



Management of skin cancer in Australia

A comparison of general practice and skin cancer clinics

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BACKGROUND

Skin cancer is common in Australia and its increasing incidence has been matched by an increase in specifically focused skin cancer clinics staffed by general practitioners. This study compares the management of skin cancer in general practice with that of skin cancer clinic networks.

METHODS

Analysis of billing data relating to management of skin cancer from 1 July 2005 to 30 June 2006 in three Queensland general practices (metropolitan, provincial, and rural) representing 23 100 patients and 23 doctors. As far as possible, methods were matched to those used in two published studies of skin cancer clinics.

RESULTS

Of the 1417 skin cancers: 31 melanomas and 1361 nonmelanoma skin cancers (NMSC) were treated by excision, and 25 NMSC were treated nonsurgically. The biopsy to treatment ratio in general practice was 0.7 and the number needed to treat (NNT) was 39, compared with 3.1 and 29 in one skin cancer clinic network and 0.5 and 24 in the other. Eighty-seven percent of skin cancer excisions were closed by primary repair and 54% of all excised lesions were malignant, compared with 42 and 60% in one network and 76 and 46% in the other, respectively.

DISCUSSION

The benign to malignant excision rate was similar in general practice and the skin cancer clinic networks, but one network reported very different rates of biopsy and complex wound closure. This raises questions as to whether outcomes are improved by these measures. These results demonstrate the usefulness of three billing data outcome measures in comparing activity in different clinical settings. However, the billing based NNT may not be a useful measure.

Australia has the highest incidence of melanoma in the world, and skin cancer is the most common cancer treated in Australia, accounting for more than 800 000 patient encounters each year. Moreover, the incidence of both melanocytic (MSC) and nonmelanocytic skin cancers (NMSC) is increasing.¹ Of these, NMSC are the most frequently diagnosed cancers. Treating skin cancer represents a large cost to the Australian community,² therefore it is important to ensure that skin cancer management represents effective use of scarce resources.

There has been a rapid increase in the number of dedicated skin cancer clinics staffed by general practitioners. Some concerns have been expressed by the Australian Society of Plastic Surgeons about the work done in these clinics.³

Descriptive studies of workload and clinical practice have been published from two skin cancer clinic groups.^{4,5} Both used billing data rather than histological data for performance indicators. In order to compare workload and clinical practice between standard general practices and skin clinics – and in the absence of a suitable published study – we analysed skin cancer management in three general practices in Queensland.

The Queensland Innovative Practices (QuIP) group comprises three (one metropolitan, one provincial city and one rural) nonspecialised general practices interested in researching clinical general practice (*Table 1*). Each practice offers a broad range of general practice services, has a mixed billing pattern, and none conducts advertised skin clinics. Dermatoscopes are available for use in each practice and all have fully equipped minor operation rooms.

Table 1. Skin cancer billing data by practice

Procedure	Practice 1 (urban)	Practice 2 (regional)	Practice 3 (rural)	QulP
	(n %)	(n %)	(n %)	Total
Standardised whole patient equivalent (SWPE)	9200	2900	11 000	23 100
Full time employed GPs	10	2.5	10.5	23
Biopsy	155	128	735	1018
Repeat freeze-thaw cryo cancer	4	8	13	25
Excision skin lesion (benign)	256	141	792	1189
Excision melanoma	3	10	18	31
Total NMSC excisions	290	171	900	1361
Complex closures*	2	15	172	189
% skin cancer excisions closed by primary repair	99.3	91.7	81.2	86.4
% lesions excised positive for skin cancer	53.3	56.2	53.6	53.9
Biopsy to treatment ratio	0.5	0.7	0.8	0.7
NNT (benign lesions excised+melanoma/melanoma)	86	15	45	39

* Includes simple, complicated and site specific flaps, wedge excisions and grafts

Methods

Data collection

Data on skin neoplasia management techniques were extracted from each practice's billing records from 1 July 2005 to 30 June 2006, de-identified and subjected to analysis. We categorised all billing data using the relevant Medical Benefits Schedule items (*Table 2*).

We analysed the data using the same measures, definitions and outcome measures as the published skin clinic papers where possible:^{4,5}

- biopsy to treatment ratio (BTR): total number of biopsies divided by the total number of NMSC detected, and
- number needed to treat (NNT): number of benign pigmented and nonpigmented lesions excised (items 31205–31240) plus number of melanomas excised divided by the number of melanomas excised.

We employed two additional outcome measures:

- percentage primary repair rate (ie. repair using uncomplicated closure techniques) for all skin cancer lesions removed, and
- percentage of all lesions removed that were malignant.

