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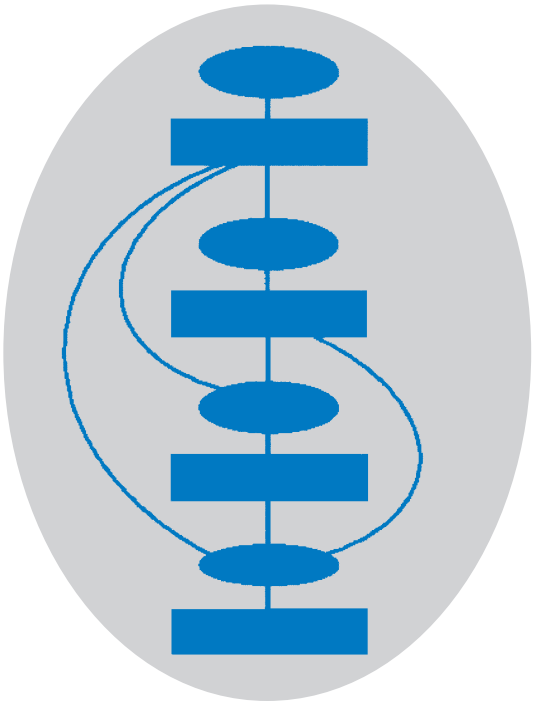
Guidance on cancer services

Improving outcomes for people with skin tumours including melanoma (update)

The management of low-risk basal cell carcinomas in the community – evidence review



May 2010

Developed by the National Collaborating Centre for Cancer

Improving Outcomes For People With Skin Tumours Including Melanoma (update 2009)

Topic: Do outcomes differ when the excisional surgery of a suspicious skin lesion is performed by a general practitioner compared with a specialist in secondary care?

Short Summary Of The Evidence

The evidence base for this topic is very poor, only one RCT exists, the remaining evidence comes from non-randomised prospective studies, retrospective observational studies, meeting abstracts presenting audit data, some audit data from specific health services and a published correspondence. Almost half the evidence was generated from within the UK with the other half generated from Australia. Applicability of the Australian evidence is limited in the UK setting. In order to accurately evaluate the outcomes from excisional surgery of a suspicious skin lesion performed by a general practitioner (GP) compared with a specialist in secondary care the ideal study would require the randomisation of patients to either of these settings and then assessment of the outcomes. The evidence body is limited in this sense with only one study attempting to evaluate this question in this way (George *et al.,* 2008). This study was limited in that it was an equivalence study which aimed to show that GPs were as good as, but not necessarily better than, hospital doctors in recognising and adequately treating skin lesions. The remaining evidence comes from observational studies; mainly retrospective series, which involves high levels of bias with respect to data collection processes or patient/lesion selection criteria. Furthermore, this evidence did not consistently describe if the GP groups included were general practitioners with a special interest or not, therefore making it difficult to conclude the performance of GPs with a special interest or GPs (with no specialised training). These retrospective studies give some indication of current practices and outcomes but essentially provide a platform for further research. Overall, the evidence body is significantly affected by low quality, highly biased evidence about excisional rates of suspicious skin lesions and lacks results of long term patient outcomes.

There were 11 studies (Carter 2009; Dabrera 2007; De La Roche 2008; George 2008; Goulding 2009; Khalid 2009; Macbeth 2009; Murchie 2008; Neal 2008; Su 2007; Youl 2007) with significant methodological bias that compared dermatologists to GPs or other clinical specialists. Eight of these studies (Carter 2009; Dabrera 2007; De La Roche 2008; Goulding 2009; Khalid 2009; Macbeth 2009; Murchie 2008; Neal 2008) indicated that margin clearance or complete excision is more adequately performed by ("hospital" or "specialist") dermatologists than GPs. Important to note that only two studies (Murchie 2008 and George 2008) clearly indicated the inclusion of GPs with a special interest, the remaining studies did not describe GPs in further detail. Three of the eleven studies reported the following: George *et al.,* (2008) reported that hospital doctors scored higher marks than GPs in surgical quality but, as this was an equivalence study, the authors found the clinical significance of this result difficult to interpret. Su *et al.,* (2007) reported the incidence of incomplete excision at a tertiary referral public hospital. There was no significant difference in the percentage of incomplete excision between consultants, registrars, and the clinical assistant, but the low numbers of cases performed by consultants may have contributed this result. Youl *et al.,* (2007) compared the ability of GPs or hospital doctors to correctly recognise malignant skin lesions. Hospital doctors were statistically superior in the detection of basal cell carcinomas and malignant melanomas but not squamous cell carcinomas. GPs and hospital doctors were of equal ability in the detection of benign skin lesions.

Importantly, the evidence body lacked sufficient evidence of difference between GPs or dermatologists in terms of long term patient outcomes. Recurrence is one key outcome and was addressed by only one study (Wylie *et al*. 2009). Wylie *et al*. (2009), reported a study that compared guideline recommendations and actual current practice. Fifty-three dermatologists were involved in an anonymous online questionnaire. When asked to respond to a clinical case example which asked for the likely excision margin (1 mm to > 4 mm) for a primary well-defined nodular basal cell carcinoma (BCC) measuring 1 cm on the mid-forehead; 33% suggested they would excise with a margin of 2 mm or less, and only 32% gave 4mm or greater as their response. Similar wide variations in practice were found with examples for high/low-risk squamous cell carcinoma and also for initial primary melanoma excision. Grade of operator and frequency of surgery were linked with the use of smaller

margins. The largest margins, (more closely following recommended guidelines), came from British Society of Dermatology Surgery members, although not exclusively. Overall it concluded, that in terms of providing adequate clearance and reducing recurrence rates, the results indicated marked discrepancies

The following section goes on to summarise the details of the evidence. A systematic review (Issa *et al.,* 2009, submitted for publication) compared incomplete excision rates reported by plastic surgical departments with those reported by other specialties for BCC excisions. It reported that plastic surgery departments managed BCC excisions more frequently when compared with other specialties and that they were better at reporting their outcomes. Incomplete excision rates were compared between specialties, which showed consistently lower incomplete excision rates in procedures performed by plastic surgeons than other specialties, despite an apparently more difficult case-mix. This paper also reported a retrospective analysis which audited all BCCs excised in the authors plastic surgery department and identified a rate of incompletely excised tumours to be 5.2%. The anatomical location, margin of surgical excision, histology, grade of operating surgeons, which margin was incomplete and follow up was also included in the audit. No significant predictors for incomplete excision were reported.

Goulding *et al.,* (2009) reported practice and histopathological outcomes among different groups of dermatological surgeons dealing with skin cancers. It found that all specialty groups were shown to have statistically significantly inferior diagnostic accuracy compared with dermatology. There was a significant difference between different specialities in the number of inappropriate procedures performed, with plastic surgeons conducting the most. With the exception of 'other sources', all specialty groups recorded statistically significantly higher incomplete excision rates compared with dermatology. Excision biopsies performed by GPs had the highest rate of margin involvement by tumour of any specialty. The study reported that 13.8% of tumours operated on by GPs should instead have been referred to secondary care for initial surgical management.

The largest prospective study was from Australia (Youl *et al.,* 2007) but the rest of the work was from the United Kingdom and is therefore more applicable to the topic population. The RCT (George *et al.,* 2008) was an equivalence study which aimed to show that GPs were as good as, but not necessarily better than, hospital doctors in recognising and adequately treat skin lesions, only a relatively small number (n=36) of which were malignant and had adequate documentation. Unfortunately, the authors were unable to make a clinical interpretation of their findings. Another prospective non-comparative study (Salam *et al.,* 2006) reported treatment outcomes on 34 malignant skin lesions that had been removed by ear nose and throat consultants.

Macbeth *et al.,* (2009) reported the rates of incomplete excision of BCC across UK regions from a retrospective series. A statistical significant difference between rates of incomplete excision in Primary Care (33%) and Dermatology (10%) was reported.

Three retrospective observational studies (Murchie *et al.,* 2007, Murchie *et al.,* 2008 and Neal *et al.* 2008) and a journal letter (Dabrera 2007) together presented data on the treatment of malignant melanomas or basal cell carcinomas by either GPs, dermatologists or other hospital doctors. Two of these studies showed that the excision accuracy of GPs was not as good as that of dermatologists but better than that of other hospital surgeons, although the findings were not always of statistical significance. One paper had equivocal findings and the journal correspondence reported a retrospective analysis showing that over a two year period in one London hospital, GPs had not performed as well as dermatologists or other hospital doctors in adequately removing BCC lesions.

Abstracts were presented at an annual meeting of the British Association of Dermatologists and were focused on describing the performance of GPs in recognising, treating or referring patients with suspicious skin lesions. These data may not have been peer reviewed before publication and were limited and highly selective with no comparative statistics, where comparisons were made. Other abstracts, although published in the British Journal of Dermatology, were included but limit the capacity to appraise the work due to lack of information about methods used. This set of abstracts also presented similar findings as above.

This report also includes audit data from primary care trusts about skin lesion recognition, management and/or referral processes. These were received by personal communication but, are not validated. The senders have been anonymised since data are unpublished. Where a comparison was made between GPs and secondary care, no statistics were given to support the findings.

Schofield *et al.,* (2009) published a health care needs assessment report that provided an overview of services for people with skin conditions in the UK. The report includes a section that describes, in detail, available services for this population at specific health care levels (ranging from level 1: self care; level 2: generalist care or primary care; level 3; specialist care; and level 4: supra-specialist care). It also evaluates the effectiveness of these services. Much of the evidence used in this section has been described in this report.

PICO:

Population	Intervention	Comparator	Outcomes
People with a suspected skin lesion.	excisional surgery (to remove a lesion) but not curettage or punch biopsy (for the purposes of obtaining a small tissue sample for diagnosis rather than to remove the lesion) and this would be performed by GPs, to include those with a 'special interest' (GPwSI).	secondary care such as dermatologists or plastic surgeons	successful excision rates, disease recurrence, cosmesis, correct diagnosis before excision, correct management (such as referral to skin cancer MDT where appropriate)

See Annex A for search strategy and inclusion criteria for review.

Full Evidence Summary:

A systematic review (Issa *et al.,* 2009, submitted for publication) compared incomplete excision rates reported by plastic surgical departments with those reported by other specialties for BCC excisions. It reported that Plastic Surgery departments managed BCC excisions more frequently when compared with other specialties and that they were better at reporting their outcomes. Incomplete excision rates were compared between specialties, which showed consistently lower incomplete excision rates in procedures performed by Plastic Surgeons than other specialties, despite an apparently more difficult case-mix. This paper also reported a retrospective analysis which audited all BCCs excised in the authors plastic surgery department in 2007 (n=677) and identified 35 incompletely excised tumours (5.2%). The anatomical location, margin of surgical excision, histology, grade of operating surgeons, which margin was incomplete and follow up was also included in the audit. No significant predictors for incomplete excision were reported.

Goulding *et al.,* (2009) reported practice and histopathological outcomes among different groups of dermatological surgeons dealing with skin cancers. This retrospective study showed that out of 1111 new skin tumour specimens; all specialty groups were shown to have statistically significantly inferior diagnostic accuracy compared with dermatology (Wald 41.35, $P < 0.001$). There was a significant difference between different specialities in the number of inappropriate procedures performed, with plastic surgeons conducting the most. With the exception of 'other sources', all specialty groups recorded statistically significantly higher incomplete excision rates compared with dermatology (Wald 33.64, $P < 0.001$). Excision biopsies performed by GPs had the highest rate of margin involvement by tumour of any specialty [68% (15/22) of such specimens vs. 8% (9/116) for dermatologists; OR 25.47, 95% CI 8.26-78.53]. The study reported that 13.8% (19/138) of tumours operated on by GPs should instead have been referred to secondary care for initial surgical management.

Su *et al.,* (2007), conducted a prospective study that reported the incidence of incomplete excision at a tertiary referral public hospital. The overall incomplete excision was 11.2 % for primary excisions. There was no significant difference in the percentage of incomplete excision between consultants, registrars, and the clinical assistant, but the low numbers of cases performed by consultants may have contributed this result.

Dhepnorrarat *et al., (*2009) also conducted a prospective study that identified the rate of incomplete excisions of skin cancers by a group of plastic surgeons in Western Australia. It reported an overall rate of incomplete lesion excisions of 4.02%.

Pua *et al.,* (2009) retrospectively evaluated the treatment of non-melanoma skin cancers (NMSC) by surgical excision in a dermatology private practice. It reported an overall incomplete excision rate of 2.2% (10/453). For BCCs, the incomplete excision rate was 1.54% (5/324), for squamous cell cancers including Bowen's disease

the incomplete excision rate was 3.9% (5/129). The majority of repairs were primary closures (82.6%). Although a significant proportion of the tumours were from the head and neck region (45.9%).

From correspondence in journals, Macbeth *et al.,* (2009) reported the rates of incomplete excision of BCC across UK regions from a retrospective series. Audit data collected by Dermatologists from four U.K. regions enabled a comparison between Dermatology and Primary Care services. Overall, there was a combined data set of 1972 cases. Of these, 1419 were attempted excisions with approximately 14% (excluding Sunderland data) from Primary Care. A statistical significant difference between rates of incomplete excision in Primary Care (85 ⁄254; 33%) and Dermatology (91 ⁄955; 10%) ($\chi 2$, $P \leq 0.001$) was reported. Twist (2009) reported the rate of incomplete excision of BCCs by General Practitioners with Special Interest. The report showed the rate of incomplete excision to be 2 out of 124 (1.6%). Both of the incompletely excised lesions were from the face.

Roberts *et al.,* (2008) conducted a survey to examine the response, from different user-groups of clinicians, to the most contentious parts of the NICE 2006 IOG for skin cancer. Made up of 15 statements the questionnaire reported that the most negative reaction was to the Statement: GPs should not treat any skin cancers: with the most negative reaction reported from members of the Primary Care Dermatology Society. The other two groups included (British Association of Dermatologists and British Association of Plastic, Reconstructive and Aesthetic Surgeons) were in favour of the statement. For the statement: Multidisciplinary teams (MDTs) should meet at least once a fortnight. The group which was most against this was the GPs. The statements with the most positive response across all groups. Was: GPs with special interests should not ('knowingly') treat patients with potential malignant melanomas, and: Patients with more advanced skin cancers such as stage IIB malignant melanomas should be referred to a specialist MDT.

The equivalence RCT study (George *et al.,* 2008) compared three outcomes of minor surgery, including the excision of suspected skin cancers, conducted in primary care or at a hospital in the South of England. Amongst the 568 patients in the trial, 57 malignant lesions were excised, although histology was only traced in 36 cases. Independent observers assessed the quality of surgery, the ability to recognise and adequately remove skin malignancies and patient satisfaction with treatment. Statistically, hospital doctors scored higher marks than GPs in surgical quality (OR = 1.64, 95%: 0.997-2.69%) but, as this was an equivalence study, the authors found the clinical significance of this result difficult to interpret. GPs failed to recognise a malignant lesion about one third of the time (sensitivity = 66.7% (range: 52.9-78%) but were good at recognising benign lesions (specificity = 92% (range: 89.7-93.9%). Hospital doctors achieved more adequate excisions than GPs (15/20 complete excisions vs 7/16) but the difference was not significant and with such a low patient number, firm conclusions should not be drawn from this result. Patients were more satisfied with treatment in primary care and found it less inconvenient than attending hospital.

