Prevention, early detection and team management of skin cancer in primary care: contribution to *The health of the nation* objectives

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SUMMARY. The incidence of all skin cancers is increasing. If The health of the nation *targets are to be addressed, incidence figures need to be more accurate. Solar damage is the major causal factor in all skin cancers. Certain individual risk factors also play an important part, especially in the development of malignant melanoma. Prevention and early detection are crucial in reducing morbidity and mortality from skin cancer. This paper considers the role of primary care skin screening clinics and cutaneous surgery facilities in the early detection and management of skin cancer. It also illustrates the value of a team approach in primary care in the prevention and early detection of skin cancer and in the more accurate recording of incidence rates.*

Keywords: skin cancer; management of disease; general practitioner role; general practitioner clinics; early diagnosis; Health of the nation *targets.*

Introduction

THE objectives for skin cancer, set out by the Secretary of State for Health in *The health of the nation* white paper in July 1992, were its prevention and early detection.[1] This involved improving people's understanding of skin cancer and the relevant risk factors. Emphasis was placed on ensuring sensible levels of exposure to the sun by altering individuals' attitudes to sun exposure and educating them to take protective measures against solar skin damage.

In a population-based survey, Geller and colleagues found that the majority of patients diagnosed as having malignant melanoma reported having had extensive contact with their regular physicians in the year prior to diagnosis.[2] Most of these patients, however, did not have their skin examined and did not examine their skin themselves during that time. The authors suggested that doctors caring for patients at risk of melanoma should integrate melanoma screening into routine care. Other studies have shown that asymptomatic melanomas incidentally diagnosed during routine skin surveillance were significantly more favourable with respect to tumour thickness than were symptomatic melanomas.[3,4] A paper by Shenefelt described the potential benefits of screening and education in primary care.[5]

This paper extends Shenefelt's ideas and discusses the fundamental question of whether, in view of Geller and colleagues' findings, the prevention and early detection of both melanoma and non-melanoma skin cancer are best achieved in primary rather than secondary care. It also examines whether valid incidence figures for skin cancer can best be collected in the primary care setting.

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Trends in incidence and public awareness

The health of the nation set as its target: 'to halt the year-on-year increase in the incidence of skin cancer by 2005.'[1] This cannot be properly addressed until the true incidence figures of all skin cancers are known.

A population-based epidemiological study in south Wales, showed a much higher incidence of non-melanoma skin cancer than was expected from published data.[6] Another study which looked at all histologically confirmed cancers in north Humberside over a 14 year period (1978–91), showed a rise in the incidence of malignant melanoma of 162%, basal cell carcinoma of 235% and squamous cell carcinoma of 153%.[7] The incidence of malignant melanoma is increasing worldwide.[8] In 1977 in the United Kingdom 1637 cases of malignant melanoma were registered.[9] By 1987 the number had risen to 3139.[10] This represents an 88% increase in 10 years. The accuracy of skin cancer incidence data in the UK has been questioned.[11] A public education campaign, started in 1985, increased people's awareness of skin cancer.[12] The possibility of increased skin cancer risk, on a global scale, has been expressed with the international concern about depletion of the earth's protective ozone layer and resultant increase in solar skin damage.[22-24]

Sun is the major causal factor in all skin cancers.[16-20] The actual and perceived incidence of skin cancer is likely to increase further over the next few years for three reasons. First, as these cancers are related to past exposure to the sun, they often take years to develop. Secondly, the incidence of non-melanoma skin cancer is likely to increase as a result of an increasingly elderly population.[21] Thirdly, improvement in skin cancer data collection will produce an initial apparent increase in incidence of skin cancer. Unless incidence is measured at primary care level, it will be difficult to obtain reliable incidence rates for skin cancer.

