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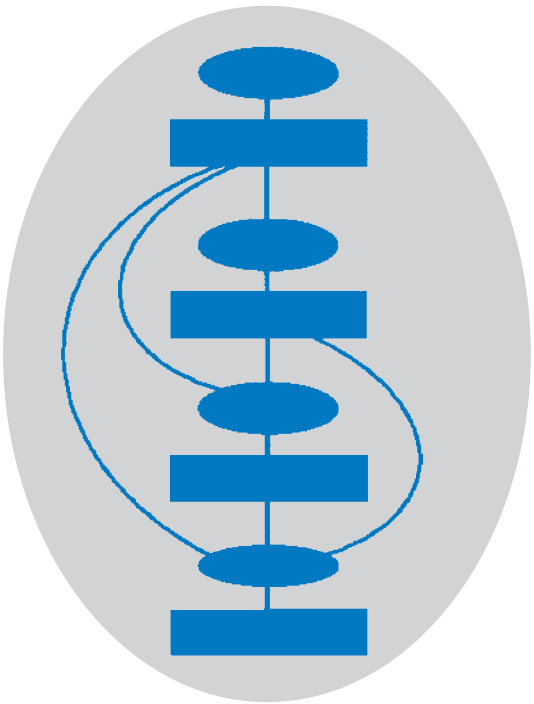
Guidance on Cancer Services

Improving Outcomes for People with Skin Tumours including Melanoma

Analysis of the Potential Economic Impact of the Guidance



Text highlighted in grey throughout this file relates to the management of low-risk basal cell carcinomas in the community.

A costing statement was produced in 2010 to support the partial update of the 2006 NICE guidance on 'Improving outcomes for people with skin tumours including melanoma' in relation to the management of low-risk basal cell carcinomas in the community.

The guidance update and costing statement are available from www.nice.org.uk/CSGSTIM

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A report commissioned by the National Collaborating Centre for Cancer

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- Dr Jat Sandu, Department of Social Medicine, University of Bristol
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- staff from Royal Colleges
- staff from primary care trusts (PCTs) and local health boards (LHBs)
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Executive summary

The economic consequences of the recommendations of the "*Guidance on Cancer Services: Improving Outcomes for people with Skin Tumours including Melanoma*" in England and Wales are set out in this document. The analysis focuses on those aspects of the key recommendations that are likely to be of greatest consequence in terms of cost, the most significant of which will be in respect of additional staffing.

There is uncertainty around the estimates presented and there will be variation between cancer networks. Sensitivity analyses were conducted to account for uncertainty in the estimated costs. Further assessments will be needed at cancer network level and/or NHS trust level to determine the exact cost implications. Work is currently being carried out in the NHS in England, in connection with 'Payment by Results', to develop a better understanding of costs of treatment and care, and this may help these assessments in the future.

The summary of the economic implications is outlined in two tables; Table 1 presents service delivery options regarding clinicians working in the community and for multidisciplinary team (MDT) working, the resource implications of which will be dependent upon the level of existing services. Table 2 presents additional resource implications that apply across cancer networks.

Table 1 Summary of service options and annual resource implications for cancer networks (£)

		Estimate £	Range £	
Community clinicians	Service cost, inclusive of staff time and consumables	625,727	469,296	782,159
	GPwSI sessional rate	329,373	247,030	411,716
	Hospital Practitioner sessional rate	196,773	147,580	245,966
MDT	For cancer networks with no MDTs, moving to low MDT provision	129,134	96,851	161,418
	For cancer networks with no MDTs, moving to high provision	258,268	193,701	322,835
	For cancer networks with partial MDTs, moving to low provision	49,888	37,416	62,360
	For cancer networks with partial MDTs, moving to high provision	105,662	79,246	132,077

Table 2 Summary of annual cancer network level resource implications (£)

		Range[1] £	
Additional staff	MDT coordinators	44,470	88,941
	Skin cancer clinical nurse specialists (CNS)	142,330	177,913
	Consultants	555,284	555,284
Sub-total		742,085	822,138
Special groups[2]	Transplant patients	4,370	17,480
Cancer Registries	Set-up costs[3]	963	1,482
	Recurring costs	963	1,482
Total (Range)		747,418	841,101

1. Costs reflect low and high staffing requirement, rounded to the nearest £
2. Assuming 1 clinic per cancer network
3. One-off cost and not added into annual total.

