

# THE EARLY DETECTION AND PREVENTION OF SKIN CANCER BY COMPLEMENTARY HEALTH PROFESSIONALS

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**Abstract:** The potential for opportunistic screening for skin cancer by certain groups of health professionals is examined. The groups targeted are chiropractors, dentists, nurses, osteopaths, pharmacists, physiotherapists and podiatrists. Current course content for the early detection of skin cancers in these groups was examined and found inadequate. It is believed these undergraduate courses could be complemented by a short course providing the necessary skills to screen for pre-malignant and malignant skin lesions. Strategies and implications for the implementation of a proposed course are discussed.

**Index terms:** Skin cancer, chiropractic, osteopathy, dentistry, nursing, pharmacy, physiotherapy, podiatry.

## INTRODUCTION

Australians live in a climate envied by many. Our outdoor lifestyle, developed around favourable weather, has both good and bad consequences. Constant and excessive sun exposure is not kind to fair skins, and dangerous skin lesions can result (1).

There is potential for opportunistic screening for skin cancer by certain groups of health professionals. The groups which could be targeted are chiropractors, dentists, nurses, osteopaths, pharmacists, physiotherapists and podiatrists. It is believed that their undergraduate training can be complemented by a short course providing the necessary skills to screen for pre-malignant and malignant skin lesions in the people they see professionally.

## SKIN CANCER - THE EXTENT OF THE PROBLEM

Australia has the highest incidence of skin cancer in the

world (2). The incidence rate for malignant melanoma (MM) and non-melanoma skin cancer (NMSC) is greater than 800/100,000 people per year and for both types the incidence is increasing (3). The lifetime risk of developing MM, the most dangerous form is 2% and there are significant numbers of associated deaths, about 800 per year (1). It has been estimated that up to two of every three Australian-born persons will require treatment for at least one skin cancer (2).

NMSCs such as basal cell and squamous cell carcinomas are more than three times as common as all other forms of cancer combined, although they tend to be less life threatening than many other cancers (1)(3). Even so, in Australia they were responsible for 269 deaths in 1990 at an age standardised rate of 21 per 100,000 in males and 16 per 100,000 in females (4).

Sun exposed areas of the body are the most prone to skin cancer development via ultraviolet radiation (UVR) (4). There is also the threat of an increased risk of skin cancer with increasing levels of UVR related to ozone depletion (5)(6)(7). Based on 1990 figures, rates of melanoma have been predicted to increase by 28% by 2010, and rates of NMSC to increase by 25% in this time (7).

These figures do not take into account other factors, such as public health efforts aimed at changing behaviour and sun exposure patterns (8), and the role of other agents in the development of MM (9). However, it is clear that skin cancer is a significant

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public health problem, accounting for a high level of morbidity and associated dollar costs to our community (10). It is also clear the majority of deaths from skin cancer can be prevented with early diagnosis and treatment (11)(12).

### PAST AND CURRENT ACTIVITIES FOR SKIN CANCER DETECTION

Public health initiatives aim to decrease the mortality, morbidity and costs to the community associated with skin cancer. In 1989 Australia's National Better Health Program in response to concerns about the impact of cancers on the community, identified preventable cancers as a priority area for prevention strategies (4).

In Victoria, the Anti-Cancer Council (ACCV), through its Sunsmart program, has been actively involved in developing resources and programs related to skin cancer awareness and prevention. The focus of the public health campaign has been to encourage behavioural change and the promotion of self-screening techniques by the general public (13). The effectiveness of self screening has not been examined, but it has been found that certain groups within the community such as the unemployed, people from lower socio-economic groups and the disabled were less likely to be involved in self-screening (1).

General practitioners (GPs) have also been identified by the ACCV as requiring resources for the diagnosis and management of skin cancer; they are often the first point of referral for the public (14). Initiatives by the Australian Cancer Society have targeted undergraduate medical students in an attempt to improve their diagnostic ability.

### THE QUESTION OF SCREENING

It is proposed that the skills of paramedics be expanded to meet public health aims through opportunistic screening. Many see vast areas of skin each day, making them a potential source of screeners. However, it is important to examine if screening by paramedics will result in more skin cancer lesions being diagnosed.