Primary care is an excellent setting for opportunistic screening and for provision of education about preventive measures for people at high risk of skin cancer. These include individuals with blond or red hair, fair skin, freckling and a tendency to severe sunburn reaction, the presence of clinically atypical naevi and a family history of malignant melanoma.[22-24]

Benefits of early detection

Malignant melanoma

Malignant melanoma can prove fatal if not detected at the 'thin, good prognosis' stage. Following the start of the public education campaign in 1985, Doherty and MacKie showed that the greatest contribution to delay in diagnosis was the delay on the part of the patient in presenting to a doctor.[25] Since then, some large teaching hospitals have held walk-in pigmented lesion clinics which patients, with a referral letter from their general practitioner, can attend without prior appointment. There is not complete agreement as to whether pigmented lesion clinics confer obvious benefits with regard to the number of 'thin, good prognosis' melanomas seen as a whole. The extra workload resulting from such clinics, however, has considerable service and cost implications which would require fuller evaluation by large scale and long-term studies.[26-29] The benefits of undertaking screening and

early detection of melanomas in general practice are illustrated in this paper.

Squamous cell carcinoma

A study by Joseph and colleagues of 695 cases of squamous cell carcinoma of the skin of the trunk and limbs showed a metastatic rate of 4.9%, an overall mortality of 3.4% and a 70.6% mortality in the metastatic group.[30] From personal experience as a general practitioner, it seems that the slow metastatic lymphatic spread in patients, in whom the diagnosis and treatment of a cutaneous squamous cell carcinoma has been delayed, often gives rise to months or years of morbidity, before death from the cancer.

Basal cell carcinoma

Death from a rodent ulcer is rare.[31] However, treatment of large basal cell carcinomas, as well as morphoeic and more invasive lesions, requires plastic surgery, radiotherapy or Mohs surgery, where such facilities exist. This causes considerable trauma to the patient and has financial implications for health services. Primary excision or cryosurgery of a superficial, solid or cystic-type basal cell carcinoma can be carried out with good cure rates in primary care.[32]

Skin screening clinic in primary care

Our rural group practice (practice population approaching 11 000 patients) has a long-standing tradition in minor surgery. My particular interest and expertise is in the management of both benign and malignant skin lesions.[33] A monthly skin screening clinic has been run in the practice since October 1990, six months after the introduction of the new contract for general practitioners. The aims of this clinic are to provide open access for advice to patients who refer themselves with worrying or suspicious skin lesions or with a risk of developing skin cancer; to provide a second opinion regarding possible skin malignancies, referred by practice partners and nurses; and to follow up patients who have previously had skin cancers treated either at the health centre or hospital. The clinic is carried out in my surgery with appointments at 10-minute intervals. Some lesions are treated or biopsied at the clinic, so local anaesthetic, sterile biopsy packs, a simple rechargable cautery machine, suitable skin dressings and a half-litre, hand-held liquid nitrogen cryosurgery appliance are available. Attendance at the skin screening clinic varies from 11 to 19 patients, with a mean of 14 patients per clinic. The types of lesions seen and/or treated in the clinic between April 1992 and March 1993 are shown in Table 1. Actinic (solar) keratoses, a small percentage of which develop into squamous cell carcinoma, were treated at the skin screening clinic by cryosurgery, or by curettage biopsy and cautery if the clinical diagnosis was uncertain.[34,35]

The preventive role of the skin screening clinic is illustrated by the fact that patients with moles including atypical naevi, a family history of malignant melanoma or other risk factors, are given information and advice on the recognition of potentially clinically significant changes in pigmented skin lesions using the modified seven point check list.[22,23,36] In the checklist for suspected malignant melanoma, the three major signs to look for in a pigmented skin lesion are change in size, change in shape, and

Table 1. Types of lesion seen and/or treated at the skin screening clinic between April 1992 and March 1993.

	No. of lesions						
			Treated[a]				
Lesions	Seen	Not treated	Curettage and cautery[b]	Snip and shave[c]	Cryosurgery	Referred to CSC	No. of follow-up visits[d]
Malignancies							
Malignant melanoma	2	–	–	–	–	2	11
Basal cell carcinoma	7	–	1 (3)	–	–	6	32
Squamous cell carcinoma	1	–	(1)	–	–	1	4
Pre-malignancies							
Bowen's disease	5	–	2 (2)	–	2	1	5
Keratoacanthoma	1	–	–	–	–	1	1
Actinic (solar) keratosis	46	–	12	–	33	1	9
Benign lesions							
Seborrhoeic wart	30	4	23	–	3	–	6
Mole (naevus)	16	3	1	6	–	6	5
Wart	14	–	10	–	3	1	1
Haemangioma	3	–	–	–	–	3	–
Lentigo	3	3	–	–	–	–	–
Chondrodermatitis nodularis helicis	2	–	–	–	–	2	–
Inflamed skin follicle	2	1	–	–	–	1	1
Sebaceous cyst	2	–	–	–	–	2	–
Skin tag/fibroepithelial polyp	2	–	–	2	–	–	–
Granuloma	1	–	–	–	–	1	1
Histiocytoma	1	1	–	–	–	–	–
Spider naevus	1	–	1[e]	–	–	–	–
Squamous cell papilloma	1	–	1	–	–	–	–
Overall total	140	12	51 (6)	8	41	28	76