Clinicians working in the community

The Guidance states that some patients with pre-cancerous or low-risk BCCs may be diagnosed, treated and followed up by clinicians working in the community under the direction of a MDT. The need for community skin cancer clinics will vary according to the expertise available and ease of access to local hospital departments. Some cancer networks already have such services in place and it will be for local commissioners to decide whether to establish them where there is currently no such provision.

In the absence of cost-effectiveness evidence, a survey was conducted to inform the resource implications of the Guidance. The costs include sessional rates paid to general practitioners with a special interest (GPwSI) in dermatology in the community and a more comprehensive service cost which includes GPwSI,

nurse and administrator time and consumables. In addition hospital practitioner sessional rates have been included (Table 1). The costs at a cancer network level for the service inclusive of GPwSI time, nursing time, administration and consumables is around £625,727 per network (± 25% range, £469,296 to £782,159). For a cancer network to deliver 30 sessions a week for 52 weeks of the year, the annual cost of those sessions, with a GP locum payment, would be around £329,373 (± 25% range, £247,030 to £411,716); at hospital practitioner rates the payment would be £196,773 (±25% range £147,580 to £245,966). Thirty sessions in a network equates to 3.4 sessions per PCT or LHB. These cost scenarios have a high degree of uncertainty because they include an element of costs for patients that have conditions other than non-melanoma skin cancer (NMSC). It also needs emphasising that the costs have been presented for information purposes and it is for local commissioners to investigate whether a GPwSI service would enhance their existing services.

Multidisciplinary teams

The Guidance recommends that cancer networks should establish two levels of multidisciplinary team – local hospital multidisciplinary teams (LSMDTs) and specialist skin multidisciplinary teams (SSMDTs). Skin cancer teams are currently established in some but not all cancer networks. It is estimated that 36% of all networks require at least one SSMDT. Fifty percent of networks require between three and six LSMDTs with a further 23% requiring a further two to four LSMDTs.

All costs in this section are based on the MDT meeting every two weeks. For those cancer networks currently without any skin cancer MDTs in place, the estimated annual opportunity costs for attending MDT meetings is estimated to be between £129,134 (± 25%, £96,851 to £161,418) and £258,268 (± 25%, £193,701 to £322,835).

For those cancer networks with partial MDT provision, the annual opportunity cost related to forming one SSMDT would be £49,888 (± 25%, £37,416 to £62,360) and £105,662 (± 25% range, £79,246 to £132,077) for four LSMDTs. The number of teams required per cancer network will vary in line with population; this will require investigation by local commissioners. There will be additional costs relating to the employment costs of a full time equivalent (FTE)

MDT coordinator/data manager for each team of around £22,582 per year. It is anticipated that an additional two to four coordinators will be required per network with an employment cost of £44,470 to £88,941 per year.

Additional staffing and training

It is estimated that between £742,085 and £822,138 would be required per cancer network per year for the employment of additional staff to sustain the increased workload as a result of the Guidance (Table 2). Not all this money will be new, as it is likely that the personnel will be existing staff who will train to fulfil such specialist posts through continuing professional development programmes. As with the costs associated with increased MDT provision the cost consequence will not be immediate. There will be an additional training cost of between £24,570 and £98,280 in each of the 31 networks that currently do not have consultants with an expertise in performing Mohs surgery.