Youl *et al.* (2007) conducted a prospective study in Australia which compared the ability of GPs or hospital doctors to correctly recognise malignant skin lesions. Since skin cancer has such a high prevalence amongst the population in Australia, this will limit this paper's external validity since the routine management of such patients perhaps occurs with less frequency in the UK. GPs made an average of 6.7 skin examinations and conducted an average of 2.65 surgical procedures per week, compared with 84.4 examinations and 34.6 procedures by clinic doctors. Case notes and histology were matched for 11,116 lesions representing an eight week or sixteen week case load for GPs and hospital doctors respectively. Hospital doctors were statistically superior in the detection of basal cell carcinomas (BCC) (sensitivity: 89%, 95%CI: 87-90%) vs 79%, 95%CI: 75-82%) ($P<0.01$) and malignant melanomas (MM) (60%, 95%CI: 52-69%) vs 29%, 95%CI: 12-45%) ($P<0.01$) but not squamous cell carcinomas (SCC) (67%, 95%CI: 64-72%) vs 69%, 95%CI: 64-75%) (not significantly different). GPs and hospital doctors were of equal ability in the detection of benign skin lesions (specificity ~98%). Excision accuracy was not addressed.

Salam *et al.* (2006) conducted a prospective non-comparative pilot study for which the primary outcome was a reduction in waiting times anticipated for a 'see and treat' clinic but, nonetheless, data for excision accuracy were also reported. One hundred and forty-five patients had 160 lesions removed by two ear nose and throat consultants, including 34 lesions that were malignant with a successful excision rate of 91%. Patient satisfaction was also canvassed and their experience was rated as good (12%) or excellent (88%).

Retrospective observational studies (Murchie *et al.,* 2007 and Murchie *et al.,* 2008) were both conducted in the Grampian region of Scotland. The earlier paper described initial skin biopsies performed on 142 patients who were subsequently diagnosed with MM. Forty of the procedures were conducted by GPs, including 35 excisions,

with an adequacy rate of 72% for those samples for which there was histology (n=32) compared with hospital doctors who conducted 102 procedures, including 93 excisions, with an adequacy rate of 75% for those samples for which there was histology (n=52). Because not all excisions necessarily had matching histology, the absolute excision rates are not calculable. The delays between initial presentation and definitive diagnosis were not affected by the settings in which initial surgery was performed.

The study by Murchie *et al.,* (2008) examined the adequacy of 856 BCC excisions performed by GPs and surgeons in secondary care for the year 2005. Data were grouped by excision margin i.e. '<1mm', '1-2mm' or 'unclear'. Compared with dermatologists and plastic surgeons, GPs were significantly more likely to incompletely excise lesions (OR = 0.34, 95%CI: 0.22-0.51%) but compared with other hospital specialists (e.g. ophthalmologists, ENT surgeons, maxillofacial surgeons, general surgeons, gynaecologists, A&E specialists and physicians) GPs were significantly more likely to completely excise lesions (OR = 1.81, 95%CI: 1.07-3.08%). GPs correctly stated the diagnosis on their clinical abstract in 67.1% of cases compared with dermatologists (82.1%) plastic surgeons (83.3%) and 'other hospital specialists' (63.9%) but these differences were not statistically significant. There were no significant differences for any outcome when comparing the performance of GPs and GPs with specialist training.

Another retrospective observational study was that of Neal *et al.* (2008) who determined the quality of excision in patients with primary MM in North Wales from 1993 to 2001. During this period, 95 such lesions were excised by GPs and, of the 64 that had accompanying histological diagnosis, 50% were judged of adequate quality and the remainder were classed as 'narrow'. Dermatologists excised 258 lesions, with 69% adequacy of margins and, similarly, other hospital surgeons excised 114 lesions with 49% adequacy. These groups were significantly different from one another (P<0.001) due to the higher success rate of dermatologists. There was no information on preliminary diagnosis and hence whether or not GPs suspected melanoma before undertaking surgery is not recorded but this likelihood was assumed by the authors to have been low. Referral rates and time to definitive diagnosis were also discussed.

A correspondence by Dabrera (2007) in a dermatology journal, reported a retrospective analysis of a modest sample of pathology data for all BCC excised over a 2 year period at one London hospital. Of 277 BCC excised, GPs performed adequate surgery in 32/75 (42.7%) cases compared with either 126/175 (72%) by consultant dermatologists or 14/23 (60.9%) by specialist registrars & clinical assistants (P<0.001) who were not statistically significantly different from one another. The authors expressed their opinion that GPs performed less well than consultant dermatologists or others under their supervision because they lacked the necessary experience and might, therefore, benefit from appropriate postgraduate training.

Salam *et al.* (2006) described a 'see and treat' clinic in Ipswich, UK between September 2001 and September 2002. Patients presenting to GPs requiring minor surgery to remove skin lesions from the head or neck had referral notes sent to two ear nose and throat consultants for review and prioritisation. Those patients with lesions considered by the surgeons appropriate for treatment in the clinic were offered appointments on which day they received surgery. The clinic was conducted in the minor surgical unit of a GP practice where lesions were removed by the reviewing consultant, using practice nursing staff to assist. Thirty BCC, 2 SCC, 1 undifferentiated carcinoma and 1 spindle cell carcinoma were removed, of which 3 BCC were incompletely excised. Over the study period, this change in referral patterns reduced average waiting times from 121 days to 47 days.

The 88th Annual Meeting of the British Association of Dermatologists was held in Liverpool, UK between the 1st and 4th July 2008. Abstracts from oral and written presentations have been included in this evidence base on request but it is not known whether or not these items were peer reviewed prior to publication. Few data and statistics were presented. The audit periods were short, the data were region specific and, in some cases, collected within narrow time periods and hence the possibility of selection bias cannot be excluded. All retrospective studies by their design are limited compared to prospective, randomised, comparative trials. For simplicity, data on diagnostic accuracy and excision rates between GPs and other surgical specialities are tabulated below for each abstract (Table 1).

Summary of published abstracts (from the British Association of Dermatologists Annual Meeting, UK):
Carter *et al.* (2009) conducted an audit which assessed whether GPs in this area were adhering to the 2006 NICE guidelines and excising with adequate margins. It also compared outcomes with those for patients treated in the Department of Dermatology.

Findings included:

- Of 71 GP procedures, 50 were excisions and 21 were incisional/ punch biopsies, shave, curettage or unspecified.
- 64 (90%) of the 71 lesions treated by GPs were high-risk: 27 were at high-risk sites and 37 of the 44 lesions at low-risk sites were of a high-risk histopathological type.
- Preoperatively GPs only suspected three of the lesions in low-risk sites to be high-risk tumours. In 16 cases (23%) no diagnosis was hazarded.
- Margins were < 1 mm or involved by tumour in 22 of 50 (44%) GP excisions and in 19 of 80 (24%) dermatology excisions.
- Further excisions were required in 24 (34%) of the GP patients vs. 13 (16%) of the dermatology patients.
- 5 (7%) fully excised tumours thought by GPs to be low risk were removed by a GP who had attended an LSMDT.

Khalid et al. (2009) conducted an audit to assess the completeness of excision of BCCs (BCC) by general practitioners.

Findings included:

- It audit showed that the GP excision numbers for BCC increased from 41 in 2005 to 66 in 2007.
- Clinically suspected malignancy increased to 75% (2007) from 54% (2005).
- In 11% of cases no clinical diagnosis was suggested, but this had improved from 22% in 2005.
- The proportion of 'high-risk' infiltrative and micro-nodular BCCs reduced to 17% (2007) from 37% (2005).
- BCCs excised with clear margins (≥1 mm) improved to 66% (2007) from 54% (2005).
- Involved margins = 11% (2007) but improved from 24% (2005).
- Completeness of excision with clear margins (±1 mm) improved from 47% in 2005 to 57% in 2007 but close and involved margins were at 33% (2007) compared with 46% (2005).
- The comparative figures for hospital specialists in the 2005 audit = 87% clear (≥1 mm), 7% close (0 –1 mm) and 6% involved.

Wylie *et al*. (2009) reported a study was to compare guideline recommendations and actual current practice. It found:

- On average, most responders were carrying out more than 20 procedures per month.
- The first clinical case example asked for the likely excision margin (1 mm to > 4 mm) for a primary well-defined nodular basal cell carcinoma (BCC) measuring 1 cm on the mid-forehead.
- Based on this, 33% suggested they would excise with a margin of 2 mm or less.
- Consultants made up 13% of this group including BSDS members.
- Only 32% gave 4mm or greater as their response.

- In terms of providing adequate clearance and reducing recurrence rates, comparing these results with the following published guidelines, there appears to be a marked discrepancies.
- Small well-defined BCCs with a 3-mm peripheral margin will clear tumour in 85% of cases.
- A 4–5-mm margin will increase the clearance rate to approximately 95%.
- Similar wide variations in practice were found with examples for high/low-risk squamous cell carcinoma and also for initial primary melanoma excision.
- Grade of operator and frequency of surgery, were linked with the use of smaller margins.
- The largest margins, (more closely following recommended guidelines), came from BSDS members, although not exclusively.

Al Rusan *et al* (2008) analysed pathology reports of all cases of BCCs biopsied or excised. It reported that GPs excised 103 BCCs, including 19 on the face. Complete excision rate = 42% for facial BCCs and 53% for other BCCs. And the mean peripheral margins for all BCCs was for GPs = 1.49 mm: mean deep margins = 2.38 mm.

De La Roche *et al.* (2008) conducted an audit of the annual complete excision rates for basal cell carcinoma (BCC). It reported a complete excision rate for high-risk BCCs in primary care of 46% and in secondary care, 89%.The complete excision rate for high-risk BCCs for dermatological surgeons was 96%. The complete excision rate for low-risk BCCs in primary care was 80% and in secondary care was 93%.

Abstract Details:

	Abstract numbers							
	O-8	**P-66**	**P-68**	**P-69**	**P-67**	**DS-2**	**DS-5**	**DS-25**
Review period	Oct-Dec 2006	Jul-Dec 2007	Jan-Jul 2006 & 2007	6 months 2 months	Apr-Mar 2007	Oct 2006 Nov-Mar 2006/7 May-Jul 2007	Jan-Jun 2007	2006
Lesion(s)	Not identified	Not identified	175 Melanomas	31 BCC 5 SCC 1 MM 40 n/k 5 SCC 11 BCC	122 BCC 18 SCC 11 MM	199 BCC	101 SCC	1693 BCC
GPs: accurate diagnosis	59/138 (43.7%)	15/40 (37.5%)	6/10 (60%)	- 6/16 'suspicious'	-	-	-	78%
Dermatologists: accurate diagnosis	328/472 (69.5%)	-	-	-	-	-	-	100%
Odds ratio (95%CI)	0.33 (0.22-0.48) P<0.001	-	-	-	-	-	-	-
GPs: adequate excision	7/22 (31.8%)	18/26 (69.2%)	81/95 (85.3%)	25% 'clear margins' 0% 'adequate'	7 SCC 65 BCC	8/10 (80%) 77.6%	3/7 (43%)	n=372 46% (hi risk) 80% (lo risk)
Dermatologists: adequate excision	107/116 (92.2%)	-	-	-	-	99/105 (94%) 90.5%	82%	n=1219 96% (hi risk) 93% (lo risk)
Odds ratio (95%CI)	25.47 (8.26-78.53) P<0.001	-	-	-	-	-	-	-
Plastic surgeons & others: adequate excision	?/480	-	-	-	-	?/84 -	90%	?/102

Table 1: Data from poster and oral presentations presented at the 88th Annual Meeting of the British Association of Dermatologists, 2008. Abbreviations: BCC - basal cell carcinoma, SCC - squamous cell carcinoma, MM - malignant melanoma, n/k - not known.

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Abstract O-8 J. Goulding, S. Levine, R. Blizard, F. Deroide and V.J. Swale. Dermatological surgery: a comparison of activity and outcomes in primary and secondary care.

Abstract P-66 Cohen S and A. Ferguson. How well is the skin cancer Improving Outcomes Guidance being followed?

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Abstract P-69. Mehra, R. Stitson, J. Natkunarajah, S. George, C.C. Harland and A. Abdul-Wahab. Skin cancer biopsies in primary care: neither BAD nor NICE.

Abstract P-67 Healy, D. Rahman, K. Gibbon, A. Sahota and A.P. Bewley. Are NICE skin cancer guidelines being followed in primary care? A review of current practice in an inner city setting.

Abstract DS- 2 Macbeth AE, Torley D, Hepburn N and Levell NJ Incomplete excision rates of basal cell carcinomas in primary care and dermatology: a multicentre audit.

Abstract DS-5 Hussain SSH, Shams N and Garioch J. Managing squamous cell carcinomas: auditing the mode of referral to secondary care and adequacy of surgical excision.

Evidence Tables

Reference
Neal *et al.* (2008)

Design: Retrospective observational study
Country: United Kingdom.

Inclusion criteria: Patients with a diagnosis of primary cutaneous malignant melanoma.

Exclusion criteria: Patients with ocular, non-cutaneous and *in situ* melanoma.

Population: n=578 (239 males, mean age 58.3 ± 16.9 years & 339 females, mean age 59.6 ± 19.6 years)

Intervention(s) and comparator(s):

Patients had a primary diagnostic excision biopsy followed by wide excision according to Breslow thickness of biopsy sample. In cases of certainty of diagnosis only one excision was made with margins as determined by the surgeon.

Excisional surgery was performed by general practitioners (GPs; 16.4%) dermatologists (54.7%) general surgeons (18.5%) hospital doctors (7.6%) maxillofacial surgeons (1%) plastic surgeons (0.9%) hospital based GPs (0.3%) and 'unknown' (0.5%).

Outcomes:

The principal outcomes of the study were to determine the quality of excision and the time to diagnosis relating to the excising surgeon and the place of excision. The secondary outcome was to describe the primary care management of these lesions.

Univariate and multivariate analyses were undertaken to determine predictors of excisional quality and also to identify any demographic differences between surgery performed in primary or secondary care settings and whether this affected hospital referral patterns.

Results:
Of the 548 lesions recorded, 28% were on the trunk, 28% on a lower limb, 21% on an upper limb and 20% on the head or neck. Just under half (41%) of the cases were male. Most trunk lesions were found on men (65%) ($P<0.001$) whereas lower limb lesions were found predominantly on women (80%). Most (88%) patients had a primary lesion only, 2% had local node involvement and three patients (1%) had local spread.

During the period from 1993 to 2001, 95/578 lesions were excised by GPs, 60% of whom excised a single lesion with the remainder removing two or more lesions. From 1997 the rate of surgery in general practice declined.

In 64 lesions removed by GPs, 50% were deemed to be of 'adequate' quality with regard to the excision margin (within UK guidelines) and the remainder were classed as 'narrow' (with a lesser margin than recommended by UK guidelines). In 258 lesion excised by dermatologists, 69% were 'adequate' and 31% were 'narrow' and in 114 lesions removed by surgeons, 49% were classed as 'adequate' and 51% 'narrow'. These results were significantly different by X^2 test ($P<0.001$) due to the greater number of adequate incisions by dermatologists compared with other groups.

In 95 excisions by GPs, 52% of the patients were referred to hospital and these tended to be younger (mean age 50.8 years ± 17.2) than those not referred (mean age 59.3 years ± 19.8) ($P=0.027$). In all other respects, there were no differences in patient demographics between GP and secondary care referrals.

Where these data could be calculated, the median total delay in the time to diagnosis for GP excised patients

(n=55) was 12 days (IQR: 4.0-52.0) compared with hospital excised patients (n=303) with a median delay of 41 days (IQR: 25.0-78.0) (P<0.001).

