



### Excision sites

A total of 2738 episodes recorded information about excision site. The procedures were carried out most commonly on the head and neck (58.3%), reflecting the propensity for skin cancer to affect sun-exposed sites.

### Pre- / Post-operative diagnosis

More than three quarters of the 2739 procedures were carried out for BCC (79.1% suspected, 77.7% histological diagnosis) with SCC the second most common tumour (17.9 suspected, 14.0% histological diagnosis; Figure 5). Table 1 shows the percentage agreement between pre- and post-operative diagnoses. Overall, for BCC there is 94.4% agreement, SCC 66.8% agreement and other NMSC 15.7% agreement. This is further broken down between prospective and retrospective data.

TYPE	NO. OF CASES	% CORRELATION
<b>All</b>	<b>2384/2728</b>	<b>87.1</b>
– prospective	1377/1600	86.1
– retrospective	999/1128	88.6
<b>BCC</b>	<b>2045/2167</b>	<b>94.4</b>
– prospective	1149/1227	93.6
– retrospective	889/932	95.4
<b>SCC</b>	<b>328/491</b>	<b>66.8</b>
– prospective	220/336	65.5
– retrospective	107/153	69.9
<b>Other NMSCs</b>	<b>11/70</b>	<b>15.7</b>
– prospective	8/37	21.6
– retrospective	3/33	9.1

**Table 1.** Overall pre- and post-operative agreement in diagnoses with prospective and retrospective breakdown of data

Where suspected BCC was found to be another diagnosis on histological examination, the most common diagnoses were benign lesions and SCC. Where suspected SCC was found to be something else the most common histological diagnosis was BCC. Melanoma was present as a very rare (<3%) unexpected diagnosis in both groups.

### Tumour size

A total of 2388 recorded procedures provided usable information about tumour size. The mean tumour diameter was 10.61 mm (standard deviation 6.92 mm), with the largest diameter being 130 mm. The density distribution plot shows a positive skew (+4.8), where most tumours were under or equal to 20 mm.

### Types of excision

A total of 2650 excisions were recorded, with 89 re-excisions (Table 2).

TYPE OF PROCEDURE	N	%
Excision	2650	96.75
Re-excision	89	3.25

**Table 2.** Types of procedure

Table 3 shows the number of complications for excisions and re-excisions respectively.

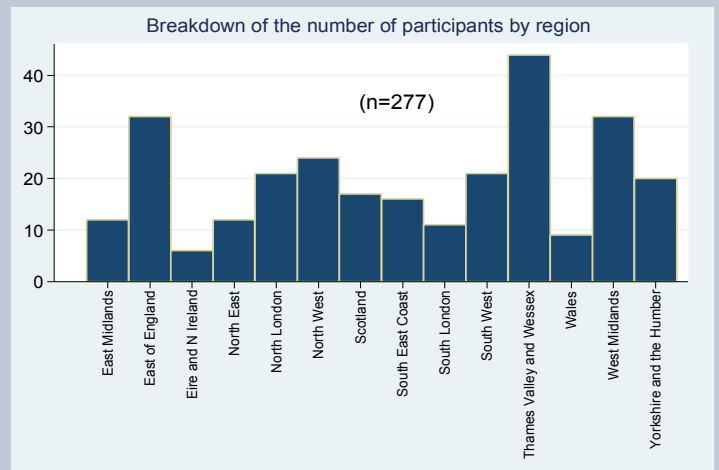
COMPLICATIONS	EXCISION	RE-EXCISION	TOTAL
No	2233 (97%)	75 (94%)	2308 (96.6%)
Yes	75 (3%)	5 (6%)	80 (3.4%)
Total	2308	80	2388