Special groups - transplant patients

Transplant patients are one of the groups who receive special consideration in the Guidance. The Guidance recommends that patients are managed by dedicated 'transplant patient skin clinics' either in the transplant centre or in a hospital closer to the patient's home. There are 28 existing transplant units in England and Wales. It is estimated that there would be at least one such clinic established in each cancer network; the exact number will vary according to patient need. The employment costs for the staff involved is likely to be between £4,370 and £17,480 for one weekly clinic per cancer network. The frequency of meetings would vary according to the size of the transplant population. It should be noted that the cost implications relating to special patient groups will vary between cancer networks. Local commissioners need to be aware that treatment of transplant patients with tumours will become progressively more important with the increasing numbers of organ transplants being performed, together with recipients improved life expectancy.

Cancer registries

The Guidance recommended that at least two cancer registries should receive additional funding to undertake full registration of skin cancers. The additional costs associated with this recommendation for one registry are between £35,638 and £54,842 for staff training for the first year, with the same level of annual

recurring costs dependant upon exactly how many additional staff are required. At the cancer network level this would be between £963 and £1,482. In practice it might be that this is an overestimate. This cost is likely to decrease as registries become fully automated.

1. Introduction

The Guidance has been developed to improve the provision of services for people with skin cancer. This economic analysis serves to inform commissioners, trusts and cancer networks of the resource and cost implications of implementing the recommendations in the Manual. The Centre for Economics and Policy in Health at the University of Wales, Bangor has been commissioned to support this process by analysing the potential cost implications.

1.1 Scope

The objectives of this economic analysis are to:

- Identify possible models of implementation, which will vary depending both on the baseline position and on the chosen means of achieving the targets set out in the Guidance
- Identify the key economic issues and cost drivers of Guidance implementation
- Estimate the costs of implementing the Guidance according to the different models identified and, in so doing, provide a structure and methodology that commissioners may use to do their own analysis
- Estimate the cost implications of implementing the Guidance at the cancer network level.

The analysis does not aim to:

- Provide a definitive answer to the cost implications of the Guidance for specific cancer centres or networks but to produce an indication of the scale of costs involved for different models
- Analyse the health outcome consequences of implementing the Guidance
- Estimate the cost-effectiveness of implementing the Guidance recommendations.

2. Process and Methods

2.1 Integration of economic review with the cancer service guidance

The research into the cost implications of the Guidance was developed in parallel with the production of the guidance on *Improving Outcomes for people with Skin Tumours including Melanoma*. One or more of the authors attended the GDG meetings, to gain a full understanding of the Guidance as it developed.

2.2 Literature and data searching

Literature searches were carried out by the National Collaborating Centre for Cancer (NCC-C) information specialists and the health economics team at Bangor. Searches were conducted in order to identify any existing costing exercises, audits of cancer activity, cost of illness studies or models of treatment pathways. Literature was screened for economic content and any emerging economic literature was referred to the health economics team for appraisal.

In addition to the specific research questions raised by the GDG, searches were conducted of the economic literature relating to:

- general issues of skin cancer, and
- specific issues relating to the key recommendations of the guidance.

The databases searched were MEDLINE, CINAHL, NHS EED, HTA and DARE. No filters were used to restrict searches; however limitations to the searches included

- studies in English
- publicly funded health services, i.e. similar systems to the NHS
- publications after 1990.

Unpublished data were obtained as a result of direct contact with members of the GDG, other expert clinicians, finance directors from cancer centres and trusts, as well as PCTs in England and LHBs in Wales, and GPwSI in dermatology.

2.3 Costs*

Procedural cost data were obtained using Healthcare Resource Group (HRG) costs from Payment by Results[1]. HRG costs are produced by every trust in England and Wales, using a very detailed method which costs all elements of patients' care including theatre time, laboratory tests, pathology tests, minutes of nursing time, minutes of consultant time, physiotherapy, X-rays, ultrasound, pharmacy and overheads (administration, heating etc.)[1]. Data were available for inpatient elective and non-elective cases, as well as day cases. Where HRG costs were not available, financial managers at NHS trusts or PCT/LHBs were consulted.