Follow up:

Patients were followed up annually for 10 years. Data on 70 lesions and from 14 patients (2%) were missing.

General comments:

This study summarised retrospective analyses of data taken from the North Wales Melanoma Database of all patients who had been treated for skin cancer between 1993 and 2001. Patients on the database were identified from histology reports sent directly from three hospital pathology departments and from private practitioners.

In this database there would not, of course, be data available from general practitioners who did not submit pathology specimens following surgery and therefore this study cannot be entirely representative of GP performance. There is also no record of pre-operative diagnosis and hence the number of GPs or other surgeons who suspected melanoma and excised the lesion accordingly is not known. The study authors expressed the opinion that since the UK guidelines (Roberts *et al.,* 2002) do not recommend melanoma removal in general practice, in the majority of cases GPs probably did not initially suppose a suspicious lesion to be melanoma (but these data pre-dated that publication). The authors were also concerned that, following surgery, only 52% of patients were referred on to secondary care. However, there are no data on the survival outcomes as a result of the treatment received or referral delay for these patient groups. It is also clear from some of the results that some data are missing and therefore the risk of bias cannot be excluded. Additionally, there is no information on the individual GPs and whether or not they may have had a special interest in dermatology. Whilst this study offers some useful results, internal and external validity cannot be established.

Roberts DLL, Anstey AV, Barlow RJ, *et al* (2002) UK guidelines for the treatment of cutaneous melanoma. *Br J Dermatol.* **146:** 7-17.

Reference
Murchie *et al.* (2008)

Design: Retrospective observational study
Country: United Kingdom

Inclusion criteria: Data from patients who had had a BCC excised during the year 2005.

Exclusion criteria: N/A

Population: n=1087 (524 males & 563 females, mean age 70.8 ± 13.3 years)

Intervention(s) and comparator(s):

Positive BCC biopsies were submitted by GPs (20.7%) dermatologists (17.9%) plastic surgeons (49.1%) and other hospital specialists (12.2%) including ophthalmologists, ENT surgeons, maxillofacial surgeons, general surgeons, gynaecologists, A&E specialists and physicians.

Five of the GPs had undergone specialist training in skin surgery and one had extensive dermatological experience. These 6 GPs had excised between 13 and 23 BCC each in 2005 whereas the remaining GPs had excised between 1 and 5 BCC for the same year.

Outcomes:

The purpose of this retrospective data review was to determine the adequacy of basal cell carcinoma (BCC) excision by GPs and other surgeons in secondary care. Other analyses included determination of the adequacy of the clinical abstract submitted and the accuracy of any clinical diagnosis made by the surgeons in primary and secondary care.

Results:

Although data were reported for all biopsy types i.e. excisional, incisional, punch, shave or curettage, only the results for excisional surgery are reproduced here, of which data on surgical margins were shown for 856 biopsies performed by GPs (n=176) dermatologists (n=75) plastic surgeons (n=498) and other hospital specialists (n=107). There were a further 34 biopsies in which the adequacy of margins was unclear.

Excisional biopsies where both margins ≥ 1mm:

GPs: 125/176 (67.9%)
Dermatologists: 70/75 (89.7%)
Plastic surgeons: 426/498 (82.6%)
Other hospital specialists: 59/107 (52.7%)

Excisional biopsies where one margin < 1mm:

GPs: 51/176 (27.7%) of which 40 were from head and neck lesions
Dermatologists: 5/75 (6.4%) of which all were from head and neck lesions
Plastic surgeons: 72/498 (14%)of which 65 were from head and neck lesions
Other hospital specialists: 48/107 (42.9%) of which 42 were from head and neck lesions

Excisional biopsies where the adequacy of margins was unclear:

GPs: 8 (4.3%)
Dermatologists: 3 (3.8%)

Plastic surgeons: 18 (3.5%)
Other hospital specialists: 5 (4.5%)

Overall, most surgery was performed on head and neck lesions and there was a statistically significant difference between groups by X^2 test (P<0.001) where GPs and 'other hospital specialists' performed less well than dermatologists or plastic surgeons. GPs completely excised lesions in 67.9% of cases compared with dermatologists (89.7%) plastic surgeons (82.6%) or 'other hospital specialists' (52.7%). Compared with dermatologists and plastic surgeons the GPs were significantly more likely to incompletely excise lesions (OR = 0.34 95%CI: 0.22-0.51) but compared with 'other hospital specialists', GPs were significantly more likely to completely excise lesions (OR = 1.81 95%CI: 1.07-3.08).

Diagnostic accuracy was measured, presumably using histology as the gold standard, and this showed that GPs correctly stated the diagnosis on their clinical abstract in 67.1% of cases compared with dermatologists (82.1%) plastic surgeons (83.3%) and 'other hospital specialists' (63.9%). The adequacy of the clinical abstract was highest for GPs (24%) compared with dermatologists (12.5%) plastic surgeons (8.8%) and 'other hospital specialists' (17.3%) but neither of these parameters reached statistical significance.

A comparison between GPs with specialist training and those without showed no significant differences in excisional adequacy, abstract adequacy or clinical diagnosis.

Follow up: N/A

General comments:

This study reported the results of a retrospective review of hospital pathology reports on samples from patients who had received surgery for BCC in Aberdeen for the year 2005. As with others of similar design, a retrospective observational study is not as valuable as would be a prospective randomised trial. However, the pathology reports were anonymised such that the two reviewers were blinded to the operator's specialty. Inter-reviewer agreement was calculated and found to high for all outcomes except abstract quality.

There was no information on identity or experience of the 'other hospital specialists' and there are no follow-up data on treatment outcomes, mortality or morbidity from surgery. No relationship between successful, adequate excision and patient outcomes was established. This study may have limited external validity since it concerned a single region in Scotland.

The authors commented that the highest levels of inaccuracy of excision by GPs occurred in surgery of the head and neck, which was also true for the 'other hospital specialists' group. They suggested that GPs may have performed smaller incisions here for cosmetic reasons leading to inadequate removal of the skin cancer in these patients.

The authors were concerned that GPs with a special interest showed no superiority in any of the measured outcomes compared with the non-specialised GPs perhaps indicating a need for better education. However it was pointed out that GPs were better than 'other hospital specialists' in terms of diagnosing, describing and successfully excising BCC, although clearly not as good as either dermatologists or plastic surgeons.

Reference
Dabrera 2007

Design: Journal correspondence
Country: United Kingdom

Inclusion criteria: Data from patients who had had a BCC excised during the years 2000-2.

Exclusion criteria: N/A

Population: n=277 (samples)

Intervention(s) and comparator(s): N/A

Outcomes: N/A

Results:

Numbers of BCC adequately excised (n=277):

GPs: 32/75 (42.7%)
Consultant dermatologists: 126/175 (72%)
Specialist registrars & clinical assistants: 14/23 (60.9%)

The rate of adequate incision between consultant dermatologists and GPs was significantly different by X^2 test ($P<0.001$) but not between consultants and specialist registrars & clinical assistants.

Follow up: N/A

General comments:

This correspondence was published in a dermatological journal and reported a retrospective analysis of a modest sample of pathology data for all BCC excised over a 2 year period at one London hospital. The detail is extremely limited and represents a relatively small data set but is included in this evidence base for completeness.

The authors expressed their opinion that GPs performed less well than consultant dermatologists or others under their supervision because they lacked the necessary experience and might, therefore, benefit from appropriate postgraduate training.

Reference
George *et al.* (2008)

Design: Randomised controlled trial (RCT)
Country: United Kingdom

Inclusion criteria: Patients presenting general practice who needed minor surgery for which the GP felt able to undertake or refer to a colleague in primary care.

Exclusion criteria:

Patients presenting for cauterisation of cutaneous warts or joint injections.

Population: n=568 (259 males & 309 females, mean age ~48.5 years)

Intervention(s) and comparator(s):

Surgical incisions, excisions, ablations and aspirations of skin and subcutaneous lesions, injection of varicose veins and banding of haemorrhoids. In this trial, 65 GPs and 60 hospital doctors participated and each group saw 284 patients, of which 57 had suspicious skin lesions:

Malignant and pre-malignant lesions (according to GP diagnosis) removed in primary care :

Bowen's disease = 0
Basal cell carcinoma (BCC) = 24 (23 sent for histology)
Squamous cell carcinoma (SCC) = 4 (4 sent for histology)
Malignant melanoma = 3 (3 sent for histology)

Malignant and pre-malignant lesions (according to GP diagnosis) removed in hospital:

Bowen's disease = 1 (1 sent for histology)
BCC = 21 (21 sent for histology)
SCC = 3 (3 sent for histology)
Malignant melanoma = 1 (1 sent for histology)

Histological results

Bowen's disease = 3
BCC = 26
SCC = 5
Malignant melanoma = 2

Of the 36 malignant or pre-malignant lesions, 16 had been removed by GPs and 20 by hospital doctors.

Outcomes:

1] Two independent observers assessed surgical quality by examining anonymised photographs of wounds 6-8 weeks following post surgery. Results were scored on a visual analogue scale (0-100) and a categorical scale (0-6).

2] Surgical safety: recognition of skin malignancies and their appropriate treatment was assessed by examining histological reports and GP referral forms.

3] Patient satisfaction was determined by questionnaire.

Results:

568 study participants were randomised by 82 GPs.

Surgical quality

The overall VAS score across all patients was 59.8 resulting in 10% equivalence limits of ± 5.98. The VAS score for the hospital arm = 61.22 and for GPs = 55.7 and the mean difference = 5.46 (95%CI: 0.925-9.99). Statistically these figures are different but this was not a superiority study but an equivalence study which means that the result is 'uncertainty' about the clinical significance of the result.

Using the categorical score, in the hospital group 66/341 achieved a maximum mark compared with 40/313 in the primary care group: OR = 1.64 (95%: 0.997-2.69).

Patient satisfaction

Patients tended to be more satisfied with treatment in primary care and reported less inconvenience than experienced by going to hospital.

Surgical safety

GPs sent in a referral form with their preliminary diagnosis. It was noted that 1 case of Bowen's disease, 51 cases of BCC, 8 cases of SCC and 4 malignant melanomas were diagnosed. However, 6 patients with BCC and 1 patient with SCC did not subsequently have surgery. The reasons are not described.

Hospital doctors achieved more complete excision of malignancies but the difference was not significant: 7/16 for GP vs 15/20 for hospital doctors when tested by X^2 (P=0.065).

The accuracy of GPs to diagnose malignant lesions was tested by comparing referral notes to histological results. The sensitivity of their diagnoses = 66.7% (range: 52.9-78) and specificity = 92% (range: 89.7-93.9) with a positive predictive value = 40% (range: 30.2-50.6) and a negative predictive value = 97.2% (range: 95.6-98.2). This meant that GPs failed to recognise a malignant lesion about one third of the time but were much better at detecting a benign lesion.

Follow up: N/A

General comments:

This study described a randomised controlled equivalence trial conducted in the South of England in which the authors wished to determine whether GPs perform minor surgical procedures as competently as hospital doctors. Patients were recruited from more than 40 GP practices from 2000 to 2002. The procedures under review included the removal of malignant and pre-malignant skin lesions. After initial consultation, potential trial participants (those patients whom the GP felt could be treated in primary care) were randomised to receive minor surgery either within primary care or at a local hospital.

Surgical quality, assessed by VAS and categorical scales, was the primary outcome of this study, replacing the intended primary outcome, rate of surgical complication. The authors had performed a power calculation assuming complication rates that far exceeded those which they observed in early trial results. Since their study would have been statistically underpowered, a new power calculation, based on preliminary VAS and categorical scores, allowed the trial to continue with a lower number of participants than would otherwise have been required. The change in protocol was approved by the study's commissioning body (NHS HTA programme).

Patients were not allocated to this trial as such but were approached on an opportunistic basis by participating GP practices. If the patient, who had elected for minor surgery, was willing to take part, randomisation was conducted at that point using a sealed envelope technique. Every effort appears to have been made to ensure that this procedure was not open to selection bias but it should be borne in mind that are ways in which this could have occurred. The patients clearly could not be blinded to treatment allocation but the reviewers were blinded to assessment of surgical quality. The treatment arms were similar in age, gender and pathology of lesions.

Interestingly, the level of GP experience had the reverse effect to that which might be anticipated since the mean VAS score for those with formal training was 52.02 compared with 60.46 for those GPs with only informal training. The probability is that there may have been selection bias since the more experienced GPs may have been willing to recruit patients with more complex cases, some of which would have been randomised to them rather than to the hospital.

The authors concluded that the quality of minor surgery, when measuring 'surgical quality' as a primary outcome, was not as good in primary care as in hospital although the difference was not that large. Patients appear to be more satisfied with the convenience of receiving their surgery at the GP practice rather than in a hospital setting.

The main concern was in the low detection rate of malignant or pre-malignant lesions by GPs and the possible differences in complete excision of such lesions, although statistically these were not significant. The authors highlighted as a cause for concern the numbers of excisions for which samples were not sent for histological diagnosis and also the recognition that further training of GPs may be worthy of consideration.

Reference
Youl *et al.* (2007)

Design: Prospective comparative study
Country: Australia

Inclusion criteria: N/A

Exclusion criteria: N/A

Population: n=28728 (4018 males in GP treatment group vs 9929 males in clinic doctors group). Mean age in GPs group = 55.9 years (± 19.4) and in clinic doctors group = 51.5 years (± 18.5)

Intervention(s) and comparator(s):

Data were collected from GPs over 2 x 8 week periods and from clinic doctors over 2 x 4 week periods during March to May and September to November 2005.

For every lesion excised, participants provided a clinical diagnosis and rated the likelihood of malignancy on a 5-point Likert scale from 'very unlikely' (1) to 'very likely' (5) and also the degree of patient pressure to excise from 'no pressure' (1) to 'strong pressure' (5). These data were combined with clinic notes and histopathology reports for each patient before being assigned a unique number by lesion and categorised into broad groups e.g. melanoma, BSS, SCC and various benign conditions.

Outcomes:

Sensitivity and specificity of diagnostic accuracy for all excised and biopsied skin lesions performed by GPs compared with cancer clinic doctors, also the number needed to excise (NNE – number of all lesions excised to the number of malignant lesions excised).

Results:

Clinical notes and histology reports were matched for 97.5% of all excisions or biopsies.

GPs conducted 8,790 skin examinations (mean = 6.7 per week). Clinic doctors conducted 19,965 skin examinations (mean = 84.4 per week)

GPs performed 3,231 procedures (2,391 excisions, 807 biopsies and 33 other) (mean = 2.65 per week) in 16 weeks. Clinic doctors performed 8,172 procedures (3,832 excisions, 4212 biopsies and 128 other) (mean = 34.6 per week) in 8 weeks.

Both clinical and histological diagnoses were available for 11116 lesions. The lesions (n=3, 175) treated by GPs included 743 BCC, 704 SCC and 49 melanomas and those by clinic doctors included 2701 BCC, 1274 SCC and 103 melanomas.

Sensitivity:

BCC: GPs correctly diagnosed 79% (95%CI: 75-82) of these lesion vs clinic doctors who correctly diagnosed 89% (95%CI: 87-90) (P<0.01).

SCC: GPs correctly diagnosed 69% (95%CI: 64-75) of these lesions vs clinic doctors who correctly diagnosed 67% (95%CI: 64-72) (not significantly different (NSD)).