It can be argued that skin cancer is appropriate for visual screening as the objectives for screening can be met (15) and the yield is equivalent to that of other major cancer screening efforts. (16) A 1991 ACCV survey (14) found that the majority of GPs stated they do not have time for visual screening. Other studies support that only a small percentage of people are screened by GPs (1), although research has found when routine screening occurred, smaller lesions were detected (17)(18).

Screening depends on sensitivity, specificity and predictive value (15). It is difficult to evaluate screening efficacy for skin cancer as there is little evidence that mortality is reduced, and little information regarding the effectiveness and cost effectiveness of screening and self-screening programs (12). In Australia screening programs have largely been restricted to promotional activities (19), which are difficult to evaluate due to lack of follow-up. There is some evidence to suggest that programs conducting total body examinations have a higher incidence of melanoma detection rate but at present there is variation in the diagnostic ability of current groups undertaking visual inspection (20).

There is support that undergraduate training in dermatology affects proficiency in screening and the provision of advice relating to skin cancer and role perception in regard to detection appears to positively influence behaviours in health professionals (14)(21)(22).

The major benefit expected of opportunistic screening is that more skin cancers will be detected, with individuals' anxiety levels not raised unduly in this form of screening. There is the probability that such a test with high sensitivity and low specificity, whilst having benefits in relation to prognosis, may result in a large number of false positives (23). The financial and psychological cost associated with people unnecessarily consulting their GPs is also acknowledged. Research has shown that whilst there may be some degree of excessive referral (there is little data to suggest over screening by paramedics) the 'pick-up rate' of skin cancers is much greater than that seen in other forms of screening such as self-screening (24).

It is proposed that certain health professionals be trained to develop a high index of suspicion for the detection of skin lesions. Opportunistic screening as the basis for referral to GPs is seen as one way that these groups can actively reduce mortality due to skin cancer and reinforce the messages in public awareness campaigns. The potential for the early detection of malignant and pre-malignant skin cancers as part of the "hands on" procedure cannot be fully realised until the role of health professionals is broadened to include this function.

When one examines the number of people who potentially could be screened for dangerous lesions the data is quite persuasive. In 1992, there were approximately two thousand graduates (the majority being nurses) from the targeted courses; all these graduates are potential "screeners" (see Table I for a breakdown of numbers).

### **CURRENT EDUCATION ACTIVITIES**

To ascertain the current situation in relation to undergraduate education, selected Victorian university schools were asked to supply details of course content relating to the assessment and prevention of malignant and pre-malignant skin lesions (see Table II).

Exploration of the content reveals that these topics are dealt with in a fragmented manner; pathology, risk factors and screening are often addressed in different subjects or years of the curriculum. A number of courses provide students with sessions on skin assessment and lesion identification, but these sessions are not always followed by a practical component, leading one to question how well this material is retained.

Most courses surveyed do not directly address the area of preventive education. Some provide more practical information than others, e.g. sun screen material, but it appears there is no formal recognition of the practitioners' role in the assessment and prevention of malignant skin lesions in most courses.

### **EVALUATION OF COURSE CONTENT RELATING TO SKIN CANCER**

Some schools provided more detail than others, although most were reluctant to give out curriculums in total as requested. Some provided a letter outlining the information required, whilst others sent details of relevant content areas.

### **BACHELOR OF NURSING CURRICULA**

The nursing curricula from all institutions are characterised by an integrated approach to curriculum design and content. This means the subject of skin cancer detection and prevention is not highlighted as a single entity at any point in the curricula.

Assessment of skin is included in most courses, and general reference to skin cancers is made at this time in two of four courses examined. Skin assessment is included in a general health assessment, but there is no evidence to suggest links are made with areas such as risk factors and pathophysiology.

Primary prevention is mentioned in two courses, forming part of the community health component. Once again, it is part of a broader area on preventive management.

Details of assessment were not supplied for any course.

### **BACHELOR OF PHYSIOTHERAPY CURRICULA**

The Latrobe University physiotherapy curriculum contains a two hour session on cancers in general. Skin cancers are mentioned in this group and slides of skin lesions are shown at this time. Risk factors, screening, and prevention are not mentioned.