**Table 3.** Reported complication rate

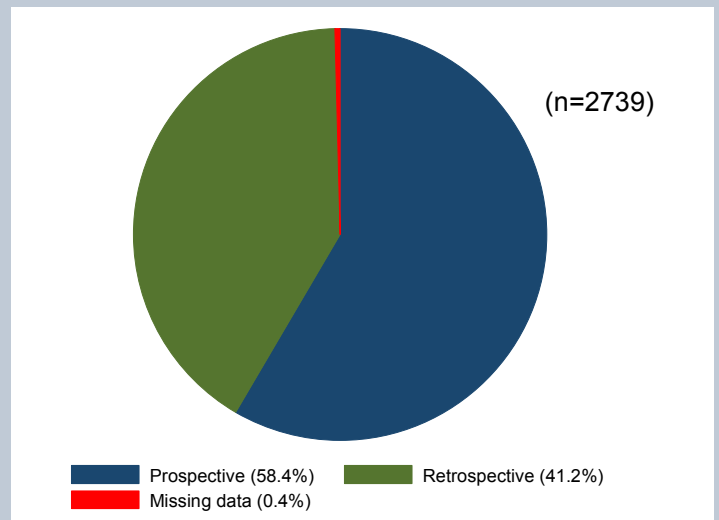
The risk ratio of complications for re-excision was 1.92 (95% CI 0.80-4.62, P=0.18); statistical significance (P<0.05) was not reached.

### Location in relation to previous scar

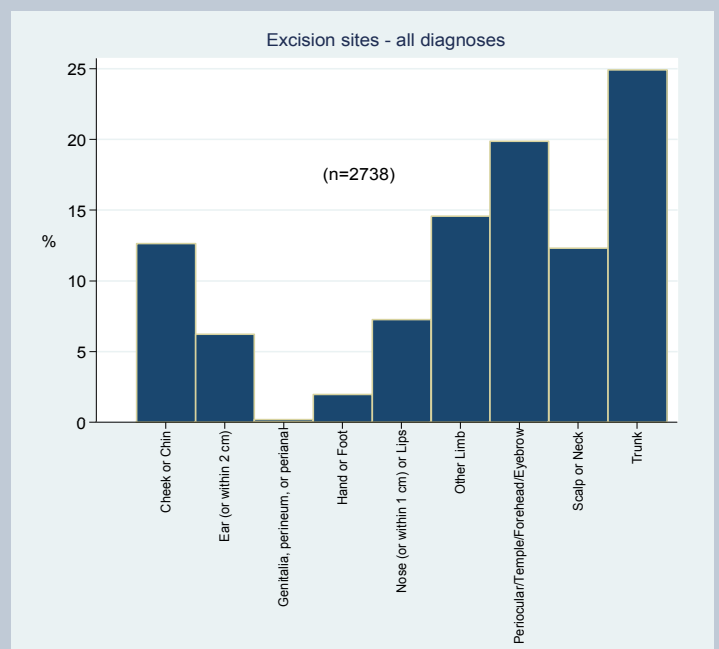
Location of BCCs and SCCs within 10 mm of previous excision scars was mapped (Figure 8). BCCs close to previous scars were most likely to be in the pericardial/temporal area and on the trunk, whilst SCCs were most likely to be on the limbs.



**Figure 2.** Participants by region



**Figure 3.** Prospective vs. retrospective data collection



**Figure 4.** Excision sites

### Tumour size and margin

As expected, tumour size has some influence on excision margin. In the graphs below (Figures 10 and 11) larger tumour sizes are more likely to be excised with margins >5 mm compared with smaller tumours.

### Completeness of excision

Based on histological diagnoses of BCC, 2001 and 1965 submissions had analysable data for lateral and deep margins, respectively. A total of 32 BCCs were incompletely excised at the lateral margin and 15 were incomplete at the deep, leading to complete excision rates of 98.4% and

