enhance early diagnosis beyond what is currently being achieved.

An additional concern relates to rapidly growing melanoma. A recent study suggests that one-third of melanomas grow rapidly (at 0.5 mm or more of tumour thickness per month) (Liu et al 2006). These are unlikely to be detected early at an annual screening program. Evidence is insufficient at present to recommend for or against routine screening for melanoma of the general asymptomatic population. This is consistent with the current position of the US Preventive Services Task Force (AHRQ 2005).

Aims

The Cancer Council's aims are to:

- encourage research to determine the impact of new diagnostic technologies (dermoscopy and digital monitoring) in general practice
- encourage further research to determine whether screening for melanoma in Australia would reduce illness and death and whether implementation would be practical and acceptable to the community.

References

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Agency for Healthcare Research and Quality (AHRQ) 2005. *Guide to clinical preventive services*. AHRQ Publication no. 05-0570, June 2005. Rockville MD: AHRQ.

Aitken JF, Janda M, Elwood M, Youl PH, Ring IT & Lowe JB 2006. Clinical outcomes from skin screening clinics within a community-based melanoma screening program. *J Am Acad Dermatol* 54(1): 105–14.

Australian Bureau of Statistics (ABS) 2007. *Causes of death, Australia 2005*. Cat. no. 3303.0. Canberra: ABS.

Australian Cancer Network (ACN) & National Health and Medical Research Council (NHMRC) 1999. *Clinical practice guidelines for the management of cutaneous melanoma*. Canberra: ACN.

Australian Institute of Health and Welfare (AIHW) & Australasian Association of Cancer Registries (AACR) 2004. *Cancer in Australia 2001*. AIHW cat. no. 23; AIHW Cancer Series no. 28. Canberra: AIHW.

Borland R, Marks R & Noy S 1992. Public knowledge about characteristics of moles and melanomas. *Aust J Public Health* 16(4): 370–5.

Chen SC, Bravata DM, Weil E & Olkin I 2001. A comparison of dermatologists' and primary care physicians' accuracy in diagnosing melanoma: a systematic review. *Arch Dermatol* 137(12): 1627–34.

De Rooij MJ, Rampen FH, Schouten LJ & Neumann HA 1996. Total skin examination during screening for malignant melanoma does not increase the detection rate. *Br J Dermatol* 135(1): 42–5.

- Del Mar C, Green A, Cooney T, Cutbush K, Lawrie S & Adkins G 1994. Melanocytic lesions excised from the skin: what percentage are malignant? *Aust J Public Health* 18(2): 221–3.
- Eiser JR, Pendry L, Greaves CJ, Melia J, Harland C & Moss S 2000. Is targeted early detection for melanoma feasible? Self-assessment of risk and attitudes to screening. *J Med Screen* 7(4): 199–202.
- Geller AC, Zhang Z, Sober AJ, Halpern AC, Weinstock MA, Daniels S, Miller DR, Demierre MF, Brooks DR & Gilchrest BA 2003. The first 15 years of the American Academy of Dermatology skin cancer screening programs: 1985–1999. *J Am Acad Dermatol* 48(1): 34–41.
- Girgis A, Clarke P, Burton RC & Sanson-Fisher RW 1996. Screening for melanoma by primary health care physicians: a cost-effectiveness analysis. *J Med Screen* 3(1): 47–53.
- Hanrahan PF, Hersey P, Watson AB & Callaghan TM 1995. The effect of an educational brochure on knowledge and early detection of melanoma. *Aust J Public Health* 19: 270–4.
- Janda M, Elwood M, Ring IT, Firman DW, Lowe JB, Youl PH & Aitken JF 2004. Prevalence of skin screening by general practitioners in regional Queensland. *Med J Aust* 180(1): 10–15.
- Kittler H, Pehamberger H, Wolff K & Binder M 2002. Diagnostic accuracy of dermoscopy. *Lancet Oncol* 3(3): 159–65.
- Koh HK, Miller DR, Geller AC, Clapp RW, Mercer MB & Lew RA 1992. Who discovers melanoma? *J Am Acad Dermatol* 26: 914–19.
- Liu W, Dowling JP, Murray WK, McArthur GA, Thompson JF, Wolfe R & Kelly JW 2006. Rate of growth in melanomas: characteristics and associations of rapidly growing melanomas. *Arch Dermatol*. 142: 1551–8.
- Marks R, Jolley D, McCormack C & Dorevitch AP 1997. Who removes pigmented skin lesions? *J Am Acad Dermatol* 36(5 Pt 1): 721–6.
- McPherson M, Elwood M, English DR, Baade PD, Youl PH & Aitken JF 2006. Presentation and detection of invasive melanoma in a high-risk population. *J Am Acad Dermatol* 54: 783–92.
- Melia J, Harland C, Moss S, Eiser JR & Pendry L 2000. Feasibility of targeted early detection for melanoma: a population-based screening study. *Br J Cancer* 82(9): 1605–9.
- Morrison A, O’Loughlin S & Powell FC 2001. Suspected skin malignancy: a comparison of diagnoses of family practitioners and dermatologists in 493 patients. *Int J Dermatol* 40(2): 104–7.
- National Health and Medical Research Council (NHMRC) 1997. *Preventive interventions in primary health care: cardiovascular disease and cancer*. Canberra: NHMRC.
- Rigel DS, Friedman RJ, Kopf AW, Weltman R, Prioleau PG, Safai B, Lebwohl MG, Eliezri Y, Torre DP & Binford RT, Jr. 1986. Importance of complete cutaneous examination for the detection of malignant melanoma. *J Am Acad Dermatol* 14(5 Pt 1): 857–60.
- Westerhoff K, McCarthy W & Menzies S 2000. Increase in the sensitivity for melanoma diagnosis by primary care physicians using skin surface microscopy. *Br J Dermatol* 143(5): 1016–20.