For BCC + SCC combined, >90% of lesions were correctly diagnosed by both groups with GPs sensitivity = 91% (95%CI: 89-93) and clinic doctors at 94% (95%CI: 92-95) (NSD).

Melanoma: GPs correctly diagnosed 29% (95%CI: 12-45) vs clinic doctors at 60% (95%CI: 52-69) (P<0.01) based on a low sample number for GPs (n=49) and clinic doctors (n=103).

Specificity:

All major groups were equivalent between GPs and clinic doctors:

Solar keratosis: GPs = 96% (95%CI: 95-97) vs clinic doctors = 98% (95%CI: 97-99) (NSD)

Dysplastic naevus: GPs = 93% (95%CI: 92-95) vs clinic doctors = 95% (95%CI: 93-97) (NSD)

Benign naevus: GPs = 98% (95%CI: 97-98) vs clinic doctors = 98% (95%CI: 98-98) (NSD)

Other pigmented lesions: GPs = 97% (95%CI: 96-98) vs clinic doctors = 97% (95%CI: 97-98) (NSD)

Other non-pigmented lesions: GPs = 98% (95%CI: 97-98) vs clinic doctors = 98% (95%CI: 97-98) (NSD)

NNE for all malignant lesions:

GPs: 2.1 (95%CI: 1.9-2.3) vs clinic doctors: 1.9 (95%CI: 1.8-2.1) (NSD)

NNE BCC: GPs = 4.3 (95%CI: 3.8-4.8) vs clinic doctors = 2.9 (95%CI: 2.7-3.2) (P=0.05)
NNE SCC: GPs = 4.5 995%CI: 3.9-5.1) vs clinic doctors = 6.2 (95%CI: 5.8-6.7) (P<0.01)
NNE melanoma: GPs = 20.7 995%CI: 14.4-27) vs clinic doctors = 19 (95%CI: 14.9-23.1) (NSD)

Follow up: N/A

General comments:

This paper presented the findings from a prospective comparative study of the treatment of skin cancer in primary and secondary care, focusing on diagnostic accuracy rather than the adequacy of excision or the rate of false negatives. There was no evidence that reviewers were blinded to the identity or professional expertise of the individual performing surgery to which each histological sample pertained.

In Australia skin, cancer clinic doctors are vocationally trained GPs electing to specialise in skin cancer medicine either alongside or instead of general practice. For this study 104 GPs and 50 skin cancer doctors were recruited and data were collected on their levels of experience and qualification.

In this study, fewer GPs were men than women (P<0.001). Compared with GPs, skin cancer clinic doctors were younger (mean 45 years vs 50 years, P<0.002) were predominantly male (84% vs 58%, P<0.001) and were more likely to have had additional training (P<0.001).

Certainty of diagnosis of melanoma was correlated with a fall in NNE for both GPs and clinic doctors, meaning that the higher the certainty with which that diagnosis was made, the greater the likelihood that the diagnosis was right. In those cases where certainty was low, patient pressure to excise the lesion was the main reason stated for undertaking the procedure.

The authors concluded from their data that the diagnostic accuracy was similar between GPs in primary care and doctors in skin care clinics. Whilst this study was prospective and comparative, nonetheless there is a possibility of bias because perhaps only those GPs who felt confident in their diagnostic abilities took up the challenge that they were offered and hence this may not have been a representative sample. Similarly, whilst this may not affect the comparison, the close scrutiny which study participants were under may have influenced the way in which they make their diagnosis. It would have been preferable, as with George *et al* (2008) for this study to have a randomised design which may have reduced bias.

The authors note that melanoma detection was poorer by GPs than clinic doctors in this study and also highlighted that GPs tended not to make whole body examinations in contrast with clinic doctors, when it was known to improve melanoma detection rates by six-fold. On the whole the positive predictive value for all practitioners was high in that most lesions diagnosed clinically to be malignant were confirmed by histology (~70%).

This study was conducted in a country where skin cancer has a greater prevalence amongst the general population which may limit its external validity in answering this topic since the practical experience of routinely seeing as patients with skin cancer is unlikely to be as high in the UK, perhaps even amongst specialists and almost certainly amongst GPs.

Reference
Murchie *et al.* (2007)

Design: Retrospective observational study
Country: United Kingdom

Inclusion criteria: Patients diagnosed with cutaneous malignant melanoma between 1994 and 2004.

Exclusion criteria: N/A

Population: n=142 (69 males & 73 females, mean age 53.9 ± 15.2 years)

Intervention(s) and comparator(s):

Patients had taken part in a study examining GP-led follow-up of malignant melanoma (35 general practices took part). The data in this paper related to the initial biopsy conducted in either primary care or at hospital. Of 142 participants, 40 had their initial biopsy conducted by their GP and the remaining 102 patients were referred directly to secondary care by their GP where the first biopsy was done.

Outcomes:

The primary outcome of interest was the length of treatment delay between initial biopsy and definitive treatment for malignant melanoma. Adequacy of first biopsy was reported.

Results:

Adequacy of first biopsy:

First biopsy by GP (histology for 32/40 samples, including 35 excisions, 2 shave biopsies and 3 punch biopsies): 23 adequate vs 9 incomplete (71.9% adequacy)

First biopsy at hospital (histology for 52/102 samples, including 93 excisions, 2 shave biopsies and 7 punch

biopsies): 40 adequate vs 12 incomplete (75% adequacy). Adequacy of first biopsy was not significantly different between GPs and hospitals.

Time from presentation to diagnosis, biopsy and definitive treatment:

Median time from presentation to biopsy (GP) = 23.5 days (IQR: 8.5-23.5)*
Median time from presentation to biopsy (hospital) = 54 days (IQR: 58.3-105.5) (P=0.002)

Median time from presentation to definitive diagnosis (GP) = 36.5 days (IQR: 23.8-78.3)
Median time from presentation to definitive diagnosis (hospital) = 77 days (IQR: 48-141) (P<0.001)

Median time from presentation to definitive treatment (GP) = 88 days (IQR: 45.5-122)
Median time from presentation to definitive treatment (hospital) = 88 days (IQR: 53-169) (NSD)

* In all but one of the cases in which GPs had taken the initial sample, a diagnosis of melanoma was not suspected which may explain the delay between presentation and biopsy. This also shows that in this study, GPs did not recognise melanoma and yet had performed surgery on the lesion, although excision accuracy was not significantly different between primary and secondary care.

Follow up: N/A

General comments:

This paper described a retrospective review of data from a non-randomised comparative study of GP follow-up in which patients with malignant melanoma had a primary biopsy either in primary care or at hospital after referral by GP. The study predated the NICE guidance on the management of skin cancer and the development of 'GPs with a special interest'.

The results show that patients presenting to primary care generally received an initial biopsy more quickly than if the GP had referred them to a hospital and, in addition, also received a definitive diagnosis from the histology sooner than the patients going through the hospital system after referral. Unfortunately, despite these apparent advantages in process time, patients received definitive treatment for melanoma at the same time, a median of 88 days after initial presentation at the GP surgery. This delay appears to have occurred between the GP performing the biopsy, receiving a diagnosis from the histopathology laboratory and then for the GP referral to be made. Unfortunately the delay diminished any time advantage to the biopsy being conducted in primary care.

Data are not complete since pathology reports were unavailable for 58 patients, mostly from patients treated in hospital, which meant that the patient number is quite small for the purposes of comparison. In addition, there is a possibility of an inequality in the severity of cases dealt in the primary and secondary settings since perhaps more difficult cases would be more likely to have been referred to hospital than be dealt with by the GP.

Reference
Salam *et al.* (2006)

Design: Prospective non-comparative study
Country: United Kingdom

Inclusion criteria: Patients with head or neck skin lesions amenable to minor surgery under local anaesthetic.

Exclusion criteria: N/A

Population: n=175

Intervention(s) and comparator(s):

Minor surgery for the removal of head or neck skin lesions.

Outcomes:

The primary outcome for this study was the reduction of waiting times for the 'see and treat' clinic. However, the paper reported on the histology of samples removed during surgery and on the quality of excision. Patient satisfaction was also monitored by a survey.

Results:

Of the 160 lesions removed from 145 patients, 30 basal cell carcinomas (BCC), 2 squamous cell carcinomas, 1 spindle cell carcinoma and 1 undifferentiated carcinoma were identified by histology. Of these 34 lesions, 3 BCC were incompletely excised. The patient satisfaction survey was returned by 97% of participants who rated their experience as either good (12%) or excellent (88%).

Follow-up:

After a 9 month follow-up, one patient with an incompletely excised BCC had a recurrence which was successfully removed.

General comments:

This paper described an audit of practice from a 'see and treat' clinic in Ipswich, UK between September 2001 and September 2002. When a patient presented with a head or neck skin lesion to their GP, a referral letter was sent to two ear nose and throat consultants from Ipswich Hospital where cases were reviewed and prioritised. Referrals were also received from the plastic surgery unit from the same hospital. Those patients with lesions considered appropriate for treatment in the clinic were offered appointments and received surgery on that day. The clinic was conducted in the minor surgical unit of a GP practice where lesions were removed by the reviewing consultant, using practice nursing staff to assist. The clinic dealt with eighteen patients per month.

Over the study period, the change in referral patterns reduced average waiting times from 121 days to 47 days.

This study is non-comparative and hence does not provide good quality evidence, however the reduction in waiting times and patient satisfaction were positive outcomes. Surgery was conducted by two ear nose and throat surgeons with a combined incomplete BCC excision rate of ~10%.

Reference
Anonymous *et al.* (2009)

Design: PCT audits for 2008
Country: United Kingdom

Inclusion criteria: N/A

Exclusion criteria: N/A

Population: N/A

Intervention(s) and comparator(s): N/A

Outcomes: Numbers of malignant lesions removed in one UK county for the year 2008.

Results:

[1] 'BCC audit' of basal cell carcinomas removed in primary or secondary care in one UK county for the year 2008

32 GPs performed 64 BCC excisions:
Complete: 35/64 (53%)
Incomplete: 22/64 (33%)
Curette incision: 6/64 (9%)
Other: 1/64

24 consultants performed 371 BCC excisions:
Complete: 310/371 (83%)
Incomplete: 42/371 (11%)
Curette incision:20/371 (5%)
Other 1/371

[2] 'GP high grade audit' of malignant skin lesions other than basal cell carcinoma (n=90) removed in two primary care trusts in one UK county for the year 2008

- Well differentiated squamous cell carcinoma (n=41): 31 complete, 7 incomplete, 1 C&C, 1 punch biopsy, 1 uncertain
- Moderately differentiated squamous cell carcinoma (n=10): 3 complete, 3 incomplete, 3 punch biopsies, 1 curetted
- Squamous cell carcinoma (n=2): 2 complete
- Metastatic squamous cell carcinoma (n=2): 1 complete, 1 incomplete
- ?Invasive squamous cell carcinoma (n=1): 1 uncertain

- Malignant melanoma (n=8): 4 complete, 1 incomplete, 2 punch biopsies, 1 shave biopsy
- Superficial spreading malignant melanoma (n=21): 12 complete, 4 incomplete, 1 punch biopsy, 1 wide excision recommended, 2 shave biopsies, 1 uncertain
- Nodular malignant melanoma (n=3): 2 complete, 1 incomplete
- ?Invasive lentigo maligna melanoma (n=1): 1 punch biopsy

- Merkel cell carcinoma (n=1): 1 incomplete

Totals (incomplete vs complete excisions):

Well differentiated squamous cell carcinoma: 7/38 incomplete (18%)
Moderately differentiated squamous cell carcinoma: 3/6 incomplete (50%)
Squamous cell carcinoma: 0/2 incomplete (0%)
Metastatic squamous cell carcinoma: 1/2 incomplete (50%)

Malignant melanoma: 1/5 incomplete (20%)
Superficial spreading malignant melanoma 4/16 incomplete (25%)
Nodular malignant melanoma: 1/3 incomplete (33%)

Merkel cell carcinoma: 1/1 incomplete (100%)

Follow-up: N/A

General comments:

A personal communication was received which disclosed audit data for the year 2008 showing the numbers of basal cell carcinomas removed by GPs and surgeons in secondary care for one year in one NHS trust. Also given were the numbers of non basal cell carcinomas removed in two primary care trusts for the same year.

Unpublished Abstracts:

Reference
British Society for Dermatological Surgery: Summaries of Papers [Abstracts of the 88th Annual Meeting of the British Association of Dermatologists, Liverpool, UK, 1-4 July 2008]

Design: Meeting abstracts
Country: United Kingdom

Results:

Main plenary sessions: summary of papers:

Abstract O-8 Dermatological surgery: a comparison of activity and outcomes in primary and secondary care J. Goulding, S. Levine, R. Blizard, F. Deroide and V.J. Swale.

This abstract reports the results of a retrospective review of skin surgical samples processed by a hospital pathology department during a three month period (October-November 2006). Of the samples received, 1111 were new tumour specimens. 472 were sent in by the dermatology department, 305 from plastic surgery, 175 from other surgical specialties and 138 from GPs. The outcomes of interest included clinical diagnostic accuracy and surgical expertise.

With respect to diagnostic accuracy, using histological outcome as the gold standard, GPs correctly identified 59/138 samples versus 328/472 for dermatologists to give an OR = 0.33 (95%CI: 0.22-0.48) (P<0.001). There were no data for comparisons between GPs and other practitioners which accounted for the remaining 480 samples. Inadequate excisions were made by GPs in 15/22 cases versus 9/116 for dermatologists to give an OR = 25.47 (95%CI: 8.26-78.53) (P<0.001). According to the UK guidance, 19 of the 138 tumours removed by GPs should have been referred to secondary care as they were classed 'high risk'.

Bristol CUP posters: summaries of posters:

Abstract P-66 How well is the skin cancer Improving Outcomes Guidance being followed?
S. Cohen and A. Ferguson.

This poster abstract described a retrospective audit of skin cancer specimens sent from the community to one hospital pathology laboratory between July and December 2007. Details of 41 samples were obtained which had been submitted from 22 GP surgeries. None of the surgical removal of lesions was undertaken by GPs with a special interest (GPwSI). 30/40 samples were accompanied by a request form with a description of the lesion or a differential diagnosis and in 39/40 samples the site of the lesion was described. 15 samples were believed to be skin cancer, 12 were thought benign and there was insufficient information to tell for the remainder. 18/26 (69%) cancers were completely removed. Compliance with NICE guidance was ~63% with respect to GPs not being involved with special interest, not being part of a MDT and failing to refer those cases which should have been sent to secondary care instead of being dealt with at the practice.

Abstract P-68 Patients with melanoma are having inappropriate surgical interventions in primary care: an audit A.-M. Skellett, E. Tan and J. Garioch.

This poster describes the results of a retrospective review of data from patients treated for melanoma by GPs. Between January 1st to July 31st in 2006 and 2007, a total of 175 melanoma samples were identified, 95 in 2006 and 80 in 2007. Of these, 14 had been incompletely removed or biopsied by GPs (1 excision, 2 biopsies and 1 curettage in 2006 and 5 excisions, 2 biopsies and 3 curettages in 2007). Of 10 lesions in 2007, 6 were suspicious

of melanoma, according to the clinical description recorded on the histology form. The authors were concerned that the number of melanomas not referred to secondary care had increased since the UK guidance was issued and some had been subject of inadequate treatment and referral delays.

Abstract P-69 Skin cancer biopsies in primary care: neither BAD nor NICE. M. Mehra, R. Stitson, J. Natkunarajah, S. George, C.C. Harland and A. Abdul-Wahab.