Staff salaries were based on Agenda for Change banding for 2005/06[2]. For each professional grade, either a spine point or mid-point was chosen, upon which

*A costing statement was produced in 2010 to support the partial update of the 2006 NICE guidance 'Improving outcomes for people with skin tumours including melanoma' in relation to the management of low-risk basal cell carcinomas in the community. The guidance update and costing statement are available from www.nice.org.uk/CSGSTIM

20% employment on-costs were added (plus a London weighting where appropriate). In addition, sessional rates for GPs were obtained from PCTs and LHBs. Where calculations were based on hourly rates, salary and on-costs, leave and sickness were taken into account by assuming a 42 week year[3]. Further advice on calculating staffing costs was provided by the payroll managers of three NHS trusts.

The impact of the Working Time Directive is not clear at this time, and has not been taken into account. However it will need to be considered by commissioners, as will Agenda for Change as it becomes fully implemented across England and Wales[4].

There is very little recent published costing data for skin cancer services relating to the UK. This evidence review reports those studies that were identified in the literature review.

2.4 Discussions with clinicians and other healthcare professionals

Advice from members of the GDG was sought to ensure that appropriate assumptions were made for future activity, to identify data sources and to assist in the interpretation of data. In addition, doctors and finance managers from individual trusts, PCTs and LHBs were contacted to discuss resource implications of various aspects of the Guidance. Further details are included in the relevant sections of this report. Several CNS and MDT coordinators were also contacted to discuss their roles in MDTs and in patient-centred care. Information and advice was sought from the Department of Health (DH), cancer networks and Royal Colleges concerning the current workforce.

2.5 Identification of key cost issues

The guidance development process, GDG discussions and a formal survey of GDG members identified and prioritised the key cost issues according to their potential budgetary impact. A proforma was produced to collate information on the key economic issues to be included, and the extent to which literature was available for key questions relating to this Guidance.

2.6 Cost analysis

For each of the key issues identified, an estimate of the national and local resource implications has been made wherever possible. The approach adopted for each issue is detailed in the relevant section of this report.

The costs for each cancer network will vary depending on population base, health service facilities, staffing levels and local patient activity. Estimates were based on broad working assumptions concerning future staffing configurations. Commissioners and trusts will need to make further considerations of staffing levels based on their local situation.

2.7 Sensitivity analysis

When estimating costs, where appropriate, a range of ± 25% was chosen to reflect uncertainty in the estimate. For consistency, it seemed important to use the same method to consider uncertainty throughout the document rather than a variety of different solutions relevant to each section. There is uncertainty in our estimates, for example, in existing configurations, frequency of MDT meetings and in current and future staffing levels. In addition there may be cost savings as a result of the Guidance that are not possible to quantify at this time.

3. Clinicians working in the community

The Guidance states that some groups of well-defined patients could be seen by a GPwSI in dermatology in primary care.

> *"In some areas, there may suitably trained doctors who work in specialist hospital departments, who would wish to see and treat patients with precancerous skin lesions and low risk BCCs in the community. The need for community skin cancer clinics will vary according to the expertise available and ease of access to local hospital departments – they may well be more appropriate in rural areas than in urban areas.*
>
> *Depending on local circumstance, community skin cancer clinics could be based in GPs' surgeries, community hospitals or diagnostic and treatment centres where these exist. Patients could be referred to these clinics by local GPs or members of the LSMDT/SSMDT".*
>
> (Section on 'Clinicians working in the community')

Currently, the place of diagnosis and of treatment for patients with non-melanoma skin cancer (NMSC) varies across the country. Some patients are referred to secondary care to be diagnosed and treated by a consultant dermatologist, some patients are referred to a GPwSI in dermatology in their practice or local area, whilst others have had an initial biopsy taken by their own GP. The Guidance seeks to ensure that all patients with suspicious lesions are seen by appropriately trained doctors, some of whom may be primary care practitioners.