The Melbourne University curriculum provides students with information related to dangerous skin lesions in a number of subject areas. No details were provided in relation to time spent on the topics or assessment (in either course).

### **THE BACHELOR OF DENTAL SCIENCE CURRICULUM**

As expected the dental curriculum has a focus on facial and oral cancers. The area of assessment is covered quite well, but it is not apparent if other aspects such as risk factors are discussed. General pathology of cancers is included in third year and skin cancers are addressed at this time. A practical session is included. Recognition of facial lesions is expected in fourth year following two sessions on epithelial neoplasia, and there is one session on assessment and diagnosis in fifth year.

Primary prevention and health education are not mentioned in relation to skin cancers and it is assumed that they are not given particular emphasis.

### **THE BACHELOR OF PHARMACY CURRICULUM**

The pharmacy curriculum focuses on the preventive aspects of skin cancers. In third year, students have a session with the Anti-Cancer Council, and another on the use of sun screens. In this year there is also a unit on primary health care, which has a practical component. A one day seminar is held in the pre-registration year, conducted by a dermatologist, where assessment is discussed with the aid of slides.

### **THE DOUBLE DEGREE IN CHIROPRACTIC AND OSTEOPATHY CURRICULUM**

This school was the only one to send all curriculum content information, although details of assessment were omitted.

In this curriculum general skin assessment is covered with assessment of all other organ systems. A session on neoplasia is included in general pathology, and a two hour session in the differential diagnosis of malignant skin lesions is given in a fourteen hour dermatology unit.

There does not seem to be a mention of preventive strategies or other aspects of health education in the curriculum.

### **THE BACHELOR OF PODIATRY CURRICULUM**

First year students are given a session in the differential diagnosis of malignant skin lesions, however there does not appear to be any information on pathology or risk factors. A further session on early detection is given in second year, and another session on differential diagnosis.

No mention is made of preventive strategies in this curriculum.

### **THE PROPOSED COURSE**

The course we propose aims to provide participants with an ability to spot potentially malignant lesions through opportunistic screening, to refer those patients to a GP for further evaluation, and to raise general awareness regarding the prevention of skin cancer. It is recommended that the education program be integrated into the undergraduate courses of the groups investigated.

See Table III for the aims and objectives of the course.

The course contains sessions on anatomy and physiology of the skin, lesions of importance, screening techniques, and prevention strategies. The use of appropriate audio-visual aids is seen as an integral part of the course content.

The course outline is shown in more detail in Table IV.

Assessment of participants will include evaluation of their detection ability, measured as an index of suspicion. Clinical assessment will focus on practical competence, and will be based on the principles of the Objective Structured Clinical Examination (OSCE) (26)(27)(28).

Any participants wishing to maintain competency in this area should attend a half day study workshop on a yearly basis or utilise existing continuing education sessions where available.

Regardless of the accuracy of visual screening, it is recognised that critical diagnosis and management decisions concerning suspected skin lesions should always be based on a combination of clinical and histopathological assessments, and history of the patient (19). For this reason the central role of the General Practitioner would be emphasised.

### **COMSIG REVIEW**

Volume 3 • Number 2 • July 1994

### **PROBLEMS ASSOCIATED WITH COURSE IMPLEMENTATION**

This program aims at producing a role modification in paramedics. It is recognised there is often resistance to change, which could lead to problems with course integration (29)(30). The course must be seen as relevant and be accepted at the level of those teaching to reduce this resistance (27).

Good planning is seen as paramount, as is demonstrating a need for the program, providing adequate information about the course and generating interest regarding implications and possible outcomes of the course. The fact that the course should be relatively cheap to implement in terms of human and physical resources is seen as an advantage.

### **THE PROPOSAL FOR COURSE IMPLEMENTATION**

It is proposed the course be implemented as a pilot in two degree courses and that a randomised, controlled trial be devised involving final year students. Outcome studies will include the evaluation of students' ability for the accurate detection of dangerous lesions, and the number of people referred for follow-up.

### **CONCLUSION**

The current and future problem of skin cancer in Australia warrants an innovative approach to the prevention and early detection of these dangerous sun-induced lesions.