This poster describes a retrospective audit of skin biopsies sent to one hospital pathology laboratory from primary care during a 6 month period (dates and year unknown but apparently pre-dating NICE guidance on skin cancer). Of 896 skin biopsies, 31 were BCC, 5 were SCC, 1 was a MM and 40 samples were inadequate for histological classification. Only 25% of biopsies had clear margins and none of the excisions were considered adequate. Only 29% of patients with BCC and 40% of patients with SCC were referred to secondary care.

Following publication of the guideline on the management of skin cancer, another audit was conducted over a 2 month period. Of the 373 skin biopsy specimens received from GPs, 5 were SCC and 11 BCC. 6/16 cases were considered suspicious at the time of biopsy but only 2 were excised by GPwSI. In the remaining 10 cases, either no details were given or cancer was not suspected, however two week referral rates were good. There were no data on excision quality.

Abstract P-67 Are NICE skin cancer guidelines being followed in primary care? A review of current practice in an inner city setting R. Healy, D. Rahman, K. Gibbon, A. Sahota and A.P. Bewley.

This abstract described a retrospective audit of data on skin biopsies performed by GPs from which samples sent to the histopathology laboratory of a London hospital over a 12 month period from April 1st 2006 to March 31st 2007. During this period, 11 malignant melanomas, 18 SCC and 122 BCC were identified. 10/11 melanomas were referred to secondary care but one patient had been missed through GP error. 11/18 SCC and only 57/122 BCC were incompletely excised, and 35 patients with BCC were not referred for re-excision.

British Society for Dermatological Surgery: summaries of papers:

Abstract DS-2 Incomplete excision rates of basal cell carcinomas in primary care and dermatology: a multicentre audit. Macbeth AE, Torley D, Hepburn N and Levell NJ.

Histology reports of basal cell carcinoma (BCC) excisions were reviewed for October 2006 in one (unidentified) UK county. 199/261 reports were of excisions, of which 53% had been performed in dermatology departments, 5% in primary care, 33% by plastic surgeons and 9% elsewhere, including private sector. Incomplete excision rates were 6% for dermatology departments compared with 20% in primary care. Excisions that were complete but with a narrow margin included 9% from dermatology departments compared with 62% in primary care.

Excision data were obtained from a second audit of a different (unidentified) UK county from November 2006 to March 2007 and from May 2007 to July 2007. Pooled results show that 28/125 (22.4%) of BCC excisions performed by GPs were incomplete compared with 36/378 (9.5%) by dermatology departments.

Abstract DS-5 Managing squamous cell carcinomas: auditing the mode of referral to secondary care and adequacy of surgical excision. Hussain SSH, Shams N and Garioch J.

This abstract reports the results of a retrospective audit of 100 patients with squamous cell carcinoma (SCC) diagnosed from January 2007 to June 2007 at an unidentified location. Of 20 cases referred from primary care to dermatology via the two-week wait (TWW) route, 25% of patients had undergone a diagnostic procedure prior to referral. The mean interval between this surgery and complete excision was 80 days compared with 36 days for those patients who were referred without a diagnostic intervention.

During the audit period, 101 excisions were undertaken including 7 in primary care. The incomplete excision rate for GPs was 4/7 (57%) compared with rates of 8% in dermatology departments and 10% in plastic surgery.

3] Abstract DS-25 Audit of excision rates of basal cell carcinomas in primary and secondary care in a county over 1 year. Malhomme de la Roche H and Lucke, T.

This abstract reports an audit for the year of 2006 for one (unidentified) county of excision rates for BCC. Data were obtained from histopathology reports from a hospital pathology database and showed that 1693 BCC were recorded for that year of which 38% were excised from a high risk site and 25% from a low risk site. Dermatologists performed 72% of all procedures (excision, curettage or biopsy) and GPs performed 22% with the rest being managed by other specialists.

The complete excision rate for high risk sites in primary care was 46% compared with 89% in secondary care and 96% by dermatology surgeons. The complete excision rate for low risk sites in primary care was 80% compared with 93% in secondary care. All the dermatologists, 94% of surgeons and 78% of GPs entered a possible diagnosis of skin cancer on the histology request form.

General comments:

These eight abstracts were presented at a national meeting of the British Society of Dermatologists in 2008. Meeting abstracts of oral and poster presentations are often not peer reviewed and so the results from them must be interpreted with this in mind. Most authors refer to the NICE guidance 'Improving Outcomes for People with Skin Tumours, February 2006' and report that GPs compared with other specialists particularly dermatologists, were not as good at diagnosing, managing, referring or adequately excising skin lesions.

Few data and statistics were presented. The audit periods were short, region specific and were, in some cases, within narrow time periods hence the likelihood of selection bias cannot be excluded. All retrospective studies, by their design, are limited compared to prospective, randomised comparative trials.

Update September 2009

FULL PAPERS:

Reference
Issa FG, Khan AA, Critchley P and Cassello. Incompletely excised BCCs: a comparative audit of practice. Submitted to Journal of Plastic, Reconstructive & Aesthetic Surgery, October 2009

This paper has been presented at the British Association of Plastic, Reconstructive & Aesthetic Surgeons, Winter Meeting, 2008.

Design: Retrospective Study and Systematic Review
Country: UK

Aim:
- To audit own departments practice and systematically review incomplete excision rates reported by other specialties (in order to determine the rate of incomplete BCC excisions taking place over one year).
- Furthermore, the study aimed to profile incomplete excisions in detail and examine potential factors that may predict their occurrence.
- The study conducted a systematic review which compared incomplete excision rates reported by plastic surgical departments with those reported by other specialties for BCC excisions.

Inclusion criteria:
Audit Study:
- Hospitals histopathology database was used to retrospectively identify all histologically confirmed BCCs excised in the department between January and December 2007 inclusive.
- All primary, recurrent and large, regionally invasive BCCs were included in preliminary cohort for further analysis.
- The second stage of review aimed to identify all incomplete excisions.
- Data on anatomical location of the tumour, tumour size, presence of ulceration, histological subtype(s), depth of invasion, clearance margins, grade of operating surgeon, documentation of surgical excision margin and the histological component of the BCC that was incompletely excised.
- From case-note review of the incompletely excised BCCs recorded whether re-excision of the residual tumour was offered, whether re-excision was performed, and if not the reasons for not doing so.

- Using random-number generation 64 control cases were identified that had undergone complete wide-local excision of their BCCs. (Controls were matched for demographics and anatomical location of the cancer.) Associations between incomplete BCC excision and tumour size, histological subtype and grade of operating surgeon were examined.

Systematic Review:
The literature search was conducted in September 2008 and search terms were listed
The literature databases searched included: PubMed, EMBASE and the Cochrane Library
Studies that reported incomplete excision rates, following excisonal biopsy, for primary BCCs were included.

Exclusion criteria:
Audit study*:*
The preliminary stage excluded all incisional biopsies and mixed tumour-types, such as basisquamous cancers.

Systematic Review:
Studies that reported outcomes following non-surgical management, including shave biopsies, curettage and cryotherapy were excluded.

Population:
Hospitals histopathology database was used to retrospectively identify all histologically confirmed BCCs excised in the department between January and December 2007 inclusive

Intervention(s) and comparator(s):

Excision practice within a plastic surgery department.

Outcomes:
- Excision Rates of BCCs
- Incomplete excision rates of BCCs
- Predictive factors for incomplete excision
- Patient demographics, tumour characteristics and clearance data (reported from the histology reports)

Results:

Audit Study:
- 490 reports for histologically confirmed 677 excised BCCs
- Of these, 35 BCCs (5.2%) were incompletely excised.
- Within the incompletely excised cohort; 4 were recurrent tumours and 3 were very large, regionally invasive BCCs.
- 28 BCCs were incompletely excised on primary excision yielding an incomplete excision rate = 4.1% for primary BCCs.

Tumour size
- Median tumour size = 13mm (range: 3-42mm) - excluding the large, regionally invasive BCCs
- Median margin of excision = 4.0mm (range: 2.0-6.0mm).

Histopathological features
- 22 of the 35 incompletely excised tumours showed histopathological heterogeneity consisting of more than 1 histological subtype.
- 3 tumours were ulcerated, 2 showed perineural invasion and 5 extended into the subcutaneous fat (Clarke's level V).

- Approximately 80% of the incompletely excised tumours consisted of infiltrative and superficial histological subtypes (figure 2).

- 40% of incompletely excised BCCs were incompletely excised through superficial components of the tumour (9% of this group being homogenously superficial).
- 26% of incompletely excised BCCs were incomplete through infiltrative components of the tumour with 5% of this group being homogenously infiltrative in nature.

Clearance margins
- 70% of incomplete excisions were incomplete at the radial margin, 20% at the deep margin and 10% at both radial and deep margins.

Grade of operating surgeon
- 12 of the 35 (34%) incomplete excisions were performed by consultants - 4 were recurrent lesions and 3 were large, regionally infiltrative BCCs.
- 21 of the 35 (60%) were performed by the specialist registrar
- 2 by the SHO (6%).

Predictors of incomplete excision
- An association between superficial histological subtypes and incomplete excision (p=0.07) and consultants performing the excision (p=0.026) was reported.
- No association was found between incomplete excision and the size of the tumour (p=0.135).

Oncological follow-up
- Follow-up ranged from 1 to 12 months.
- Of the 35 incomplete excisions 30 were offered further wide local excision.
- Of these, 13 underwent further excision and 17 opted for clinical observation at the request of the patient.
- 5 of the 35 underwent clinical observation at the recommendation of the surgeon.

Systematic Review:
- 37 papers from our preliminary search.

- 23 papers (see below: for included studies) were included in the review
- 28 incomplete excision rates were reported as some papers reported rates from more than one specialty.
- Of the 28 reported incomplete excision rates:
  - 13 were from Plastic Surgery departments,
  - 5 from Dermatology,
  - 7 from Primary Care and
  - 3 from other specialties (Oral & Maxillofacial surgery, Otolaryngology and General Surgery).

- The overall number of reported BCC excisions across all specialties = 18,939:
  - 11,759 were excised by Plastic Surgery departments,
  - 1,200 by Dermatologists,
  - 2,020 by Primary Care and
  - 3,960 from the other specialties (including a 10-year series from Oral & Maxillofacial surgeons reporting on 3,960 excisions).

- The median incomplete excision rates:
  - Plastic Surgery = 11.4% (standard error of the mean (SEM): 1.8%)
  - Dermatology = 13.5% (SEM: 2.7%)
  - Primary Care = 21.4% (SEM: 5.3%)
  - Other specialties = 23.7% (SEM: 12.1%)

SEM interpretation: The standard error of the mean (SEM) is a measure of how far a sample mean is likely to be from the true population mean.

General comments:
Internal validity of included papers was assessed and reported via unpublished communication with the author of the paper AA Khan.

The observation of the high incomplete excision rate for consultant surgeons may be due to a more complex case mix.

References of included studies:
Kumar, P., Orton, C. I., McWilliam, L. J., et al. Incidence of incomplete excision in surgically treated basal cell carcinoma: a retrospective clinical audit. *Br J Plast Surg* 53: 563-566, 2000.

Griffiths, R. W. Audit of histologically incompletely excised basal cell carcinomas: recommendations for management by re-excision. *Br J Plast Surg* 52: 24-28, 1999.

Wilson, A. W., Howsam, G., Santhanam, V., et al. Surgical management of incompletely excised basal cell carcinomas of the head and neck. *Br J Oral Maxillofac Surg* 42: 311-314, 2004.

Murchie, P., Delaney, E. K., Thompson, W. D., et al. Excising basal cell carcinomas: comparing the performance of general practitioners, hospital skin specialists and other hospital specialists. *Clin Exp Dermatol* 33: 565-571, 2008.

Cancer, N. C. C. f. Guidance on cancer services: improving outcomes for people with skin tumours including melanoma. . In N. I. f. H. a. C. E. (NIHCE) (Ed.). London, 2006.

Wettstein, R., Erba, P., Farhadi, J., et al. Incomplete excision of basal cell carcinoma in the subunits of the nose. *Scand J Plast Reconstr Surg Hand Surg* 42: 92-95, 2008.

Farhi, D., Dupin, N., Palangie, A., et al. Incomplete excision of basal cell carcinoma: rate and associated factors among 362 consecutive cases. *Dermatol Surg* 33: 1207-1214, 2007.

Su, S. Y., Giorlando, F., Ek, E. W., et al. Incomplete excision of basal cell carcinoma: a prospective trial. *Plast*

Reconstr Surg 120: 1240-1248, 2007.

Griffiths, R. W., Suvarna, S. K., Stone, J. Basal cell carcinoma histological clearance margins: an analysis of 1539 conventionally excised tumours. Wider still and deeper? *J Plast Reconstr Aesthet Surg* 60: 41-47, 2007.

Shah, S. A., Obaidullah, Fahimullah. An assessment of incomplete facial Basal cell carcinoma excision. *J Coll Physicians Surg Pak* 15: 149-151, 2005.

Talbot, S., Hitchcock, B. Incomplete primary excision of cutaneous basal and squamous cell carcinomas in the Bay of Plenty. *N Z Med J* 117: U848, 2004.

Corwin, P., Munn, E., Nicholls, D. A study of general practitioners' skin surgery in Canterbury. *N Z Med J* 110: 253-255, 1997.

Bostock-Ling, N. Excising basal cell carcinoma in general practice. *Aust Fam Physician* 35: 558-560, 2006.

Bogdanov-Berezovsky, A., Cohen, A. D., Glesinger, R., et al. Risk factors for incomplete excision of basal cell carcinomas. *Acta Derm Venereol* 84: 44-47, 2004.

Hussain, M., Earley, M. J. The incidence of incomplete excision in surgically treated basal cell carcinoma: a retrospective clinical audit. *Ir Med J* 96: 18-20, 2003.

Nagore, E., Grau, C., Molinero, J., et al. Positive margins in basal cell carcinoma: relationship to clinical features and recurrence risk. A retrospective study of 248 patients. *J Eur Acad Dermatol Venereol* 17: 167-170, 2003.

Kumar, P., Watson, S., Brain, A. N., et al. Incomplete excision of basal cell carcinoma: a prospective multicentre audit. *Br J Plast Surg* 55: 616-622, 2002.

Dieu, T., Macleod, A. M. Incomplete excision of basal cell carcinomas: a retrospective audit. *ANZ J Surg* 72: 219-221, 2002.

Schreuder, F., Powell, B. W. Incomplete excision of basal cell carcinomas: an audit. *Clin Perform Qual Health Care* 7: 119-120, 1999.

Fleischer, A. B., Jr., Feldman, S. R., Barlow, J. O., et al. The specialty of the treating physician affects the likelihood of tumor-free resection margins for basal cell carcinoma: results from a multi-institutional retrospective study. *J Am Acad Dermatol* 44: 224-230, 2001.

George, S., Pockney, P., Primrose, J., et al. A prospective randomised comparison of minor surgery in primary and secondary care. The MiSTIC trial. *Health Technol Assess* 12: iii-iv, ix-38, 2008.

Gudi, V., Ormerod, A. D., Dawn, G., et al. Management of basal cell carcinoma by surveyed dermatologists in Scotland. *Clin Exp Dermatol* 31: 648-652, 2006.

Reid, B. Reducing the incomplete excision of non melanotic skin cancers in Australian general practice. *Aust Fam Physician* 29: 278-281, 2000.
Rippey, J. J., Rippey, E. Characteristics of incompletely excised basal cell carcinomas of the skin. *Med J Aust* 166: 581-583, 1997.