National initiatives such as Action on Dermatology[5] were intended to improve waiting times for dermatology appointments and to "streamline patient care". The plan set a target that by 2004 there would be 1000 GPwSIs taking referrals from other GPs and dermatology was one of the four specialities included. Fifteen pilot sites for GPwSI in dermatology were established in England and more have been developed since. A good practice guide was produced in 2003[5]. These GPwSIs have been seeing increasing numbers of patients with a variety of conditions either in primary care in their own surgeries, or in specialist centres or secondary care out-patient (OP) departments.

In order to obtain evidence on the activity and costs of GPwSIs in dermatology

and to establish the breadth of service offered and the associated costs, enquiries were made to the GDG and information was sought from the DH website and from academic literature. No cost-effectiveness research has yet been completed comparing GPwSI services in primary care with traditional secondary care OP services with a consultant dermatologist. There are two NHS Service Delivery and Organisation (SDO) trials currently underway into the cost-effectiveness of GPwSI services[6,7] and both are expected to report by the end of 2005. Abstracts are included in Appendix A of this report.

3.1 GPwSI activity

In order to obtain cost data to inform the economic implications of the Guidance a survey was conducted. Action on Dermatology[5] provided initial information concerning 15 pilot sites in England where GPwSI clinics had been established. The National Primary and Care Trust (NatPACT)[8] coordinated a database of GPwSI activity until 2004, but this has since been discontinued; the database was not audited. All 20 PCTs listed in the NatPACT database as having GPwSI clinics/practices active in 2002 from 3 regions of England were contacted. There were 85 PCTs in the 3 regions. At the time not all regions had established these services. The survey was conducted between June and August 2004. It is not possible to give the sample as a proportion of all GPwSIs services as the database contained out of date information and was in the process of being up-dated. Referral criteria, activity and cost data were requested. In addition to contacting GPwSI services listed in the NatPACT database, direct contacts were made with GPwSIs. The results of this survey are reported below.

3.1.1 Models of service delivery

The models of GPwSI service delivery vary, but are broadly:

- GPwSIs in their own surgery taking referrals from either GPs in their own practice or across one or two PCTs/LHBs
- a specialist GPwSI centre or walk-in centre
- GPwSI in an OP clinic in secondary care.

Most of the services on which information was gathered are provided within primary care facilities, and all but one led by a GPwSI. The exception is led by a consultant dermatologist and the GPwSI assisted the dermatologist. In one

example, all minor surgery is performed by a general surgeon employed by the local PCT. In most other practices the surgery is performed by the GPwSI and occasionally by a CNS.

Patients are referred from GPs within their own practices or by GPs in neighbouring practices. The numbers of GPwSIs practicing within each PCT/LHB varied between one and seven.

3.1.2 Referral criteria

There is variation in the referral criteria, including:

- No specific criteria - GP discretion to refer to acute service or a GPwSI
- Lumps, bumps, pigmented lesions (excluding 2 week waits)
- All referrals including 2 week waits
- NMSC only
- Specified diseases e.g. solar keratoses, seborrhoeic keratoses, BCC, SCC, Bowens disease, suspicious pigmented lesions, any other undiagnosed suspicious lesion requiring urgent opinion, rash, psoriasis and eczema.

3.1.3 GPwSI service costs

The robustness of the costing information varied between PCTs/LHBs. Not all had prepared business plans or had conducted cost assessments or evaluations. Some were unable to provide costs in any greater detail than the sessional costs paid to GPs; others were able to include consumables and in some cases were able to give a full breakdown that included costs relating to clinical governance and medical liability insurance, as well as information technology (IT) systems. However, where patients were seen in walk-in centres or GPwSI clinics, it was not possible to estimate costs for one disease-specific patient group. In view of the variation it is only possible to present a cost description of the various service models, although an overview is presented in Appendix A and Table 3.1

Although there was uniformity in the length of each session (3.5 hours) and the number of sessions per year (42), there was no uniformity of payment per session. The GP annual sessional rate ranged from £5,377 (which excludes any

provision for locum cover) to £8,500, (mean was £7,375). This rate is likely to increase to £9,290 per year for 44 sessions in 2005/06. The upper annual rate paid to GPwSIs in our survey was £12,000 for 120 sessions. Some GPwSIs were paid per session rather than per annum and in those cases the range was between £170 and £190 depending upon GP experience, with the most experienced being employed on consultant rates.