CSC = cutaneous surgery clinic. [a]All lesions treated were sent for histopathology except for warts, sebhorroeic warts and actinic (solar) keratoses which were treated by cryosurgery. [b]Number in brackets represents skin lesions biopsied by curettage and cautery before further treatment. [c]Plus gentle cautery. [d]Includes patients whose lesions were treated in previous years. [e]Cold-point cautery.

change in colour. The four minor signs are inflammation, crusting or bleeding, sensory change, and a diameter of more than 7 mm. Special care at the hottest time of the day and protection from sun exposure in the form of loose-fitting clothes and sun hats is stressed to all age groups. The regular application of a sunscreen preparation of suitably high sun protection factor is advised to patients who are going on holiday.

Similar advice about preventive measures is made available by the practice nurses to all families and individuals who attend the practice travel clinic. This opportunistic contact and the skin screening clinic, in conjunction with the regular review of melanoma patients, provides the best chance of early detection and cure of malignant melanoma. A skin screening clinic can still be beneficial even where minor surgery skills and expertise are not available. It is wise to follow up most patients with a previously treated basal cell carcinoma or squamous cell carcinoma at six monthly intervals for two years to exclude any recurrence or new lesions.[37] With open access to a practice skin screening clinic, however, these patients can be encouraged to report back at any stage, if they are concerned about changes at the treatment site or if any new skin lesions appear.

Cutaneous surgery clinic in primary care

Since 1985, I have undertaken a regular monthly cutaneous surgery clinic, mainly for the treatment of skin cancer, employing either primary excision or liquid nitrogen cryosurgery.[32] The involvement of the practice nurses in these clinics and the feedback received by partners following these treatments has resulted in all the doctors and nurses becoming more aware and experienced in the recognition of a wide range of skin lesions. In 1987, I became a clinical assistant in dermatology at the local district general hospital.

The practice has a well-equipped minor surgery theatre, and facilities to carry out curettage, cautery, excisional surgery and cryosurgery of any skin lesion. The existence of a cutaneous surgery clinic within the practice extends the author's ability to confirm and treat most skin cancers. Thus, a suspicious mole can be excised to confirm or exclude a malignant melanoma, and most basal cell carcinomas and squamous cell carcinomas can be treated by primary excision or cryosurgery following biopsy.

One year's experience in detail

All the skin malignancies and pre-malignancies seen in the practice between April 1992 and March 1993 were studied. These included all such lesions seen at the skin screening clinic and those referred by partners directly to the cutaneous surgery clinic for treatment. All the skin malignancies and pre-malignancies were confirmed histologically. This allowed the incidence of melanoma and non-melanoma skin cancers within the practice population to be calculated. The source of all the referrals was also noted (Table 2). Patients referred by a doctor for opinion or treatment had either consulted their own doctor about a suspicious skin lesion or had had an opportunistic skin check. Nurse referrals were by the nurse practitioner, practice nurses or community nurses. The skin lesion had either been drawn to the nurses's attention or had been noted by the nurse during a consultation. Patient self-referrals came through the open skin screening clinic. Although the number of malignant melanomas in the 12-month study was too small to generate reliable estimates of incidence, compared with the national rate of malignant melanomas of 5.5 per 100 000 men and 8.7 per 100 000 women,[38] the rate of this practice (27.6 per 100 000) was much higher. Although the proportion of elderly patients in the practice population was below the national average[39] (857 patients out of 10 852 aged between 65 and 74 years, and 638 patients aged 75 years and over), the number of non-melanoma skin cancers was much higher than in the general population. The combined rate of basal and squamous cell carcinoma was 193.5 per 100 000 in this practice compared with the national rate of 66.1 per 100 000 men and 58.6 per 100 000 women. Although as part of a farming area there are farmers and outdoor workers registered with the practice, the majority of the adult poulation are professional, non-manual workers, many of whom retire to the area. Taking these factors into consideration, the high incidence rates of all skin cancers in the practice are likely to be a result of the primary health care team's high detection rate, and the open access skin screening clinic.