Reference
GOULDING, J. M. R., S. LEVINE, R. A. BLIZARD, F. DEROIDE, AND V. J. SWALE. 2009. Dermatological surgery: A comparison of activity and outcomes in primary and secondary care. British Journal of Dermatology 161: 110-114.

Design: Retrospective Study
Country: UK

Aim: To examine the activity and histopathological outcomes all practitioners performing skin surgery in authors locality over a 3-month period to report the effectiveness of the procedures performed.

Inclusion criteria:
All skin surgical specimens processed by a histopathology department over a 3-month period (1 October to 31 December 2006, inclusive).

Exclusion criteria:
From 1408 biopsy specimens, 21% (297⁄1408) were excluded: biopsies of rashes (108 specimens), re-excisions of biopsy-proven malignant skin conditions (113 specimens) and assorted miscellaneous non tumour specimens (76 specimens) such as excisions of localized inflammatory conditions (e.g. pilonidal sinus and hidradenitis suppurativa).

Population:
From the above process: 1111 new tumour specimens

Intervention(s) and comparator(s):
Not applicable

Outcomes:
- Histopathology reports were reviewed for each specimen to establish the surgical practitioner responsible for the case, suggested clinical diagnosis or differential diagnosis, procedure performed and final histological diagnosis.
- The clinical diagnosis correlated with the histological diagnosis if it appeared on the request form even as part of a differential diagnosis – this was how accuracy was established.
- An assessment was made of the appropriateness of the specific procedure undertaken for each specimen with reference to published U.K. guidelines.
- Every specimen report for which the procedure was deemed inappropriate was reviewed by a consultant dermatologist.
- An assessment of the appropriateness of practitioner involvement for each specimen. [performed to ensure that all cases of suspected or proven high-risk BCC, squamous cell carcinoma (SCC) and melanoma were managed by a suitably trained surgical practitioner working as part of a skin cancer multidisciplinary team (MDT), as per NICE guidance.

Results:
From 1111 new tumour specimens:
- 472 (42.5%) were sent from the dermatology department,
- 305 (27.4%) from plastic surgery,
- 175 (15.8%) from other surgical specialties (including general surgery, ophthalmology and ear, nose and throat),
- 138 (12.4%) from GPs
- 21 (1.9%) from other sources (accident and emergency)

From 1111 specimens :

- 21 melanoma (1.9%),
- 68 SCC (6.1%),
- 222 BCC (20%),
- 137 pre-malignant (12.4%, including Bowen's disease, actinic keratosis and dysplastic naevus), 13 other malignant (1.2% including metastatic deposits and sebaceous carcinoma),
- 641 benign (57.7%, including seborrhoeic keratosis and benign melanocytic naevus)
- 9 (0.8%) for which a histological diagnosis was not possible (due to specimen inadequacy)

Clinical and histological diagnoses match (Accuracy):

- in 69.5% (328⁄472) of specimens from dermatology, compared with
- 62.6% (191⁄305) from plastic surgery,
- 50.3% (88⁄175) from other surgical specialties and
- 42.8% (59⁄138) from GPs.

All specialty groups were shown to have statistically significantly inferior diagnostic accuracy compared with dermatology (Wald 41.35, P < 0.001)

- plastic surgery odds ratio (OR) 0.74, 95% confidence interval (CI) 0.54–0.99;
- other surgical specialties OR 0.44, 95% CI 0.31–0.63;
- GPs OR 0.33, 95% CI 0.22–0.48.

(With the exception of 'other sources' where the numbers were small)

Inappropriate procedures were performed most often by:

- plastic surgeons, involving 6.6% (20⁄305) of their specimens
- GP involving, 3.6% (5⁄138) procedures (including a punch biopsy of a other suspected melanoma)
- surgical specialties, 2.9% (5⁄175)

These differences were statistically significant (exact P < 0.001).

Margin involvement by tumour was present in excision biopsies performed by:

- GPs, comprising 68% (15⁄22) of such specimens (with histological diagnoses including melanoma, BCC and dysplastic naevus).
- other surgical specialties, 29% (12⁄42) of excision biopsies
- 19% (32⁄169) from plastic surgery,
- 8% (9⁄116) from dermatology.

With the exception of 'other sources', all specialty groups recorded statistically significantly higher incomplete excision rates compared with dermatology (Wald 33.64, P < 0.001):

- plastic surgery OR 2.78, 95% CI 1.27–6.07;
- other surgical specialties OR 4.75, 95% CI 1.83–12.35;
- GPs OR 25.47, 95% CI 8.26–78.53.

The histology report made specific reference to crush or diathermy artefact, or inadequacy of specimen in:

- 11.6% (16⁄138) of GP specimens,
- 3.4% (6⁄175) of those from other surgical specialties,
- 1.5% (7⁄472) from dermatology,
- 1.3% (4⁄305) from plastic surgery.

These differences reached statistical significance (exact P < 0.001).

Assessment of the appropriateness of practitioner involvement :

- 13.8% (19⁄138) of tumours operated on by GPs should have been referred for initial surgical management in secondary care (according to NICE skin cancer guidance – as judged by the authors). These included suspected as well as proven cases of BCC, SCC and melanoma.
- All other specialty groups handled cases appropriately according to NICE guidance.

General comments:

- The authors of this study report that no GPs submitting specimens attended their local skin cancer MDT, and

none were designated as GPwSI. Thus, GPs submitting both suspected or proven low- and high-risk BCC specimens were considered to be inappropriately involved. This also makes impossible to draw conclusions about the competency of GPwSI's.

- A key bias of this study is that the conclusions/judgements reported were conducted by hospital dermatologists.

- The correlation between clinical and histological diagnosis as assessed in this study is only a crude measure of diagnostic accuracy.

Reference
DHEPNORRARAT, R. C., M. A. LEE, AND J. A. MOUNTAIN. 2009. Incompletely excised skin cancer rates: a prospective study of 31 731 skin cancer excisions by the Western Australian Society of Plastic Surgeons. *Journal of Plastic, Reconstructive & Aesthetic Surgery* 62: 1281-1285.

Design: prospective case series
Country: Australia

Aim: To identify the rate of incomplete excisions of skin cancers by a group of plastic surgeons in Western Australia (WA).

Inclusion criteria:
plastic surgeons in WA

Exclusion criteria:

Population:
- 25 plastic surgeons in WA collected prospective data on incomplete clearances of skin cancer excisions in private practice.
- A standard data entry form was used and data were collected by clerical staff, independent of the surgeon, and submitted annually to the Western Australian Society of Plastic Surgeons

Intervention(s) and comparator(s):
N/A

Outcomes:
A lesion was considered to be incompletely excised if tumour was found on histological examination to be present at the excision margin of a specimen

Results:
- From 1996 to 2002, 25 plastic surgeons performed 31 731 skin lesion excisions over a period of 6 years.
- Incomplete margins were found on histopathological examination of 1277 lesions (4.02%).
- 19 surgeons performed over 500 procedures.
- Overall rate of incomplete lesion excisions = 4.02%
    - Incomplete lesions for BCC= 4.01%
    - Incomplete lesions for SCC = 3.71%
    - Incomplete lesions for MM = 4.73%
    - Incomplete lesions for other tumours 11.57%
    - For re-excisions: Incomplete lesions for BCC= 4.01%; Incomplete lesions for SCC = 3071%; Incomplete lesions for MM = 4.73%
- Incomplete lesion excisions were compared to the results of other series (which showed a range of 4.02% - 25%), indicating that the current series was within the lower end of the range.

General comments:
- The study included specialists across the Western Australian Society of Plastic Surgeons (WASPS), so not limited to one institution and may offer an overall finding for WASPS.
- Bias reduced due to the clerical staff inputting the data (therefore some level of blinding involved)
- Limited conclusions wrt influence of lesion site; age and size on excision rate and recurrence rate.

Reference
Roberts DL. 2008 What do clinicians think of the recommendations made in the 'Improving Outcomes for People with Skin Tumours including Melanoma'? Br J Dermatol. May;158(5):1148-50.)

Design: Cross sectional study (Descriptive)
Country: UK
Aim: To examine the response, from different front-end groups of clinicians, to the most contentious parts of the NICE 2006 IOG for skin cancer.

Inclusion criteria:
Users of the 2006 NICE IOG: dermatologists, general practitioners (GPs) and plastic surgeons

Exclusion criteria:
Not reported

Population:
- The questionnaires were distributed to members of the British Association of Dermatologists (BAD), the Primary Care Dermatology Society (PCDS) and the British Association of Plastic, Reconstructive and Aesthetic Surgeons (BAPRAS).
- 341 replies were received, (141 from BAD, 115 from PCDS and 85 from BAPRAS).
- The response rate for each group was 23.5%, 16% and 20%, respectively.

Intervention(s) and comparator(s):
NA

Outcomes:
A questionnaire was developed and included 15 statements, which sort opinion on some of the potentially controversial issues in the IOG for skin cancer.

- A statement taken from the IOG and the mean score for each clinical group was reported.
- The lower the score, the more the clinical group is in agreement with the statement (conversely, the higher the score, the more the clinical group is against the statement).
- A score of < 5.5 (the midpoint of the possible scores 1–10) = the clinical group is in broad agreement with the statement,
- A score of > 5.5 = the clinical group is broadly against the statement.
- Also, the sum of the means of the groups for each statement is reported giving an overall indication of how acceptable each recommendation is for all of the clinical groups together (a low total score indicating a high degree of agreement with the statement and a high score indicating a high degree of disagreement.)

Results:
For some of the questionnaire statement the following responses were recorded:
Statement: GPs should not treat any skin cancers:
- This statement incited a negative reaction: mean score = 6.1 from members of the PCDS.
- Total of the means for all the groups = 14.6, despite the other two groups were in favour with mean scores = 4.1 and 4.4.
- In retrospect, the statement was incorrectly worded as the IOG does not recommend that GPs should not treat any type of skin cancer but suggests that GPs who wish to treat skin cancers should be part of a local skin cancer MDT with various other stipulations regarding training and accreditation. It is therefore not surprising that this statement proved to be the most unpopular. p1134

Statement: Multidisciplinary teams (MDTs) should meet at least once a fortnight:
- Total score of the means = 12.9.
- The group which was most against this was the GPs (5.3).

Statement: GPs with special interests should not (‘knowingly’) treat patients with potential malignant melanomas,
Statement: Patients with more advanced skin cancers such as stage IIB malignant melanomas should be

referred to a specialist MDT. • Both were the most popular recommendations • Both had totals of the mean = 7.2, indicating a high degree of approval overall.
General comments: Authors note: • Response rate to this questionnaire was relatively low [though, not explicitly measured and reported in the study] • In general, the authors reported that the IOG has been well received, and most clinicians agree with most of the recommendations made.

Reference
PUA, V. S. C., S. HUILGOL, AND D. HILL. 2009. Evaluation of the treatment of non-melanoma skin cancers by surgical excision. *Australasian Journal of Dermatology* 50: 171-175.

Design: Retrospective case series
Country: Australia

Aim: To evaluate the treatment of non-melanoma skin cancers (NMSC) by surgical excision

Inclusion criteria:
NMSC = BCC, SCC and SCC-*in situ* or Bowen's disease

Exclusion criteria:
Mohs microscopic surgery cases

Population:
- All non-melanoma skin cancers excised by two dermatologists at a private practice in 2004
- The practice was a tertiary referral centre with day surgery accreditation.

Intervention(s) and comparator(s):
Surgical excision of non-melanoma skin cancers

Outcomes:
- Incomplete excision defined by pathologists as the presence of tumour at surgical margins
- Age, sex, tumour site, method of reconstruction, number of incompletely excised tumours and subsequent management.
- The margins used = 3-4 mm for BCCs

Results:
- 241 patients were treated, with a total of 453 tumours excised.
- Overall incomplete excision rate = 2.2% (10/453).
- For BCCs, the incomplete excision rate = 1.54% (5/324)
- For squamous cell cancers including Bowen's disease the incomplete excision rate = 3.9% (5/129).
- The majority of repairs were primary closures (82.6%). Although a significant proportion of the tumours were from the head and neck region (45.9%).
- 2 of 5 incompletely excised BCC were re-excised, 2 were treated with Mohs micrographic surgery
- 1 superficial BCC was managed with photodynamic tx.

Follow up:

General comments:
Authors note that this study demonstrated that careful patient selection, experience of the surgeon and adherence to recommended excision margins can achieve a favourable incomplete excision rate.

While incomplete excision rates are comparable to other study series (4.5 -13.7%) , it is problematic to compare across studies as there is a high degree of variability b/n them wrt patient selection, tumour characteristics, type of facility, level of doctor training, country of origin and types of referral, eg. see Su 2007

Reference
SU, S. Y., F. GIORLANDO, E. W. EK, AND T. DIEU. 2007. Incomplete excision of basal cell carcinoma: A prospective trial. *Plastic and Reconstructive Surgery* 120: 1240-1248.

Design: Prospective study
Country: Australia

Aim: To report the incidence of incomplete excision at a tertiary referral public hospital and determine influencing factors.

Inclusion criteria:
- 2582 skin tumors were excised from 1223 patients.
- The Plastic Surgery Unit consists of: a plastic surgery trainee registrar (usually a first-year registrar on 6-month rotation), a clinical assistant, and three consultant surgeons.
- All pathology specimens were examined and reported by the Department of Pathology at the same centre.
- Incomplete excision was defined by the pathologist as the presence of tumour at the surgical margin.

Exclusion criteria:
Punch, shave, or incisional biopsies and palliative excisions were excluded. Incomplete or incorrectly entered data forms were excluded [79 patients (6 %), 96 lesions (3.7 %)].

Population:
1214 basal cell carcinomas (BCCs) excised at Peter MacCallum Cancer Centre, Melbourne Australia

Intervention(s) and comparator(s):
surgical excision of BCCs (no comparators)

Outcomes:
- Variables collected by the operating surgeon were the patient's age and sex, tumour site and size, preoperative diagnosis, surgical margin of excision, method of reconstruction, and type of anaesthetic.
- The experience of the surgeon, number of lesions excised at the operation, and history of previous treatment.

Results:
- From a total of 2582 lesions excised, 1214 (47 %) were BCCs.
- Of the 1214 BCCs, 93 % (1129) were primary excisions, 4.6 % (n = 56) were recurrent, and 2.4 % (n = 29) were re-excisions for incompletely excised lesions

- Incidence of incomplete excision for primary lesions = 11.2 % (results are based on primary excisions)

- Anatomical Site:

52.1% of BCCs were located on the head.
Statistically significant difference ($p < 0.005$) in the proportion of incompletely excised lesions from the head 14.5 percent), trunk (8.5 %), neck (7.7 %), and limbs (7.0 %)

- Histologic Subtypes of Primary Excisions:

Significant ($p < 0.001$) differences in the percentage of incomplete excision for morpheic BCCs (50 %), superficial BCCs (16.1 %), infiltrative BCCs (12.8 %), and nodular BCCs (7.3%)

- Diameter of Lesion:

BCCs larger than 20 mm had a significantly ($p < 0.03$) higher % of incomplete excision (20.4 %) than lesions of ≤10 mm (11 %) or lesions between 10 and 20 mm (10.6 %)

- Margin of Excision:

The % of incomplete excision = 11.2 % and 17.6 % for lesions excised with surgical margins of 2 to 5 mm and 5 to 10 mm, respectively ($p = 0.427$. Margins >10 mm were not used.