3.1.4 GPwSIs in their own surgery

There were two examples of service delivery in the survey:

- The first example involved seven GPwSI in three neighbouring LHBs taking referrals from GPs in the area for patients with NMSC for excision. Patients were seen during the usual working day and GPs were contracted to see 150 patients each per year at £100 per patient. The annual cost of the service was £105,000 (1050 excisions). The costs were inclusive of GPwSI, nurse and receptionist salaries and consumables (gloves, sutures, local anaesthetic and disposables). A GPwSI reported that between three and six patients a month did not have NMSC but that excisions were still performed in line with patients request or expectation, even though no fees would be payable for these additional patients.

- In the second example, one GPwSI was contracted to conduct three sessions a week, two in primary care (including one for minor surgery) and one session per week in secondary care. Referrals were from within the practice and, in addition, patients were referred from secondary care for treatment in the community. Around 700 patients were seen each year at a cost of £16,131 per year; £23.04 per patient. This payment covers the GPwSI sessional rates only with no additional payment for locum cover for the practice.

3.1.5 GPwSIs in a specialist centre

There were four examples in this group and again the costs are not directly comparable as the elements included vary. Three had specific referral criteria for NMSC and other skin conditions, while the fourth left the decision to the referring GP, with the option of being referred to a GPwSI or secondary care consultant. Not all PCTs and LHBs were able to give details of costs.

- In the first example, two salaried full-time GPwSIs conduct 12 sessions per week, three of which are in a neighbouring PCT. The service is supported by three nurses (1.5 FTE Grade D, 0.5 FTE grade B and 1.0 FTE nursing assistant). The reported annual cost is £424,000. However this includes the cost of a walk-in minor injury service which could not be separated. This example is included for information purposes only and not included in any cost analysis. The skin service can diagnose and treat pre-malignant lesions. High-risk lesions are referred to secondary care. The service also takes referrals for moderate inflammatory skin conditions. Annual activity for 2003-04 was 902 referrals from local GP practices.

- In the second example, the GPwSI service has referrals for all patients who would normally be referred to secondary care but excludes those patients with malignant melanoma (MM) and squamous cell carcinoma (SCC) patients that need to be seen within two weeks or basal cell carcinomas) (BCCs) on the face and ears. There are two GPwSIs conducting two sessions a week each, supported by one FTE nurse. The service saw 752 patients in 2003/04; patient numbers were limited due to a clinical trial being conducted at the time of our enquiries. The total annual cost of the service is £93,000 resulting in a mean cost per patient of £123.67.

- The third example of a GPwSI service involves five GPwSIs contracted to provide eight sessions per week, including two for minor surgery. In addition there were two nurse-led cryotherapy sessions per week. The GPwSIs cover a weekly Rapid Access Clinic in secondary care on a rotational basis together with one consultant. Annually, around 4,100 patients are seen, 2,100 new and 2,000 follow-ups, with between 550 and 600 for minor surgery. Annual costs for the GPwSI service are £178,000 with a mean cost per patient £43.41. This cost is inclusive of regular tutorials for the GPwSIs.

- The final example is of two GPwSIs each being paid an annual fee of £7,500 to deliver two sessions a week for 42 weeks. This service treated 541 dermatology patients in 2003/04 with a mean cost per patient of £27.73. At the time of enquiry this service was in a pilot phase and no

detailed costs had been calculated. There were no specific referral criteria. The service is delivered in a specialist GPwSI centre. It was reported that the sessional rate will rise to £9,290 for 2005-06.

3.1.6 GPwSI service in secondary care

There were two examples in this group.

