Cost of skin cancer in England, including projections to 2020 (funded by NAEDI)

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Commissioning Challenges for Skin Cancer

• Implementation of NICE Commissioning Guidance (2006 and 2010)
• Ensure enhanced performance against Skin Cancer Standards
• Implementation of NICE Prevention Guidance
• Implementation of Sun-bed Legislation

Commissioning

• Needs assessment
• Evidence base/guidance for service provision or interventions
• Assessment of current service provision (including quality)
• Allocate money
• Negotiate service change
• Local Quality Assurance
Challenges for Skin Cancer improvement

- Barely touches commissioning radar
- Not perceived as a major public health issue (doesn’t kill)
  - Except occasional flurries about prevention
- Not much inpatient activity
- Not seen as a burden on NHS resources

Comparison of average number of new skin cancer cases and deaths with other types of cancers in the South West, 2001–2005

Cervix -260 c.f. Melanoma ~1200
Lung ~2900 c.f. NMSC ~11,000

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Bladder C67</td>
<td>275</td>
<td>706</td>
<td>153</td>
<td>292</td>
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<tr>
<td>Breast C50</td>
<td>4512</td>
<td>0</td>
<td>1195</td>
<td>0</td>
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<tr>
<td>Cervix C53</td>
<td>280</td>
<td>0</td>
<td>93</td>
<td>0</td>
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<tr>
<td>Colorectal C18-C20</td>
<td>1657</td>
<td>1847</td>
<td>720</td>
<td>783</td>
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<tr>
<td>Leukaemia C91-C95</td>
<td>329</td>
<td>410</td>
<td>190</td>
<td>231</td>
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<tr>
<td>Lung C33-C34</td>
<td>1169</td>
<td>1756</td>
<td>971</td>
<td>1503</td>
</tr>
<tr>
<td>Melanoma C43</td>
<td>627</td>
<td>590</td>
<td>93</td>
<td>109</td>
</tr>
<tr>
<td>Non-Melanoma Skin Cancer C44</td>
<td>4923</td>
<td>5927</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>Non-Hodgkins Lymphoma C82-C85, C96</td>
<td>525</td>
<td>626</td>
<td>211</td>
<td>262</td>
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<tr>
<td>Prostate C61</td>
<td>751</td>
<td>0</td>
<td>442</td>
<td>0</td>
</tr>
<tr>
<td>Upper Gastro-Intestinal C15, C16, C25</td>
<td>909</td>
<td>1264</td>
<td>798</td>
<td>1051</td>
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</table>
The ‘incidence’ of non-melanoma skin cancer

Incidence of Skin Cancer Cases

Source: NCDR
Forecast

Current estimate in an excess of 8,000 new cases of malignant melanoma per annum in England (ONS)

Diffey (BJD, 2004; 151: 868-872))
Predicts that in 30-50 years the rate of melanoma in the UK could be around 2 to 3 times those presently observed.

Recorded Skin Cancer in the South West

Number of registrations

- BCC
- Melanoma
- Other C44
- SCC


Number of registrations: 0, 2000, 4000, 6000, 8000, 10000, 12000
Non Melanoma Skin Cancer:

Squamous Cell Carcinoma and Basal Cell Carcinoma

Very high and underestimated number of Non Melanoma Skin Cancers

- 10 times more common than Malignant Melanoma
- Often arise in surgically difficult anatomical sites
- Associated with high morbidity and can impact on quality of life
- More complex operations performed for NMSC than MM
- Many dealt with by GPs
- Metachronous tumours
- Burden on the NHS

Skin cancer incidence and mortality in England

Data from the UK Association of Cancer Registries national database for registered incidence and from the Clinical and Health Outcomes Knowledge Base web site (http://www.nchod.nhs.uk) for mortality are shown for 2006 by Strategic Health Authority
Survey of registration practices

- Data are received via 3-7 methods, with an average of 4.5 methods per registry. Pathology and death certificates are the main data sources.

- Nearly all cancer registries record staging information for MM but few record it for SCC and BCC. Some registries receive staging information but do not enter it on their data computer systems.

- Of the registries who replied, 5 record more than the first SCC, 3 more than the first BCC and 4 more than the first in situ NMSC. In addition the rules for NMSC registration differs across all the registries.

- The main barrier to the registration of additional SCC, BCC or in situ NMSC per patient, is the cost of the process. It is believed that an efficient automated electronic system would enable registries to make better use of data collected in Trusts.