- Site of Tumour Infiltration and Invasion:

The lateral margin was involved in 81.9 % of incomplete excisions; the deep margin, in 13.4 %; both margins, in 3.9 %; and nerve invasion, in 0.8 %. The ratio of lateral to deep margin involvement = 5:1.

- Experience of Surgeon

No significant difference in the % of incomplete excisions between operators ($p = 0.11$):

  - 4.5 % for consultant surgeons,
  - 11.1 % for the clinical assistant, and
  - 9.1 % for the trainee registrar operating alone.
  - When a consultant assisted the registrar, it was 16.1 %; if the roles were reversed, it was 14.7 %. The registrar or clinical assistant was the chief operator in 92 % of operations

- Recurrent Lesions and Wider Excisions
  - Compared with primary excisions, the % of incomplete excision for recurrent BCCs and lesions requiring wider excision were significantly higher ($p < 0.05$): 11.2, 26.8, and 37.9 %, respectively
  - Of the 2582 lesions, 56 were wider excisions of previously incompletely excised BCCs, and 58.1 % ($n = 29$) of these had residual tumour on histologic examination.

- Multivariate Analysis
  - Variables that were significant predictors for incomplete excision include:
  - head location; nodular, superficial, and morpheic subtypes; diameter greater than 20 mm; the presence of multiple (two or more) lesions; and graft repair.
  - Lesion size and type of repair remained significant when each was removed step-wise from the model, suggesting independence.

General comments:

Professionals from a specialised Plastic Surgery Unit were only included (plastic surgery trainee registrar (usually a first-year registrar on 6-month rotation), a clinical assistant, and three consultant surgeons) – there was no comparison with other health professionals (i.e. from primary care)

NOTE: The incidence of incomplete excision of basal cell carcinoma reported in retrospective studies is in the range of 6.3 to 25 %.

CORRESPONDENCE ONLY

Reference
Macbeth, A. E. et al (2009) Audit of incomplete excision rates of BCCs of 1972 cases from four UK regions British Journal of Dermatology, 161, 3, 710-712 (correspondence only)

Design: Retrospective case series
Country: UK

Aim: To determine the rates of incomplete excision of BCC across UK regions.

Inclusion criteria:
- Audit data collected by Dermatologists from four U.K. regions (allowing the comparison of Dermatology and Primary Care).

Exclusion criteria:
Punch biopsy or curettage specimens were excluded

Population:

- **In Norfolk**, 261 consecutive BCCs from October 2006 were identified retrospectively from histopathology reports. (Data included procedures from Secondary Care, Primary Care and the private sector)
- At re-audit in October 2007, 269 consecutive BCCs were identified, including 196 attempted excisions

- **The United Lincolnshire Hospitals Dermatology department** identified all BCCs from histopathology reports from November 2005 to March 2006 and May to July 2007.
- Excision outcomes were analysed in detail in Dermatology and Primary Care services.
- In total, 892 BCCs were identified and of these 63% were attempted excisions

- **East Sussex Hospitals Trust** BCC excisions were audited between January and April 2008.
- In total, 438 cases of BCC were identified retrospectively from histopathology reports: 15% (65⁄438) of these were treated in Primary Care and the remainder in Secondary Care

- In **Sunderland** identified histopathology reports of cutaneous malignancies submitted from Primary Care alone.
- The audit spanned one calendar year, 2006, and was repeated in 2007.
- Only 54% (72⁄134) of those confirmed as BCC, squamous cell carcinoma or malignant melanoma stated a possible diagnosis of malignancy on the histology request card.

Intervention(s) and comparator(s):
Excision of BCCs

Outcomes:
- Number of BCCs identified
- Excision Rate across Dermatology services and Primary Care
- Excision outcomes

Results:
<u>In Norfolk:</u>
- Of 199 attempted excisions, 53% were performed by Dermatologists in Secondary Care and
- 5% were performed in Primary Care (but not by general practitioners (GPs) with special interests)
- The total incomplete excision rate across specialities was 5%, with 6% in Dermatology (6⁄105) and 20% in Primary Care (2⁄10).

Of the excisions considered to be complete, margins of < 1 mm were seen in 9% (9⁄99) in Dermatology vs. 50% of the remaining complete excisions in Primary Care.

At re-audit: the proportion excised by the Dermatology departments had increased to 61% (120⁄196) and the

incomplete excision rate remained static at 6%, all of which were head and neck lesions.
Excisions in Primary Care had reduced to 3% of all excisions (5/196), all of which were complete.
Data suggested that more complex procedures on high-risk sites were now referred to Secondary Care.

The United Lincolnshire Hospitals Dermatology department:

- In the initial audit period, 73% (203/279) of attempted excisions were performed by Dermatologists and 27% (76/279) by Primary Care. The overall incomplete excision rate was 17%, rate = 14% (28/203) and 25% (19/76) in Dermatology and Primary Care, respectively.
- In the second audit period, incomplete excision rates had reduced in both specialities to 5% (8/175) and 18% (9/49).

East Sussex Hospitals Trust:
Of the Primary Care attempted excisions, 39% (22/57) were incomplete in comparison with 12% (42/352) of those performed in Secondary Care.

In Sunderland :

- Of the total sample, BCCs comprised 84% (112/134).
- Following exclusion of all punch biopsy and curettage specimens, the incomplete excision rate = 56% (22/39) in 2006, increasing to 61% (11/18) in 2007.
- Excision of low-risk BCCs may be performed in the community by appropriately trained staff.
- In Sunderland in the years analysed, there were no accredited GPs for dermatological surgery and no record of any GP attendance at MDT meetings, as was the case in all regions analysed.
- A low-risk BCC is a primary lesion of < 2 cm diameter with superficial or nodular histological subtype, on sites other than the nose, paranasal region, ears, scalp, temples, periocular region and lips.1
- The data included: head and neck lesions comprised 54% (21/39) of attempted excisions in 2006 with an incomplete excision rate= 62% (13/21), rising to a rate of 71% (5/7) in 2007.

Overall:

- Combined data from the above audits = 1972 cases.
- Of these, 1419 were attempted excisions with approximately 14% (excluding Sunderland data) from Primary Care).
- A statistical significant difference between rates of incomplete excision in Primary Care (85/254; 33%) and Dermatology (91/955; 10%) ($\chi 2$, $P \leq 0.001$) was reported.
- (see Table 1 extracted from published correspondence)

General comments:

Reference
TWIST, M. 2009. Rate of incomplete excision of BCCs by General Practitioners with Special Interest. *British Journal of Dermatology* 161: 187. (correspondence only)

Design: Retrospective study/audit
Country: Bognor War Memorial Hospital, UK

Correspondence:

- Reported rates vary widely from 3% to 25% and many of these come from specialist skin cancer services or plastic surgery departments.

- A retrospective audit was conducted to establish the rate of incomplete excision of BCC in a GPwSI clinic at Bognor War Memorial Hospital between 2005 and 2008.
- Pathology reports of 124 consecutively excised BCCs (50% head and neck, 50% trunk/limbs) treated in this clinic were examined with regard to excision margins.
- The rate of incomplete excision = two out of 124 or 1.6%. (Both of the incompletely excised lesions were from the face –
- One was incomplete laterally and was re-excised (completely) by the original surgeon).
- The other was reported as incomplete deeply and was referred to a plastic surgeon who re-excised the area with no residual BCC found.

- The rate of incomplete excision of BCC in this GPwSI clinic compares favourably with the reported rates in the literature and may be of interest to readers for consideration of the role of GPwSI in dermatological practice.

General comments:

ABSTRACTS ONLY - Published

Reference
CARTER, E. J., L. R. WHITTAM, AND D. A. BUCKLEY. 2009. Failure of adherence to NICE guidelines for skin cancer surgery in general practice. *British Journal of Dermatology* 161: 63.

Abstract only:

Great Western Hospital, Swindon, Wiltshire, U.K.
Retrospective study

- This audit assessed whether GPs in this area were adhering to the 2006 NICE guidelines and excising with adequate margins. It also compared outcomes with those for patients treated in the Department of Dermatology.
- All 71 skin cancers treated by local GPs (13 November 2007 to 11 November 2008) - identified from the local skin cancer multidisciplinary team meetings (LSMDT).

- Analysis assessed whether or not the GPs had:

(i) removed a pathologically proven high- or low-risk lesion (low-risk: Bowen's disease, actinic keratosis or superficial basal cell carcinoma on trunk/ limbs);
(ii) suspected they were removing a high-risk lesion;
(iii) excised the lesion with margins of ≥ 1 mm;
(iv) had attended LSMDTs.

- The comparison included: consecutive patients undergoing excisions for skin cancer at the Department of Dermatology during 15 weeks of the same period were identified (80 lesions in 70 patients; excisions carried out by clinical assistants and consultants).
- Histological margins of ≥ 1 mm were chosen arbitrarily as a guide to adequacy of excision.

- Of 71 GP procedures, 50 were excisions and 21 were incisional/ punch biopsies, shave, curettage or unspecified.
- 64 (90%) of the 71 lesions treated by GPs were high-risk: 27 were at high-risk sites and 37 of the 44 lesions at low-risk sites were of a high-risk histopathological type.
- Preoperatively GPs only suspected three of the lesions in low-risk sites to be high-risk tumours. In 16 cases (23%) no diagnosis was hazarded.
- Margins were < 1 mm or involved by tumour in 22 of 50 (44%) GP excisions and in 19 of 80 (24%) dermatology excisions.
- Further excisions were required in 24 (34%) of the GP patients vs. 13 (16%) of the dermatology patients.
- 5 (7%) fully excised tumours thought by GPs to be low risk were removed by a GP who had attended an LSMDT.

Authors conclude that "GPs are still treating skin tumours in contravention of NICE guidelines. GP involvement with the LSMDT could be increased. Future outcomes for patients treated both by GPs and in secondary care may be improved by feedback from the LSMDT. Further excision leads to delays in appropriate treatment, as well as unnecessary and costly interventions."

Reference
KHALID, S., A. SPICER, B. GEE, AND R. CARR. 2009. The impact of Improved Outcome Guidance (IOG) for skin cancer: a comparative re-audit of excision rates of BCCs by general practitioners in South Warwickshire. *British Journal of Dermatology* 161: 109.

Abstract only:

South Warwickshire
Retrospective Study

- An audit was conducted in 2005 (population 275 000) to assess the completeness of excision of BCCs (BCC) by general practitioners (GP).
- Published: Griffiths M, Vella J, Maxwell L et al. Quality assurance in the surgical management of BCCs: an audit of complete excision rates in primary and secondary care. Br J Dermatol 2007; 157 (Suppl. 1): 118).

- The results of this audit were disseminated to all GPs in the area with appropriate recommendations based on the IOG.
- This re-audit compared the completeness of excision of BCCs excised by GPs in 2005 with 2007.
- The audit was carried out on all 66 BCC excisions received from GPs in 2007.
- It audit showed that the GP excision numbers for BCC increased from 41 in 2005 to 66 in 2007.
- Clinically suspected malignancy increased to 75% (2007) from 54% (2005).
- In 11% of cases no clinical diagnosis was suggested, but this had improved from 22% in 2005.
- The proportion of 'high-risk' infiltrative and micro-nodular BCCs reduced to 17% (2007) from 37% (2005).
- BCCs excised with clear margins (≥1 mm) improved to 66% (2007) from 54% (2005).
- Involved margins = 11% (2007) but improved from 24% (2005).
- Completeness of excision with clear margins (‡ 1 mm) improved from 47% in 2005 to 57% in 2007 but close and involved margins were at 33% (2007) compared with 46% (2005).

- The comparative figures for hospital specialists in the 2005 audit = 87% clear (≥ 1mm), 7% close (0–1 mm) and 6% involved.

Authors conclude: This audit cycle highlights the impact of the IOG for skin cancer. Few GPs attend the skin cancer MDT but all cases of incomplete excision of BCCs in primary care are discussed and recommendations made. This has resulted in a higher standard of care of patients treated for BCCs. Further engagement by GPs with MDTs is likely to produce even better results.

Reference
WYLIE, G. AND G. DAWN. 2009. Audit of Scottish dermatologists' skin cancer surgical excision margins. *British Journal of Dermatology* 161: 37.

Abstract only:

Monklands Hospital, Lanarkshire, U.K.
Retrospective study

The purpose of this study was to compare guideline recommendations and actual current practice.

53 dermatologists were involved in an anonymous online questionnaire between July and September 2008. Data collected included:
- a number of cases with specific examples of skin cancers with size and location.
- a choice of excision margin, including those suggested by current guidelines.
- Demographics including grade, surgical commitment, number of procedures per month, and British Society of Dermatology Surgery (BSDS) membership.

- Of the total who replied, 55% were consultants and 23% BSDS members.

- On average, most responders were carrying out more than 20 procedures per month.
- The first clinical case example asked for the likely excision margin (1 mm to > 4 mm) for a primary well-defined nodular basal cell carcinoma (BCC) measuring 1 cm on the mid-forehead.
- Based on this, 33% suggested they would excise with a margin of 2 mm or less.
- Consultants made up 13% of this group including BSDS members.
- Only 32% gave 4mm or greater as their response.

- In terms of providing adequate clearance and reducing recurrence rates, comparing these results with the following published guidelines, there appears to be a marked discrepancies.
- Small well-defined BCCs with a 3-mm peripheral margin will clear tumour in 85% of cases.
- A 4–5-mm margin will increase the clearance rate to approximately 95%.
- Similar wide variations in practice were found with examples for high/low-risk squamous cell carcinoma and also for initial primary melanoma excision.
- Grade of operator and frequency of surgery, were linked with the use of smaller margins.
- The largest margins, (more closely following recommended guidelines), came from BSDS members, although not exclusively.

Authors highlight the importance of excision margins and that they should be made available in departments and biopsy rooms for staff carrying out skin cancer surgery.

Reference

AL RUSAN, A., D. TODD, D. SHUTTLEWORTH, AND E. FRASER-ANDREWS. 2008. Audit of excision margins for 377 BCCs (BCC) in primary and secondary care reveals that 47% of BCCs are incompletely excised in primary care. *British Journal of Dermatology* 159: 4.

Abstract only:

Department of Dermatology, Essex County Hospital, Colchester, U.K.

Retrospective study

Data was analysed from pathology reports of all cases of BCCs biopsied or excised between:
- January 2006 and December 2006 for patients from primary care, and
- October 2006 and March 2007 for patients from secondary care.

Specifically the following outcomes were included:
- the type of surgeon (GP, dermatologist, plastic surgeon, ophthalmologist),
- the site of excision, and
- the peripheral and deep margins

- 377 BCCs were excised;
- 44 punch biopsies and 16 curettages were excluded from the audit.

- GPs excised 103 BCCs, including 19 on the face. Complete excision rate = 42% for facial BCCs and 53% for other BCCs.
- For dermatologists complete excision rates for 161 BCCs excised = 93% (face) and 95% (other),
- For plastic surgeons, 95 BCCs were excised with complete excision rates = 88% (face) and 97% (other).
- Ophthalmologists completely excised 81% of 16 periocular BCCs and
- General surgeons excised 2 of 2 BCCs were completely

The mean peripheral margins for all BCCs:
- for GPs = 1.49 mm: mean deep margins = 2.38 mm
- dermatologists = 2.49 mm: mean deep margins = 2.82 mm
- plastic surgeons = 3.43 mm: mean deep margins = 4.11 mm
- ophthalmologists = 1.14 mm: mean deep margins = 1.97 mm

Reference
DE LA ROCHE, H. M. AND T. LUCKE. 2008. Audit of excision rates of BCCs in primary and secondary care in a county over 1 year. *British Journal of Dermatology* 159: 111-112.