Waiting times for patients with malignant and pre-malignant lesions to be seen and treated within the practice were compared with all patients in the Crewe health district who had been referred by their general practitioner to the dermatology department of the local general hospital over the same 12-month period (Table 3). Except in the case of keratoacanthoma, the least malignant skin lesion, primary care showed definite advantages in terms of earlier diagnosis and treatment compared with hospital referral. All malignancies, except for one melanoma and one basal cell carcinoma, were treated at the health centre. The three melanomas in the practice were all 'thin, good prognosis' tumours. Action has since been taken at the hospital to reduce waiting times for the treatment of the two most malignant lesions, malignant melanoma and squamous cell carcinoma.

The combined cases of squamous cell carcinoma and Bowen's disease (squamous cell carcinoma in situ) was high (92.1 per

Table 2. All skin malignancies and pre-malignancies seen and treated at the health centre between April 1992 and March 1993.

	No. of lesions								
	Referred by				Treated				
	Doctor	Nurse	Patient	Being followed up	In skin screening clinic	In cutaneous surgery clinic	By plastic surgeon	Total	Incidence per 100 000
Malignancies									
Malignant melanoma	1	–	1	1	–	2	1	3	27.6
Basal cell carcinoma	8	2	4	5[a]	1	17	1	19	175.1
Squamous cell carcinoma	1	–	–	1	–	2	–	2	18.4
Pre-malignancies									
Bowen's disease	3	1	1	3	4	4	–	8	73.7
Keratoacanthoma	–	2	1	–	–	3	–	3	27.6
Actinic (solar) keratosis	10	3	19	14	45	1	–	46	423.9

[a]One was a recurrence of a basal cell carcinoma.

Table 3. Mean waiting times for patients with malignancies and pre-malignancies to be seen and to be treated at the health centre and the district general hospital, April 1992 to March 1993.

	Mean no. of days patients waited before being			
	Seen at		Treated at	
Skin lesion	Health centre[a]	Hospital[b]	Health centre[c]	Hospital[d]
Malignant melanoma (*n* = 3/7)	9	16	12	35
Basal cell carcinoma (*n* = 19/83)	7	70	7	48
Squamous cell carcinoma (*n* = 2/12)	2	51	0	62
Bowen's disease (*n* = 8/9)	12	47	5	50
Keratoacanthoma (*n* = 3/3)	20	18	5	0

n = number of lesions seen in health centre/hospital. [a]From doctor/nurse contact to consultation. [b]From date of general practitioner referral letter to dermatology outpatient appointment. [c]From consultation to biopsy/treatment. [d]From outpatient appointment to biopsy/treatment.

100 000) in the practice. Also of interest was the finding that the ratio of cases of squamous cell carcinoma to Bowen's disease in the health centre was 1: 4. The ratio for the hospital over the same 12-month period was 4: 3. This finding would suggest that patients with Bowen's disease (a potentially invasive, non-melanoma skin cancer) were presenting and being diagnosed more often at the pre-malignant stage in primary care than in secondary care.

In order to give an indication of incidence of skin cancers over time, the total number of skin malignancies and the incidence of each type of skin cancer per 100 000 of the population between 1988 and 1994 is shown in Table 4. The apparent increase in incidence for all skin cancers is likely to be a result of the increased detection rate.