 Skin cancer: staging information held on cancer registry databases

<table>
<thead>
<tr>
<th>BCC</th>
<th>SCC</th>
<th>MM</th>
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</thead>
<tbody>
<tr>
<td>TNM</td>
<td>T</td>
<td>Clark</td>
</tr>
<tr>
<td>NYCRIS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trent</td>
<td>Red</td>
<td>Green</td>
</tr>
<tr>
<td>ECRIC</td>
<td></td>
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</tr>
<tr>
<td>Thames</td>
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<td></td>
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<tr>
<td>OCIU</td>
<td>Red</td>
<td>Red</td>
</tr>
<tr>
<td>SWCIS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WMCIU</td>
<td>Red</td>
<td>Red</td>
</tr>
<tr>
<td>NWCIS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WCISU</td>
<td>Red</td>
<td>Red</td>
</tr>
<tr>
<td>Scotland</td>
<td>Red</td>
<td>Red</td>
</tr>
<tr>
<td>NICR</td>
<td>Red</td>
<td>Red</td>
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</tbody>
</table>
Cost of Skin Cancer in England

Prof Steve Morris from UCL Research Department of Epidemiology and Public Health, University College London was commissioned to calculate the current financial cost of skin cancer in England.

- Three methods were considered:
  - Bottom up data
  - Top down data
  - PCT spending data

Bottom up approach

- Using a simplified model of skin cancer care in the NHS
- Based on guidelines produced by the BAD for the management of MM (Marsden et al 09), BCC (Telfer et al 08), SCC (Motley et al 09).
- On Health guides from the Map of Medicine website for MM and BCC.
- Using Unit costs obtained from published national average for England, published reports etc (Keogh-Brown et al 2007, Thomas et al 2000, Curtis 2008) etc.
- Using NHS reference costs from 2 time period (different HRG Healthcare Resource Groups) classification system.
- MM Data from ONS 2006-08 and MNSC estimates using SWPHO model
- Assumption of 12 cases of benign cases for every MM case (Goulding et al 2009, Jackson et al, 2000)
**Simplified care pathway**

- **Benign**
  - Self-monitoring
  - Treat in primary care
  - Successful Follow-up

- **Self-monitoring**
  - Topical drug treatment
  - Phototherapy
  - Cryotherapy
  - Radiation therapy
  - Mohs surgery

- **Phototherapy**
  - Follow-up

- **Curettage and cautery**
  - Follow-up

- **Cryotherapy**
  - Follow-up

- **Surgical excision**
  - Follow-up

- **Radiotherapy**
  - Follow-up

- **Diagnostic biopsy**

- **Non-melanoma**
  - Self-monitoring
  - Topical drug treatment
  - Phototherapy
  - Cryotherapy
  - Radiation therapy
  - Mohs surgery

- **Topical drug treatment**
  - Follow-up

- **Phototherapy**
  - Follow-up

- **Cryotherapy**
  - Follow-up

- **Surgical excision**
  - Follow-up

- **Radiotherapy**
  - Follow-up

- **Surgical excision**
  - Follow-up

- **Melanoma**
  - Self-monitoring
  - Radiotherapy
  - Excision + radiotherapy

- **Radiotherapy**
  - Follow-up

- **Excision + radiotherapy**
  - Follow-up

- **Radical lymph node dissection**
  - Follow-up

- **Referral to specialist**

- **Primary care examination**

**Estimating the missing incidence**

**Ratio of directly age-standardised rate of non-melanoma skin cancer to directly age-standardised rate of malignant melanoma, in the South West, 2004-06**

- **Local Authority**
  - Ratio of DSR of Non-melanoma skin cancer to DSR of malignant melanoma
Estimating the missing incidence

Ratio of directly age-standardised rate of non-melanoma skin cancer to directly age-standardised rate of malignant melanoma, in the West Midlands, 2004-06

Applying estimates to cancer networks

Recorded and estimated numbers of non-melanoma skin cancer, by Cancer Network, 2004-06

- Recorded non-melanoma skin cancer
- Seven times malignant melanoma
- Ten times malignant melanoma
The numbers

- 2004-06 data from NCHOD
- Areas with exceptionally low rates: 3,981 cases per year
- Revised estimate: 13,025 to 18,607 cases per year
- Estimate for England: 72,788 to 78,370 cases per year
- Actual recorded in England: 63,744 cases per year

Bottom up approach - results

- Expected cost per case for MM and NMSC: £2,607 and £889 respectively
- Expected cost per benign case was £181.

- Based on a total of 8,658 of MM, 73,593 of NMSC and 101,720 benign cases.

- Total financial cost to the NHS were calculated to £106,418,000.
Top down data - expanded

- NHS cost were calculated using data on the number of general practitioner consultations, inpatient stays, day cases and outpatients visits due to skin cancer.
- Cost of skin cancer comprises costs to NHS, cost incurred by patients and indirect cost.
- Unit cost were taken from published national sources and applied to each category to give an overall estimate of the cost to the NHS of skin cancer.
- Indirect cost arising from individual inability to function in their usual role were estimated from incapacity benefits claims and death registration from Skin Cancer.
- 2008 estimates projected to 2020 based on published estimates of the future incidence of MM (Diffey 2004)