Abstract only:

Royal Cornwall Hospital, Truro, U.K.
Retrospective study

A countywide audit of the annual complete excision rates for basal cell carcinoma (BCC) was conducted to establish baseline information on where patients receive treatment and quality of treatment (with respect to complete histological excision used as the gold standard).
All histopathology reports relating to BCCs from 1 January to 31 December 2006 were accessed (from a county district general hospital pathology database).

Outcomes were reported: specialty of the clinician, type of surgical procedure, high or low risk site, histological confirmation of complete excision and clinical diagnosis.

1693 BCCs (in total) were recorded in the database during 2006.
38% were excised from a high-risk site, 25% were excised from a low risk site.
16% of procedures were incisional biopsies.
7% were curetted as a definitive procedure from a high-risk site and 14% were curetted as a definitive procedure from a low-risk site.

Dermatologists performed 1219 (72%) of all procedures,
GPs performed 22% with the remainder being managed by other surgical specialties (mainly ophthalmological and maxillofacial surgeons).
Complete excision rate for high-risk BCCs in primary care = 46% and in secondary care = 89%.
The complete excision rate for high-risk BCCs for dermatological surgeons = 96%.
The complete excision rate for low-risk BCCs in primary care = 80% and in secondary care was 93%.

100% of dermatologists, 94% of surgeons and 78% of GPs entered a possible clinical diagnosis of skin cancer on the request form.

Incomplete excision rates for patients with high-risk BCC managed by GPs = 54%.

Abstract – unpublished:

From the WINTER BAPRAS Meeting 2008. The Royal College of Surgeons, London WC2A 3PE, 3-5 December 2008

Excision of BCCs: At the GP Surgery or at the Hospital?
Ms M Daruwalla, Dr A Milligan, Mr D Ward (Leicester)

The NHS is in a quality-control era. As providers we have to monitor quality of care, for which clinical indicators may have a role.

Aim: To assess the quality of service provision, incomplete excision of BCC is an audit recommended by NICE: "Improving Outcomes for People with Skin Tumors - 2006". It is also a clinical indicator developed by the Australian Commission of Healthcare Standards and the Royal Australasian College of Surgeons.

Method: Histology reports of BCC excisions by primary and hospital care (predominantly plastic surgeons and dermatologists) over the same three-month period in 2006 and in 2007 were analysed.

Results: Primary care had a 55% complete excision rate when the intention was to treat, as compared to 93% in hospital care. This was statistically significant (Chi-square test: $p < 0.0001$, ARR=38.95, RR=2.52, NNT=2.57).

Conclusion:
- Incomplete excision rates in hospital mirror those published in the UK and worldwide.
- General-practitioners had a higher incomplete excision rate, although most of their excisions were limited to non-high risk lesions.
- There is a higher degree of diagnostic uncertainty in primary-care and proportion of patients requiring repeated visits.
- Standardisation of care of patients with skin cancer as recommended by NICE, may mean an increase in the hospital work load including plastic surgery departments.

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AUDIT DATA Region of Audit	Region A	Region B	Region C	Region D	Region D
Place of Audit	Primary Care (GPs only)	Surgical Service in primary/intermediate care (GPwSIs)	Community skin cancer clinic – **GpwSI A**	Community skin cancer clinic – **GpwSI B**	Histopathology Labs (BCC reports only)
Review period	2008	Past year or more – up to 2009? (no further details given)	28/2/2008 to 22/1/2009 (11 month period)	29/1/08 to 6/1/09	1/1/06 to 31/12/07
Lesion(s)	Total no. of BCCs reported by histopathology in 2008: 516	• 162/343 BCCs • 181/434 high risk and referred to secondary care • 43 excision performed for suspected BCCs	• Total procedures: 122 • Excisions for suspected cancer: 56 • Excisions of BCCs: 41	• Total procedures: 275 • Excisions for suspected cancer: 112 • Excisions of BCCs: 61	• Total of 2796 histopath. reports analysed. • Incomplete data (body site, gender, age, type of BCC, correct diagnosis missing etc) cases excluded from study (n= 98) • Female = 1157; Male = 1639 Clinical source of surgical specimens to path lab: GP: 612; GpwSI: 560; DERMATOLOGIST: 975; GEN. SURG: 82; MXF: 256;

<table>
<tr><td></td><td></td><td></td><td></td><td></td><td>PLASTIC S: 119;
ENT:12;
OCULAR:168

Types of surgical procedures done:
Excision biopsies = 2236
Diagnostic biopsy (punch , shave and incisional) = 192

Curettage = 328</td></tr>
<tr><td>GP incomplete excision rate:</td><td>Only ¼ of surgical procedures designed to remove the BCC did so.
Subsequent management:
<table>
<tr><th>Procedure</th><th>No.</th><th>No. referred to 2nd-care</th></tr>
<tr><td>Incompletely excised</td><td>9</td><td>8</td></tr>
<tr><td>Close margin</td><td>3</td><td>1</td></tr>
<tr><td>Completely and adequately excised</td><td>4</td><td></td></tr>
<tr><td>Biopsied</td><td>8</td><td>7</td></tr>
</table></td><td></td><td></td><td></td><td></td></tr>
<tr><td>GPs: excision rate</td><td>Total where initial surgery was done by GP: 24
Of these;
Total excisions 16
Proportion of those excisions that were adequate 4/16

Total Biopsies 8</td><td></td><td></td><td></td><td></td></tr>
<tr><td>GPwSIs incomplete excision rate:</td><td></td><td>1 out of 43</td><td></td><td></td><td></td></tr>
</table>

GPwSIs: excision rate		• 38/43 confirmed on histology • 5 not confirmed	8 BCCs were excised (4 head and neck)	Total excisions were as follows: BCC – 61 (Head and neck: 45, Body: 16) SCC – 8 (Head and Neck: 5, Body 3) MM & MMIS – 13 Merkel cell - 1 Wide local excision – 29 Total Shaves / Punches: BCC – Shaves: 45, Punch Bx: 6 SCC – Shaves: 3 (in Bowens x1, in AK x1) Excisions of precancerous/dysplastic lesions Dysplastic naevi: 15 (Benign naevi: 18) Spitz: 2 AK: 6 + 1 Bowens KA: 3 (SK:6)	Surgical performance (complete excisional) rates by clinical subgroups GP: 55% GpwSI: 73%
Secondary Care: excision rate			• In secondary care 114 procedures were performed. • 67 were excisions of which included: - 33 BCCs (23		

			were head and neck tumours) - 16 moles 3 melanomas - 5 SCCs - 7 wide local excisions for melanoma - 3 other		
Dermatologists: Incomplete Excision Rate					Surgical performance (complete excisional) rates by clinical subgroups DERMATOLOGIST: 66%
Dermatologists: Excision Rate					
Plastic surgeons & others Incomplete Excision Rate:					
Plastic surgeons & others Excision Rate:					Surgical performance (complete excisional) rates by clinical subgroups GEN. SURG: 63% MXF: 75%; PLASTIC S: 76% ENT: 68% OCULAR: 78% NB: Secondary care deals with more difficult " high risk " Bcc's at more challenging surgical sites.
Uncertain			• Incomplete	• Incomplete BCC	

location of care			BCC excisions: 1 (superficial component only) - ***Incomplete excision rate for BCCs: 2.4%*** • Incomplete excision rate for all suspected skin cancers: 1.8%	excisions: 1 (superficial component only) - ***Incomplete excision rate for BCCs: 2.4%*** • Incomplete excision rate for all suspected skin cancers: 1.8%	

AUDIT DATA continued				
Region of Audit	**Region E**	**Region F**		
Place of Audit	**Depart of plastic surgery**	**Medical Centre**	Cancer network	Cancer network
Review period	Retrospective analysis of all BCCs treated by surgical excision over a 6 month period between Aug. 2005 and Jan. 2006	MARCH 2008-MARCH 2009	2007	2008
Lesion(s)	**Acute Trust workload** 646 cases (Close Approx) per year 44% skin cancer work 45 skin cancer cases need Flap/graft (30%) 3% incomplete Xs rate skin cancer (overall)	Total Excision Procedures: 40 6 Malignant Melanomas 3 In-situ Melanomas 2 Squamous Cell Cancers 29 Basal Cell Cancers Excision was mainly directed towards head and neck BCC's or thicker BCCs/younger patients In addition a further 39 skin cancers were treated with other modalities	5,869 skin lesions excised	32 GPs performed 64 BCC excisions
GPs: excision rate			5,869 skin lesions had been excised by GPs of which 578 were cancerous, including 398 BCC.	

			Of all the cases shown to be cancer, 151 were discussed at a multidisciplinary team (MDT).	
GPwSIs incomplete excision rate:			No data on excision accuracy were reported. There is no evidence table for this audit.	32 GPs performed 64 BCC excisions with 33% considered incomplete, compared with twenty-four consultants who performed 371 similar excisions with 11% incomplete. An audit of malignant skin lesions other than BCC indicated that GPs had removed the following skin lesions: well differentiated squamous cell carcinoma (7/38 incomplete) moderately differentiated squamous cell carcinoma (3/6 incomplete), SCC (0/2 incomplete)

				metastatic squamous cell carcinoma (1/2 incomplete) MM (1/5 incomplete) superficial spreading MM (4/16 incomplete) nodular MM (1/3 incomplete) and Merkel cell carcinoma (1/1 incomplete).
GPwSIs: excision rate				
Primary Care: excision rate	Total cases 1988 (approx) per year Skin cancer cases 305 (15% work load) Skin cancer incomplete excision rate 2%	Excision rates with histological clearance 100%		
Dermatologists: Incomplete Excision Rate				
Dermatologists: Excision Rate				
Plastic surgeons & others Excision Rate:	Total cases: 431 Benign histology: 209 Skin cancer: 162 Pre-cancerous lesions: 27 Carpal Tunnel release: 33 Bcc complete Xs: 104 Scc complete Xs: 22 MM complete Xs: 21 Incisional / punch biopsy: 9 (no MM biopsy)			
Plastic surgeons &	Bcc incomplete Xs: 2 Scc incomplete Xs: 1			

others Incomplete Excision Rate:	MM incomplete Xs: 1			
Uncertain location of care				

Annex A:

Topic: Do outcomes differ when the excisional surgery of a suspicious skin lesion is performed by a general practitioner compared with a specialist in secondary care?

Literature Search strategy

The following search strategy was applied to identify studies dated from 19th May 2005 (date of the original search conducted during development of the skin cancer guidance). The databases used include Medline, Embase, EBM Reviews/Cochrane Library, Cinahl and HMIC.

Published evidence was also accepted from GDG members.

Skin Cancer AND Excision AND Primary Care

Skin Cancer	**Primary Care**
1. exp Skin Neoplasms/	1. exp Primary Health Care/
2. exp "Neoplasms, Adnexal and Skin Appendage"/	2. exp Physicians, Family/ or exp Family Practice/
3. exp Melanoma/	3. exp Community Health Services/
4. exp Carcinoma, Squamous Cell/	4. (primary care adj physician$).tw.
5. exp Carcinoma, Basal Cell/	5. (primary care adj1 doctor$).tw.
6. exp Carcinoma, Merkel Cell/	6. (general practi$ or gp$1).tw.
7. exp Lymphoma, T-Cell, Cutaneous/	7. generalist$.tw.
8. sarcoma, kaposi/	8. (general practi$ adj1 special$ interest$).tw.
9. exp Nevus, Pigmented/	9. (gpwsi$ or gpsi$).tw.
10. (Basal adj2 carcinoma$).tw.	10. family pract$.tw.
11. (basal adj1 cancer$).tw.	11. family doctor$.tw.
12. (basal adj1 neoplas$).tw.	12. family physician$.tw.
13. (basal adj1 tumo?r$).tw.	13. community health nursing/
14. (basal adj1 epithelioma$).tw.	14. (family adj nurse$).tw.
15. (basal adj1 malignan$).tw.	15. (community adj nurse$).tw.
16. basalioma$.tw.	16. (nurse$ and (specialist$ or practitioner$)).tw.
17. (basocellular$ adj carcinoma$).tw.	17. (primary care adj nurse$).tw.
18. BCC.tw.	18. community health centers/
19. (basosquamous adj1 carcinoma$).tw.	19. (family health adj2 (centre$ or center$)).tw.
20. (Squamous adj2 carcinoma$).tw.	20. (community health adj1 (centre$ or center$)).tw.
21. (squamous adj1 tumo?r$).tw.	21. or/1-20
22. (squamous adj1 cancer$).tw.	
23. (squamous adj1 neoplas$).tw.	
24. (squamous adj1 epithelioma$).tw.	
25. (squamous adj1 malignan$).tw.	
26. SCC.tw.	
27. (Merkel adj2 carcinoma$).tw.	
28. (merkel adj1 cancer$).tw.	
29. (merkel adj1 tumo?r$).tw.	
30. (merkel adj1 neoplas$).tw.	
31. (merkel adj1 malignan$).tw.	
32. MCC.tw.	
33. (t adj1 lymphoma$).tw.	
34. (cutaneous adj1 lymphoma$).tw.	
35. (mycos$ adj fungoid$).tw.	
36. sezary$.tw.	
37. (kaposi$ adj sarcoma$).tw.	

38. melanoma$.tw. 39. (maligna$ adj2 lentigo).tw. 40. LMM$1.tw. 41. nonmelanoma$.tw. 42. NMSC.tw. 43. dermatofibrosarcoma$.tw. 44. (apocrine adj carcinoma$).tw. 45. (sweat adj1 carcinoma$).tw. 46. (sweat adj1 tumo?r$).tw. 47. (sweat adj1 neoplas$).tw. 48. (sweat adj1 cancer$).tw. 49. (sebaceous adj carcinoma$).tw. 50. (sebaceous adj tumo?r$).tw. 51. (sebaceous adj neoplas$).tw. 52. (sebaceous adj cancer$).tw. 53. (eccrine adj (poroma$ or porocarcinoma$)).tw. 54. (eccrine adj epithelioma).tw. 55. SSDC.tw. 56. Basal Cell Nevus Syndrome/ 57. ((naevoid or nevoid) adj3 syndrome$).tw. 58. gorlin$.tw. 59. (malignant adj1 (nev$ or naev$)).tw. 60. ((skin or derm$ or cutaneous or epithelial or epidermoid) adj1 (cancer$ or neoplas$ or carcinoma$ or tumo?r$ or malignan$)).tw. 61. or/1-60 **Excision** 1. Ambulatory Surgical Procedures/ 2. Surgical Procedures, Minor/ 3. ((ambulatory or minor) adj (surgery or surgical)).tw. 4. excision.tw. 5. excised.tw. 6. or/1-5	

Inclusion criteria for the review was defined by PICO Table:

PICO Table:

Population	Intervention	Comparator	Outcomes	

People with a suspected skin lesion.	excisional surgery (to remove a lesion) but not curettage or punch biopsy (for the purposes of obtaining a small tissue sample for diagnosis rather than to remove the lesion) and this would be performed by GPs, to include those with a 'special interest' (GPwSI).	secondary care such as dermatologists or plastic surgeons	successful excision rates, disease recurrence, cosmesis, correct diagnosis before excision, correct management (such as referral to skin cancer MDT where appropriate)	Study designs included: • Systematic reviews (of all study designs) • RCTs • Observational (prospective and retrospective) • Abstracts (considered)