Case histories

Patient with malignant melanoma

In April 1992, a 43-year-old woman with fair skin and multiple atypical naevi, who normally spent at least one short holiday a year on the continent with her family, was referred by a practice partner to the skin screening clinic with a possible malignant melanoma on her back. A superficial spreading malignant melanoma with a Breslow thickness of 0.5 mm was confirmed on primary excision at the cutaneous surgery clinic. As a result of careful follow up, an increasingly pigmented and enlarging mole was excised from her back four months later. On histological examination, this turned out to be a benign compound naevus. In February 1993, however, another malignant melanoma with a Breslow thickness of 0.3 mm was excised from the patient's right breast. Advice about sun avoidance, the use of protective clothing and high sun protection factor sun cream on holiday, was reinforced. The patient continues to receive regular follow up and supportive counselling. The family have all been screened.

Patient with squamous cell carcinoma

In April 1991, an 85-year-old widow presented at the skin screening clinic with a warty lesion on the thenar eminence of her hand. Curettage biopsy confirmed a well-differentiated squamous cell carcinoma. This responded well to cryosurgery. A year later, the patient presented at follow up with a suspicious lesion on her ear. On primary excision at the cutaneous surgery clinic, the lesion was confirmed as an invasive, somewhat poorly differentiated squamous cell carcinoma, which has been completely excised. The patient continues to be followed up and, to date, has not had further problems.

Table 4. Total number of skin malignancies recorded at the practice between 1988 and 1994, and incidence rates per 100 000 of the population.

	No. of skin malignancies (incidence per 100 000)			
Year	Malignant melanoma	Basal cell carcinoma	Squamous cell carcinoma	Bowen's disease
1988	1 (9.0)	13 (117.2)	2 (18.0)	1 (9.0)
1989	1 (9.2)	14 (128.6)	4 (36.7)	4 (36.7)
1990	1 (9.2)	8 (73.5)	5 (45.9)	4 (36.7)
1991	2 (18.4)	13 (119.9)	6 (55.3)	1 (9.2)
1992	4 (37.4)	17 (158.8)	0 (0)	8 (74.7)
1993	2 (18.9)	20 (188.5)	5 (47.1)	2 (18.9)
1994	4 (37.3)	20 (186.3)	10 (93.2)	7 (65.2)

Patient with basal cell carcinoma

A 68-year-old retired farmer, who had received treatment for a squamous cell carcinoma in 1990, had four primary, solid-type basal cell carcinomas excised from his back over a period of three years at the cutaneous surgery clinic. These basal cell carcinomas had been detected during regular review at the skin screening clinic, at which the patient had also received cryosurgery for five solar keratoses of his head. In August 1994, he had a further squamous cell carcinoma treated.

Cost, training and expertise

In 1987, the author demonstrated that savings of over 50% could be achieved for health centre-based treatment of skin cancer, relative to that provided in hospital outpatient clinics.[32] Little work has been published on the cost of primary care of skin cancer since the introduction of the general practitioner contract, largely because of the ever-changing medicopolitical scene. As fundholders, however, the practice makes considerable savings in terms of reduced dermatological referrals. Remuneration is available from the practice budget to contribute towards each minor surgical procedure carried out. The cost in terms of the increased number of histology requests is incorporated in the negotiated overall pathology contract.

Training and experience in the recognition of common benign and malignant skin lesions is essential when managing skin cancer in general practice. Some dermatologists have considerable reservations about the treatment of skin cancer in primary care.[40] Training of general practitioners needs to include the diagnostic and technical aspects of skin biopsy as a minor surgery procedure.[41,42] Pathologists in Leicester found that although the histopathological workload generated by general practitioners had significantly increased since the introduction of the new general practitioner contract, it still represented a small proportion of the total.[43] It is inevitable that even in experienced hands, a proportion of benign pigmented naevi are excised and sent for pathology in order to exclude malignant melanomas.[44] As workers in south east Scotland confirmed, the important point is that general practitioners need to think more often of malignant melanoma when they excise pigmented lesions.[45]

If all these points are taken into account, it would seem feasible that general practice could be the main focus for the early

detection and prevention of skin cancer.

Conclusion

Prevention and early detection of skin cancer are crucial in reducing morbidity and mortality from skin cancer. If doctors and nurses involved in primary care are given appropriate training, early detection and more accurate recording of the incidence of all skin cancers are feasible objectives. The source of treatment will depend on the expertise and facilities available. The prevention of skin cancer will be achieved by the continuing education of the public in which the primary health care team has a vital role.

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