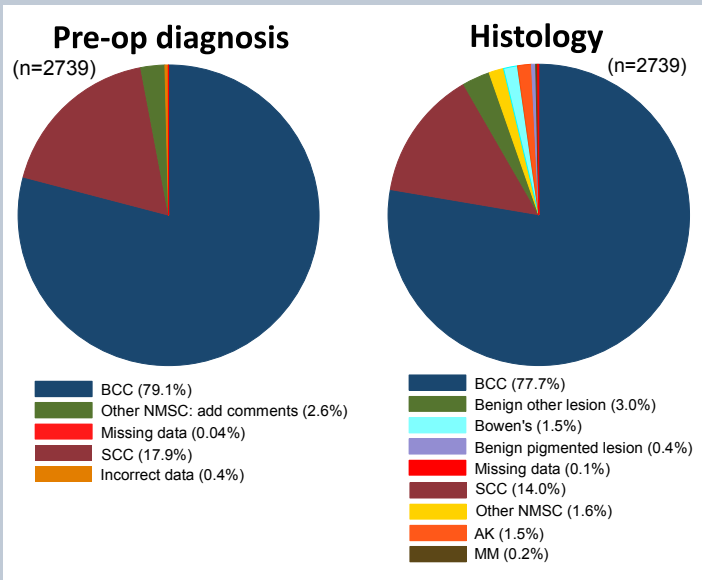


Figure 5. Pre-operative clinical diagnosis vs. histological diagnosis

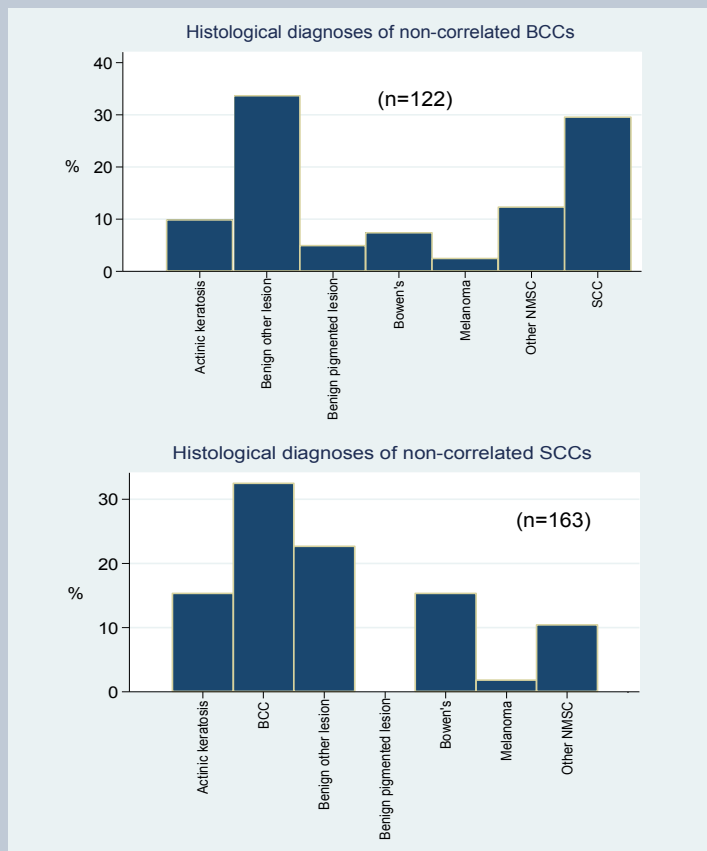


Figure 6. Final histological diagnoses where clinical diagnoses were corrected by histology result

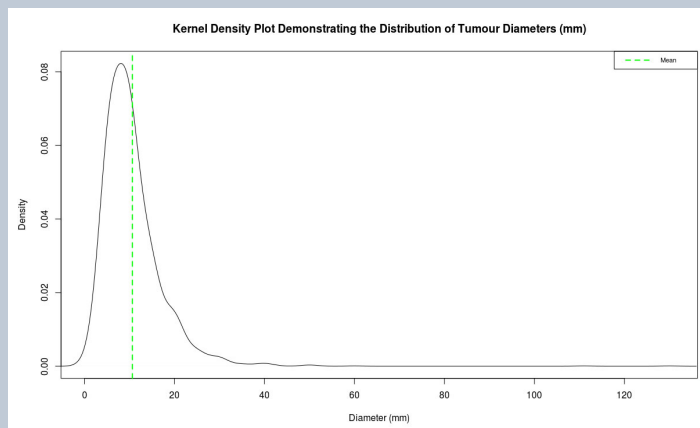


Figure 7. Distribution plot of tumour size

99.2% lateral and deep, respectively. The complete excision rates based on histologically confirmed BCC diagnoses were virtually identical (lateral – 98.3% (1906/1938) total, broken down to 5.0% <1 mm, 85.9% 1-5 mm, 7.5% >5 mm; deep – 99.2% (1886/1901) total, broken down to 6.8% <1 mm, 76.0% 1-5 mm, 16.4% >5 mm).