Top down data - results

- Based on 8,656 MM and estimated 73,593 NMSC in 2006
- The total cost of Skin Cancer in England is estimated to be approximately £270 million.
- NHS costs were estimated to be £112.4 million (42%). The remainder being attributable to patients costs, indirect morbidity costs, and indirect mortality cost.
- 55% of the total cost of skin cancer is due to malignant melanoma.
- Projection to 2020: 1.7 times the number of MM (A models)
  » 1.65 -1.60 (B or C models) (Diffey, 2004)
- NHS costs for skin cancer are projected to £190.5 million, £185.5 million and £180.1 million in 2020 for A,B,C
- Total costs are projected to £455.1 million, £443.2 million, £432.2 million in 2020 for A,B,C
PCT spending data

- Based on the establishment of a dataset containing variable on incidence of skin cancer, skin cancer mortality and NHS expenditure on skin cancer for all PCTs in England. Various sources of data were used including Extrapolation of NMSC was done using a methodology developed by SWPHO. 2008-09
- Data on incidence were obtained from the National Centre for Health Outcomes Development (NCHOD) – 2004-06
- Counts of MM by PCT were obtained from cancer registries and NMSC estimates used SWPHO model of calculation.
- Data on Skin Cancer expenditure were obtained from the 2008-09 Cancer Network Workbook version 1.0 from the National Programme Budget project webpages (doh)
- Skin Cancer expenditure per 1000 population for each year was calculated based on raw population estimate for PCTs.

PCT spending data - results

- Total national spending on skin cancer in England in 2006/7, 2007/8 and 2009/10 were £95,012,000, £103,958,000, and £105,194,000. or £1882, £2050 and £2053 per 1000 population, respectively.
- Skin Cancer represented 2% of the total national spending on all cancers and tumours.
- The data suggest that in general skin cancer spending by PCTs and both skin cancer incidence and mortality are positively correlated
Overall costs for England obtained from 3 methods

• Total financial cost to the NHS were calculated to £106,418,000 (bottom up approach)

• NHS costs were estimated to be £112.4 million (bottom down approach)

• Total national spending on skin cancer in England £105,194,000 (PCT spending data)

Limitations

• Under-recording of cases
• Underestimation of cases
• Coding issues (are the right code used by clinicians) and implication on cost
• Difficult estimating the number of cases in each path
• Difficult assessing pathways
### Percentage of treatment given and tumour type

<table>
<thead>
<tr>
<th>Tumour type</th>
<th>BCC</th>
<th>SCC</th>
<th>MM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topical treatment</td>
<td>3%</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td>Curretage</td>
<td>7.5%</td>
<td>4.5%</td>
<td>0%</td>
</tr>
<tr>
<td>Excision and direct closure</td>
<td>56%</td>
<td>55%</td>
<td>85%</td>
</tr>
<tr>
<td>Complex repair</td>
<td>26%</td>
<td>35%</td>
<td>18%</td>
</tr>
</tbody>
</table>

Note: % do not add up to 100

Source: Assessment of skin cancer presentation in the South West and Hampshire in 2008

### Estimate of true cancer numbers from SWPHO Skin Cancer Project

<table>
<thead>
<tr>
<th></th>
<th>No of cases (SWCIS)</th>
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<tbody>
<tr>
<td></td>
<td>2008 (CR)</td>
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<tr>
<td>BCC</td>
<td>13683</td>
</tr>
<tr>
<td>SCC</td>
<td>3770</td>
</tr>
<tr>
<td>Additional data not entered yet</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>17453</td>
</tr>
</tbody>
</table>

Source, SWPHO
CR; Cancer Registry ; SCP Skin cancer project
Conclusions

The three independent methods of costing produce similar figures!!

Investment does appear to ‘broadly’ match need!!

Commissioners can use the Skin Cancer Profiles on the Skin Cancer Hub

Registration of Skin Cancers needs to improve

Costing exercise will need to be updated

Skin Cancer Profiles

- Statistics at Local Authorities and PCT using Instant Atlas mapping software based on data from National Centre for Health Outcomes Development
- Include set of determinants such as contributory factors (number of sunshine hours, IMD average score, ethnicity) and general health factors (life expectancy and death from cancer)
Thank you
Please visit the Skin Cancer Hub

Schools:

Skin cancer is the most common form of cancer in the UK. It is a major public health issue and a growing concern for many people. The Skin Cancer Hub is a great source of up-to-date evidence, information and tools available to help teachers and other educational professionals. Here are some of the key features and resources available on the Skin Cancer Hub website:

- Informational resources
- School-based activities
- Policing and enforcing local restrictions
- Support and care for patients

What's going on in your area, and how can we help?

By visiting the Skin Cancer Hub, you can access information on the latest research, trends, and developments related to skin cancer. This information is useful for students, educators, and researchers alike. You can also find resources and tools to support the prevention and management of skin cancer, including information on early detection and treatment options.

What's next?

To learn more about the Skin Cancer Hub and its resources, please visit the website and explore the various sections. You can also sign up for regular updates and connect with other professionals in the field. Thank you for your interest in this important issue.