Finally, we compared these results with the published data from the two skin clinic networks,^{4,5} and with the national figures derived from Medicare Australia data for the same period.⁶ Skin clinic network 'one' included seven clinics in the Northern Territory, Queensland,

Table 2. Medical Benefits Schedule items relevant to skin cancer management

Billed activities	Item numbers
Procedure	
Biopsy	30071
Benign excision	31200–31240
NMSC excision	31255–31295
Melanoma excision	31300–31355
Flap repair simple	45200
Flap repair complicated	45203
Flap repair site specific	45206
Wedge excision	45665
Graft	45439, 45445, 45451
Curette benign lesion	30195
Nonexcision treatment of skin cancer	30196, 30197, 30202, 30203
Cryocautery premalignant	30192

and New South Wales. Skin clinic network 'two' comprised of four clinics in Queensland.

Results

Table 2 shows the relevant billing data for the QulP practices. There were no significant differences in the excision rates for skin cancers between the three practices so we considered it acceptable to group their data. The only difference was that the nonmetropolitan practices excised more melanomas on site, while the urban practice referred more patients to specialists for melanoma excision.

Of the 1417 cancers treated at the combined practices, 31 were melanomas treated by excision, 1361 were NMSC treated by excision,

and 25 were NMSC treated nonsurgically. The BTR was 0.73 and the NNT was 39.

Most malignant skin lesions (86.4%) were removed with primary repair; 53.9% of all lesions excised were malignant.

Comparison with skin clinic data

The proportion of lesions excised and found to be malignant on histology by QulP fell between the published rates at the two skin clinics (*Table 3*). However, skin clinic network 'one' differed markedly from skin clinic network 'two' and the QulP group in two outcome measures: the BTR was four times higher than at QulP and six times that of the other network; the flap and graft rate was four times that of QulP and twice that of network 'two'.

Table 3. Comparison of QulP data with published skin clinic data⁴⁻⁶

Item name	QulP (n)	Skin clinic 1 (n)	Skin clinic 2 (n)	Australia 2005–2006
Biopsy	1018	19 356	7458	559 488
Repeat freeze-thaw cryo cancer	15	1613	7119	186 106
Excision skin lesion (benign)	1189	3230	9099	606 114
Total number NMSC excisions	1361	4709	7468	363 684
Excision melanomas	31	116	395	25 153
Simple flap	117	1187	1226	34 931
Complicated flap	12	1027	250	20 427
Site specific flap	33	437	336	23 545
Wedge excision	3	42	0	6472
Graft	24	111	41	26 539
Total number of complicated closures	189	2804	1853	111 914
% lesions excised positive for skin cancer	53.9	59.9	46.4	39
% skin cancer excisions closed by primary repair	86.4	41.9	76.4	71
Biopsy to treatment ratio	0.7	3.1	0.5	0.97
NNT (benign lesions excised+melanoma/ melanoma)	39	28.8	24.0	25

The NNT was 39 for QulP, 29 for skin clinic network 'one' and 24 for network 'two'.

Comparison with Australian data

QulP and the two skin clinic networks had a higher proportion of excisions positive for malignancy than the national data for 2005/2006 (GP and specialist pooled) (Table 3). Network 'one' had higher biopsy, flap and graft rates compared to the national data.

Discussion

This is the first direct comparison using billing data between standard general practice and skin clinics in Australia. With the exception of melanoma management – where the urban QulP practice referred most melanomas to specialists – skin cancer management appears to be similar at all three QulP practices. Moreover, QulP excision rates are similar to reported rates of excision by GPs for NMSC based on histology data.⁷

The NNT performance indicator used by Wilkinson et al⁴ is probably a flawed indicator because it may not reflect the actual skin cancer management of different clinical groups. Under Medicare Australia rules, melanoma item numbers can only be billed by diagnosing practitioners when they perform a definitive wide excision. The initial narrow excision has to be billed as a benign excision item. Also, the billing data

does not distinguish between melanocytic and nonmelanocytic benign lesions excised, whereas histology studies do. Furthermore, seborrhoeic keratosis frequently masquerades as MSC and excision of such a lesion, if not billed as a biopsy but just charged according to time spent, will not show under the NNT billing indicator.

QulP billed for 31 melanomas whereas 39 were histologically proven. The urban practice in QulP usually referred clinically suspicious melanocytic lesions and biopsy proven melanomas to a specialist. The other two QulP practices usually performed the wide excisions themselves. We assume the skin clinics performed the definitive wide excision rather than referring, giving a lower NNT.

The data indicate that GPs in the QulP general practices have similar benign to malignant excision rates to those in skin clinics. However, one skin clinic network has major differences in biopsy and complex closure rates; the reasons for this are unclear.

The QulP data is only from three practices, and so may not be representative of standard general practice. Indeed, QulP has a higher proportion of excised lesions found to be malignant than nationally and a slightly lower biopsy rate. However, QulP results are similar to reported histological data from Australian general practice.⁷ Further, it is difficult to interpret

the national figures, which do not distinguish between specialist and GP excisions. The marked differences in the management of suspected skin cancer between our standard general practices and that of some skin clinics requires further study, especially the appropriate use of complex closure for NMSC lesions of different sizes and in different locations, and whether a high biopsy rate improves patient outcomes.

Conflict of interest: none declared.

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