Based on histological diagnoses of SCC, 348 and 349 submissions had analysable data for lateral and deep margins, respectively. A total of 7 SCCs were incompletely excised at the lateral margin and 14 were incomplete at the deep, leading to complete excision rates of 98.0% and 96.0% lateral and deep, respectively. The complete excision rates based on histologically confirmed SCC diagnoses were very similar (lateral – 98.4% (300/305) total, broken down to 2.3% <1 mm, 69.8% 1-5 mm, 26.2% >5 mm; deep – 97.1% (296/305) total, broken down to 5.6% <1 mm, 75.4% 1-5 mm, 16.1% >5 mm).

Based on all histological lesions recorded, 2445 and 2400 had analysable data for lateral and deep margins, respectively. Overall complete excision rates were calculated at 98.2% lateral and 98.7% deep, respectively. For BCC and SCC (excluding other diagnoses) the overall complete excision rate (lateral or deep or both) was 97.7%.

### Conclusions / Discussion

We have examined the completeness and margins of excision undertaken by dermatological surgeons in secondary care for NMSCs from a variety of body sites with 58.3% from the head and neck. The majority of NMSC excisions are for BCC and SCC.

A total of 94.4% of clinically suspected BCCs were confirmed histologically and 66.8% of suspected SCCs. These are at the upper range of previously published figures on diagnostic accuracy for NMSCs being seen in secondary care settings (89.0-95.4% for BCC and 33.0-68.0% for SCC).<sup>5,6</sup>

The most common alternative diagnosis for BCC was benign lesions or SCC, and for SCC was BCC.

The largest single lesion recorded was 130 mm but most tumours are less than 20 mm (mean 10.6 mm, SD 6.9) in diameter. This matches the average size of lesions at presentation in most dermatology departments.<sup>7</sup> With clinical margins of 4 to 6 mm according to tumour type and location, this will result in defects of 18.6 to 22.6 mm, mostly on the head and neck.