A course specifically designed to build on paramedics' existing knowledge and skills in this area has the potential to markedly increase the number of health professionals opportunistically screening for skin cancers. Opportunistic screening is a public health practice that has the potential to decrease the mortality and morbidity associated with skin cancers for a minimal cost.

**TABLE I**  
**NUMBERS OF PARAMEDICS GRADUATED IN VICTORIA IN 1992**

| <b>Specialty</b> | <b>Number of Graduates</b> |
|------------------|----------------------------|
| chiropractors    | 56                         |
| osteopaths       | 11                         |
| pharmacists      | 60                         |
| physiotherapists | 90                         |
| dentists         | 45                         |
| podiatrists      | 50                         |
| nurses           | 1700                       |

Source: Mr. N. Brockley, Registrar, Health and Community Services Department. Victoria.

**TABLE II**  
**VICTORIAN UNIVERSITIES AND COURSES EXAMINED FOR SKIN CANCER CONTENT**

| <b>University</b>    | <b>Course Examined</b>                       |
|----------------------|--|
| Deakin University    | Bachelor, Health Science, Nursing.           |
| LaTrobe University   | Bachelor, Health Science, Nursing            |
|                      | Bachelor of Podiatry                         |
|                      | Bachelor of Physiotherapy                    |
| Melbourne University | Bachelor of Dental Science                   |
|                      | Bachelor of Physiotherapy                    |
| Monash University    | Bachelor of Nursing                          |
|                      | Bachelor of Pharmacy                         |
| RMIT                 | Double Degree of Chiropractic and Osteopathy |
|                      | Bachelor, Health Sciences, Nursing           |

**TABLE III**  
**BROAD AIMS OF THE COURSE**

At the end of the program and with further reading it is expected that health professionals will:

- Increase personal awareness of the magnitude of the skin cancer problem in Australia
- develop a beginning ability to detect pre-malignant and malignant skin lesions, and identify appropriate referral mechanisms, based on a high index of suspicion.
- utilise community resources to maintain competency in the areas of early detection and prevention of skin cancers.
- incorporate early detection of suspicious lesions and preventive public education relating to skin cancer.

**BROAD OBJECTIVES OF THE COURSE.**

At the end of the program and with further reading it is expected that health professionals will:

- examine the incidence of malignant skin lesions in Australia.
- identify risk factors for skin cancer development, focusing on the roles of UV radiation and ozone depletion.
- identify common presentations for each of the major skin cancers.
- discuss the implications of the prognoses and management of malignant skin lesions.
- discuss the major issues involved with screening, and perform a total body examination of the skin.
- differentiate between primary and secondary skin cancer prevention.

TABLE IV

CONTENT OUTLINE FOR PROPOSED COURSE

**NORMAL ANATOMY AND PHYSIOLOGY OF THE SKIN**

epidermis and dermis  
skin organelles  
functions of the skin

(entry level test of 15 mins - if score >65%, omit session )

**LESIONS OF INTEREST**

basal cell carcinoma (BBC) - tumour sub-types  
squamous cell carcinoma (SCC) - tumour sub-types  
cutaneous malignant melanoma (MM) - tumour sub-types  
pre cancerous lesions

**for each**

common appearances, major variations, early and late lesions  
common areas of occurrence  
natural history of disease, including epidemiological aspects  
implications of prognosis and management  
adoption of a checklist for initial assessment

**RISK FACTORS - CONSTITUTIONAL AND ENVIRONMENTAL**

role of UV radiation  
role of individual behaviour

**SCREENING**

assessment of the skin - history taking and visual inspection  
issues of patient consent to examination and compliance with self-examination  
mechanisms of referral  
community resources  
applicability of opportunistic screening to the role of the paramedic  
(theory and practical sessions)

**EDUCATION FOR PRIMARY AND SECONDARY PREVENTION**

teaching of preventive behaviour and self-examination  
chemical sun screens  
chemoprevention

**TOTAL NUMBER OF HOURS - 8**

**ASSESSMENT**

1 hour examination, based on OSCE and including:  
20 slides for identification and referral (yes/no)  
30 multiple choice questions  
history taking

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