- In the first example three GPwSIs are contracted on a rotational basis to cover 120 sessions per year in secondary care (2.3 per week). Referrals to the clinic include NMSC as well as other inflammatory skin conditions. The patient activity is around 1,200 patients per year, half of whom are new patients. A breakdown of costs was available, and includes GP and nurse time, administration and consumables. The annual cost is £51,420 with a mean cost per patient of £42.85; the GPwSI sessional rate in this example was £36,000 for 120 sessions between 3 GPwSIs.

- The second example contracts three GPwSIs to each provide one session per week with the consultant dermatologist (session rate is £7,991). The service, which costs £30,940 per year, sees 1,836 patients at a mean cost per patient of £16.85. The costs include educational support to local GPs.

3.1.7 Consultant-led service in primary care

- There was one example of a consultant-led service in the survey. Referrals included patients with NMSC and suspicious pigmented lesions, as well as patients with inflammatory skin conditions. A GPwSI and a CNS supported the consultant. There were two sessions per week in four surgeries on a rotational basis. Nurse-led clinics are also conducted in this service. The service costs £98,000 per year, but this cost has not been itemised. In total 2093 patients were seen in 2003/04 with a mean cost per patient of £46.82.

3.1.8 General surgeon in primary care

- In this example, a general surgeon is contracted for one session per month to perform excisions for two GPwSIs in primary care. The excisions included NMSC, moles, warts, skin tags, and other lesions but excluded lesions on the head and neck or below the torso. The GPwSIs each conduct two or three excisions a week, and the general surgeon is

contracted to do the remainder. Around 312 excisions per year were performed at an annual sessional cost of £39,000 (£125 per patient). The cost is inclusive of surgeon and nurse time and administration.

3.2 Costs of OP appointments in secondary care

The national average unit cost[1] for a patient seeing a dermatologist in secondary care is £95 for a first appointment (range £74 to £185). The average unit cost of a follow-up appointment is £61 (range £49 to £180). The mean cost for first attendance and follow-up is £78.

3.3 Cost of non-consultant career grade sessions

The pay and conditions of non-consultant career grade (NCCG) doctors is currently under review by the DH. The sessional rates paid to these doctors vary according to the doctors' grade, for example a staff grade is likely to be paid £59 per session with £108 per session for an associate specialist[9]. The annual sessional rate for a hospital practitioner varies from a minimum of £4,119 to a maximum of £5,550 for 44 sessions[2] (£94 to £126 per session).

3.4 Cost implications of community services

The survey demonstrates that there are various service provision options within GPwSI service delivery. The variation in service and costing methods does not allow any direct cost comparison. In the absence of any published cost-effectiveness studies, these costs have been presented for information concerning the costs of existing services; the Guidance is not seeking to increase service provision. This is a decision for local commissioners.

Three cost scenarios are presented for cancer networks who might consider increasing or introducing a GPwSI service. The first details a comprehensive costing that includes staff time, administration, consumables and training; the second details the sessional rates paid to GPwSIs and the third sessional rates paid to hospital practitioners, as described above and in Table 3.1.

3.4.1 Costs based on GPwSI inclusive costs

Given the variations between services cited above, our survey indicates that the annual inclusive cost of the GPwSI services, in the GPs own surgeries or in GPwSI centres, is around £71,237 per PCT/LHB. This is based on the mean of those services that gave full costs; £105,000 (three LHB areas served), £93,000,

£178,000 and £51,420.

The following calculations are based on the mean number of PCT/LHBs per cancer network of 8.78; (303 PCTs in England, 22 LHBs in Wales and 37 cancer networks in England and Wales). If there were to be one GPwSI service per PCT/LHB per network, the estimated annual costs of the service would be around £625,727 per network (± 25% range, £469,296 to £782,159). However, it may that in rural areas, GPwSI services would be shared across more than one PCT/LHB, as was the case in the first example cited.