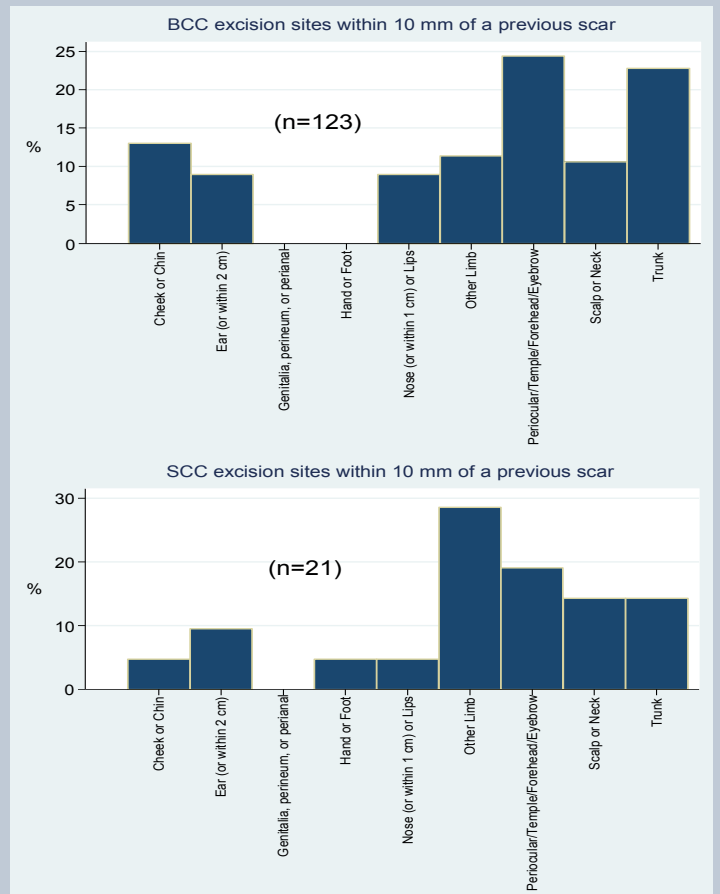
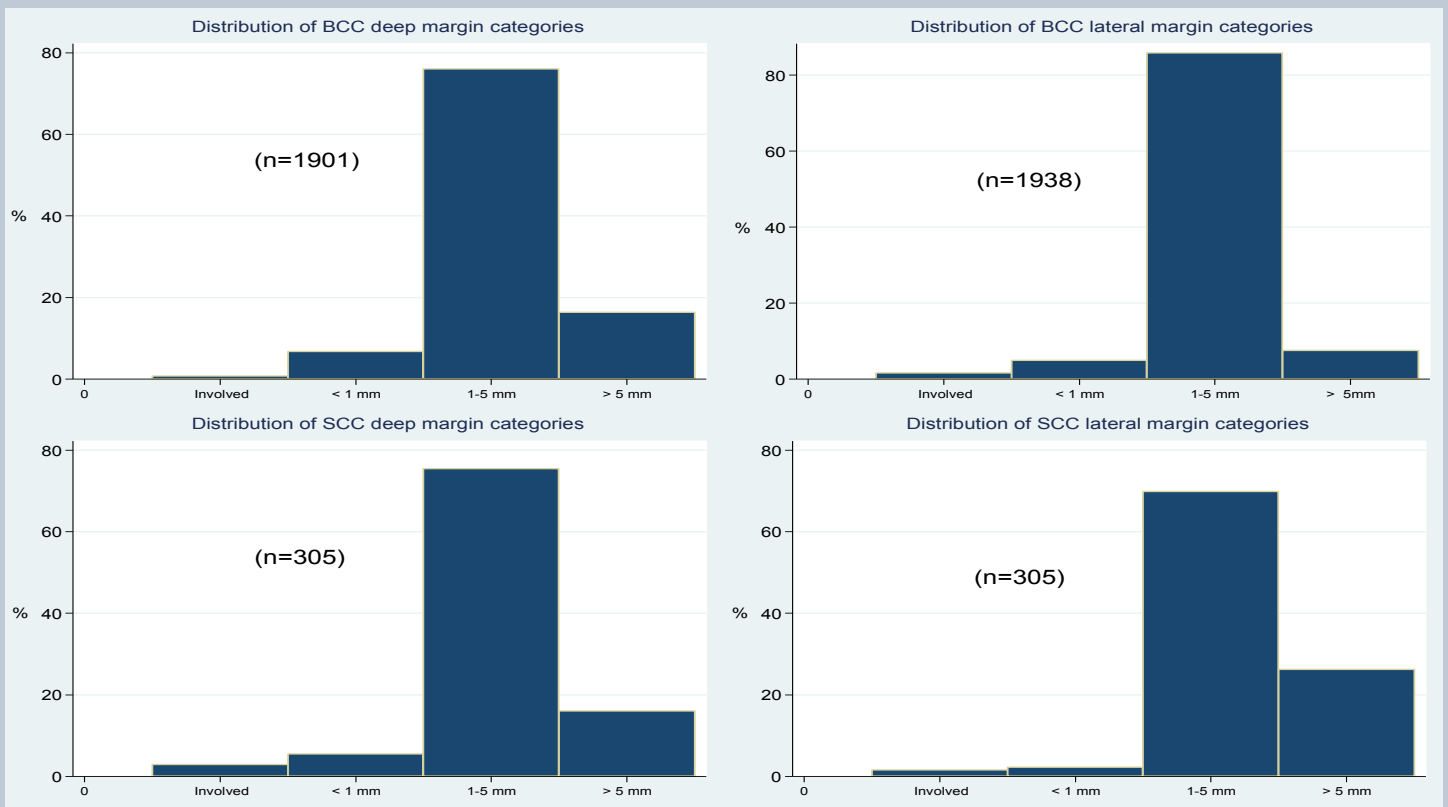
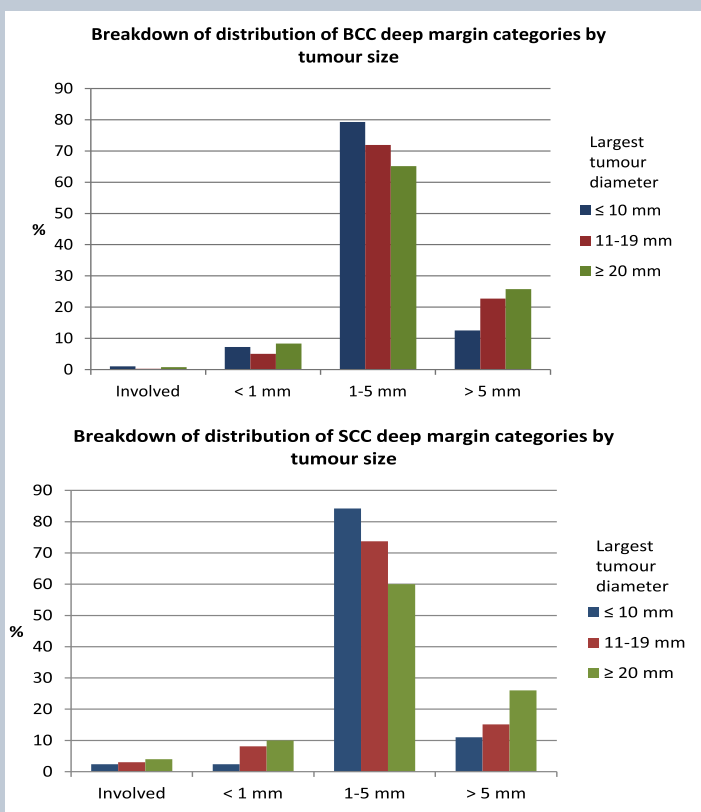


