# Improving melanoma detection in general practice

**Paul A Corwin MB ChB, BA, FRNZCGP**

**Paul Corwin** is a GP in Christchurch and a senior lecturer in the Department of General Practice at the Christchurch School of Medicine.

## KEY POINTS

- GPs' clinical diagnosis of pigmented skin lesions has been shown to have high sensitivity
- The use of photographs or digital imaging has not been shown to increase the "pick-up" of malignant melanomas
- Dermatoscopy requires considerable training and experience to perform accurately and even then has not been shown to alter the clinical management of pigmented skin lesions
- Digital imaging of plain or dermatoscopic views of pigmented skin lesions cannot be justified as a screening tool for malignant melanomas

## ABSTRACT

Traditional diagnosis of malignant melanoma has relied on clinical examination of the skin followed by excision of suspicious lesions. In recent years new techniques have been developed to try to improve on traditional diagnosis. This paper reviews the place of these new methods in improving the ability to diagnose malignant melanoma in general practice.

## INTRODUCTION

Malignant melanoma is a significant health problem in New Zealand. Traditionally, malignant melanomas have been diagnosed by naked eye examination of the skin followed by excisional biopsy. In countries such as Australia about 20–30 benign pigmented lesions are excised for every excised malignant melanoma.1 The continuing substantial morbidity and mortality attributable to malignant melanoma might suggest that these lesions have either not presented to a physician early enough or have not been recognised by the examining doctor. If that were true, any method shown to improve the diagnostic accuracy would have substantial health benefits and this has led to the search for diagnostic aids in melanoma diagnosis.
This paper reviews the three main diagnostic aids currently used in melanoma diagnosis; namely, clinical photographs, dermatoscopy and computer or digital imaging of skin lesions, and discusses their utility for GPs.

## UNASSISTED DIAGNOSIS

Before discussing aids to the clinical diagnosis of melanomas, the accuracy of unaided clinical examination requires review. Burton et al studied the performance of GPs in Australia who had received special training (approximately 10 hours in both specialist clinics and lectures) in skin cancer diagnosis, with GPs who had not received this training.1 Patients with suspicious pigmented lesions detected by dermatologists were examined by GPs prior to having the lesions removed. Both groups of GPs correctly identified the melanomas (sensitivity 0.98 and 0.95 for trained and untrained GPs respectively) but had low specificities (0.52 and 0.49 for trained and untrained GPs respectively). Although the dermatologists achieved higher values (sensitivity 1.0, specificity 0.70), these differences were not statistically significant.
A study of GPs in New Zealand using photographs showed that they were accurate in identifying lesions requiring biopsy and their performance in this regard did not differ significantly from that of

dermatologists.2 A retrospective analysis of dermatologists found a sensitivity of 84.5 per cent for the diagnosis of melanoma.3 Specificities relating to pigmented lesions were not reported from this study. In summary, studies have shown that the clinical diagnosis of malignant melanomas by GPs and dermatologists has high sensitivity.

## DIAGNOSTIC AIDS

### Photography

There have been several studies of the utility of clinical photographs in detecting melanoma. In a large Australian study, doctors in one city were offered an instant camera and an algorithm for the management of pigmented lesions. This intervention appeared to reduce unnecessary skin excisions without increasing the number of missed malignant melanomas.4
A recent study from the UK assessed the utility of instant photography combined with a clinical grading using a seven-point checklist in screening asymptomatic individuals for melanoma.5 Suspicious pigmented lesions were graded by the doctor and photographed. Copies of the photographs were given to the patient, retained in the patient notes and sent to a dermatologist.
The dermatologist had no access to any clinical details and was asked to give an opinion on the photographed lesion.
Fourteen patients of 39,922 screened were eventually found to have melanomas. Only eight of these melanomas had been identified by the dermatologists on the basis of their clinical photographs alone.
A seven-point checklist had a high sensitivity for picking up melanomas but a very low specificity and adherence to the checklist would have resulted in a large number of unnecessary referrals. The authors stated that there were dangers in relying on two-dimensional images in screening for melanoma.
Other studies have also found that highly trained dermatologists viewing both colour photographs and digital images of skin lesions showed considerable intraobserver and interobserver variation in the interpretation of skin lesions. This variability was similar for both high resolution photographs and lower resolution digital images.6 One area where clinical photography appears to be useful is in the surveillance of patients with multiple dysplastic naevi. These patients are at a greatly increased risk of melanoma and baseline clinical photography of the entire skin surface was carried out on a large cohort of patients with five or more dysplastic naevi. These patients were followed up at six to 12-monthly intervals. The baseline photographs enabled the early diagnosis of melanoma in over half the melanomas, which were detected in this cohort over a 42-month period, and was very much more cost-effective than the prophylactic excision of all dysplastic naevi in this high-risk cohort.7

### Dermatoscopy

Dermatoscopy (also known as dermo-scopy or epiluminescence microscopy) is a method of visualising pigmented skin structures. Oil is used to eliminate skin surface reflection and makes the stratum corneum more translucent which combined with a dermatoscope (a 10x magnifying lens with an illumination source) allows for subsurface details of the skin to be visualised. A systematic review of the diagnostic accuracy of dematoscopy in the detection of malignant melanoma has been published recently.8 This review found six useful studies comparing dermatoscopy with clinical diagnosis.
All of the studies were conducted in specialist dermatology clinics. Sensitivity and specificity for dermatoscopy varied and, in studies where the clinical diagnosis sensitivity and specificity was poor, dermatoscopy did improve the diagnostic accuracy.
However, when the sensitivity and specificity of clinical diagnosis was higher (84–95 per cent) dermatoscopy added little or nothing to the diagnostic accuracy. The author of this review concludes that dermatoscopy has not been shown to alter the clinical management of pigmented lesions.

One of the studies reviewed found that dermatologists using dermatoscopy without formal training reduced their diagnostic accuracy.

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Two of the studies compared dermatoscopy with the use of simple structured ABCD criteria and found the use of these criteria resulted in high sensitivity and specificity either with or without the use of dermatoscopy.
A more recent study has also shown that dermatoscopy reduced diagnostic accuracy in dermatology residents with only one to two years of formal dermatoscopy training and was only shown to improve diagnostic accuracy in the hands of well-trained dermatologists using it daily.9
In New Zealand, with our very high melanoma incidence, suspicious pig-mented lesions will almost certainly be excised by prudent GPs regardless of the dermatoscopy findings. GPs are unlikely to have had the degree of training required to demonstrate improved diagnostic accuracy, and dermatoscopy should be left in the hands of dermatologists with suitable training and expertise.

### Digital imaging

Digital photographs are being used increasingly in the diagnosis of melanomas. The ability to store these digital images, transmit them easily, and even use computers to analyse the images makes digital photography seem a promising advance in improving the diagnosis of pigmented skin lesions.
This digital imaging is sometimes referred to as "mole mapping". Digital imaging of dermatoscopic and plain views of moles is being marketed actively both by dermatologists and some GPs. There is a dearth of research supporting the use of this new technology.
Despite the lack of research, the ability to store these images easily suggests it may be of use in monitoring patients at very high risk of melanoma, such as patients with multiple dysplastic naevi or those with a past history of melanoma. Its use in general population screening is unjustified. There are several commercial franchises in New Zealand actively promoting screening of individuals via digital imaging.
A brochure from one of these groups shows a photograph of a child being screened and states that "every person in New Zealand" is at risk of melanoma. This is an extraordinary statement as the risk of melanoma in Maori, Pacific Islanders and children is exceedingly low.10 The credibility of the brochure is further called into question when it states without any substantiation that the digital images improve diagnostic accuracy.

## CONCLUSIONS

There is no question that malignant melanoma is a significant health problem in New Zealand. There is currently insufficient evidence to recommend population- based screening for malignant melanoma.11 The role of clinical examination has been undervalued.
If screening for melanoma is of any use we should concentrate on the simple, inexpensive traditional clinical examination of the skin in at-risk individuals.
Clinical examination of the skin for both melanoma and non-melanoma skin cancer can be combined with educational messages to the patient on sun avoidance and the need to report changes in any skin lesions promptly.12
Clinical photographs, dermatoscopy and digital imaging have not been shown to be superior to clinical examination of skin in detecting malignant melanomas. Advocates of new technologies purported to improve the diagnosis of melanomas must produce evidence that the technique does lead to improved diagnostic accuracy and improved patient outcome before GPs or their patients should embrace these new modalities.

**There is currently insufficient evidence to recommend population based screening for malignant melanoma**

**Correspondence:** Dr Paul Corwin, Department of General Practice, Christchurch School of Medicine, PO Box 4345, Christchurch.

**Acknowledgements:** Thanks to Dr Amanda Oakley, Dr David Nicholls and Professor Les Toop for their helpful comments.

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