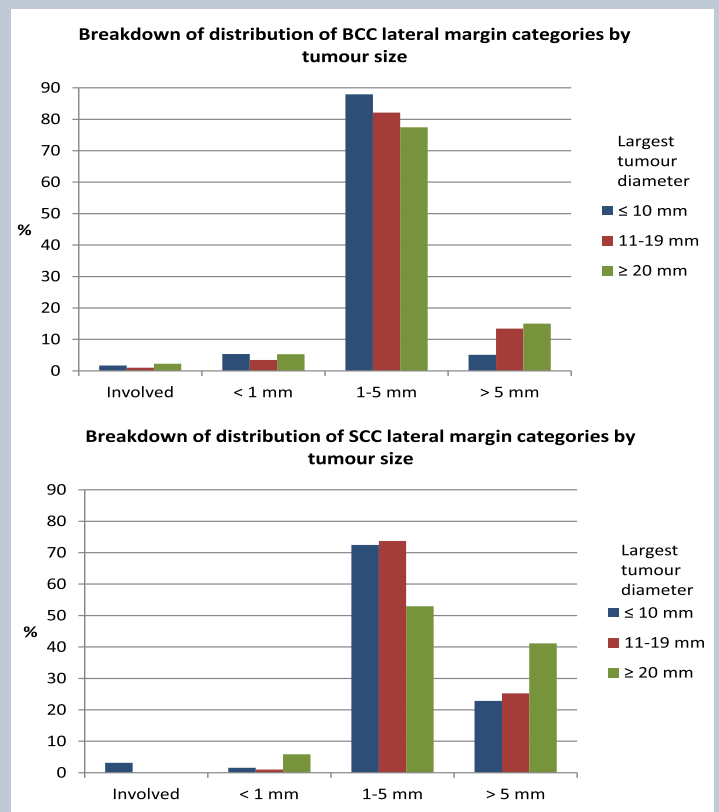
Figure 8. Mapping of tumour site to presumed recurrences according to tumour type



**Figure 9.** Distribution of deep and lateral histologically confirmed margins according to main tumour type (grouped: involved, <1 mm, 1-5 mm, >5 mm)



**Figure 10.** Deep margin clearance according to tumour size



**Figure 11.** Lateral margin clearance according to tumour size

The majority of procedures were primary excisions. Most patients are not followed up in secondary care, which means complication rates probably go under-reported. Higher rates of re-excision were observed on the ear, hand/foot and scalp/neck. This may reflect increased difficulty of excision leading to higher rates of incomplete excision.

This audit has provided an assessment of the completeness of non-Mohs excision of NMSCs in secondary care in the United Kingdom. Tumour size, site and co-morbidities provide context for interpretation.

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