3.4.2 Costs per network based on sessional fees paid to GPwSIs and NCCGs

The survey indicated that the GPwSI sessional rates for 2005/06, inclusive of locum cover, would be £9,290 per annum for 44 sessions. The top grade hospital practitioner rate is £5,550, again for 44 sessions; payments to other grades of NCCG doctors will vary around these figures. The mean number of sessions per week in our survey, extrapolated to a network level would be around 30 sessions per week. For a network to deliver 30 sessions a week for 52 weeks of the year the annual cost would be around £329,373 [£9,290*52*30/44]; (±25% range £247,030 to £411,716). The same calculation for a hospital practitioner rate would be £196,773 [£5,550*52*30/44]; (±25% range £147,580 to £245,966). (The salary plus on-costs for associate specialists, with allowance for holidays, sickness and training, for the same number of sessions is £218,047). Cost calculations appear in Table 3.1.

For the service to be at a level of 20 GPwSIs sessions a week in each network per year the cost would be £219,582 and for 10 GPwSI sessions per week the cost would be £109,791 per network per year.

The same service for a doctor paid on a hospital practitioner rate will vary between £65,591 and £131,182. These cost estimates, based on sessional rates, do not include consumables or training costs.

Table 3.1 Estimated annual costs per network to provide GPwSI services in each PCT/LHB.

Service models for costing	Estimated annual cost (£) (52 weeks cover)	Sensitivity analysis (£)	
		-25%	+ 25%
GPWSI service cost inclusive of staff and consumables (30 sessions)	625,727	469,296	782,159
GPwSI sessional fees			
10 sessions/network/week	109,791	82,343	137,239
20 sessions/network/week	219,582	164,686	274,477
30 sessions/network/week	329,373	247,030	411,716
Non-consultant career grade doctor sessional fees (Hospital practitioner)			
10 sessions/network/week	65,591	49,193	81,989
20 sessions/network/week	131,182	98,386	163,977
30 sessions/network/week	196,773	147,580	245,966

3.5 Discussion

There is uncertainty in the estimates. The Guidance recommends that community clinicians should have to be a GPwSI or non-career-grade doctor employed by the hospital Trust. It also worth emphasising that the costs have been presented for information purposes and it is for local commissioners to investigate whether a GPwSI or non-career-grade doctor would enhance their existing services. The cost impact would vary at a local level in line with the type of service configuration adopted and the existing service provided.

During the Action on Dermatology[5] pilot, locum payments were made to the GP practice where the GPwSI was based, but this practice did not continue in all PCTs at the end of the pilot. In the survey of GPwSI services undertaken to inform this review it was reported that a locum was not always employed because the sessional rate was not sufficient to cover a locum. This resulted in an increased workload for the other GPs and has resulted in some GPwSIs withdrawing from the PCT-wide service to see only the patients from within their own practice. A more recent survey of GPwSIs would indicate that the payments made to GPwSIs continue to vary widely[9].

The new GP contract and the NCCG review will have an impact on service delivery by doctors working in the community, but it is not possible to estimate at this time what the exact impact will be. The payments to GPwSIs would reflect the fact that they are self employed and any payments to NCCGs employed by the Trust would have additional 20% on-costs. It is for commissioners to investigate the cost effectiveness of the options when the evidence becomes available late in 2005. It may be that in areas where there is a shortage of dermatologists, a community service may offer a solution by releasing clinic time in secondary care. Training for GPwSIs and CNS will be discussed in Section 5 of this report.

The cost of the community service would not necessarily require additional funding in the cancer network as it represents a potential shift of resources from secondary to primary care. For example, using data from the NHS Reference Costs[1] it is estimated that around £349,688 (± 25% range, £262,267 to £437,111) per network per year is required to fund OP appointments with a consultant for the number of skin biopsies performed in out-patient clinics, excluding

microscopically controlled excision and procedures involving repair. This cost is based on the product of the annual number of biopsies conducted in secondary care for 2004 as recorded in the NHS Reference Costs (165,878)[1], and the mean cost of an appointment with a consultant (£78), divided by the number of cancer networks in England and Wales (37).

If all cancer networks were to refer significant numbers of patients with suspected precancerous lesions or low risk BCCs to GPwSIs or other doctors working in the community, there would be a consequent reduction in funds to secondary care as a result of the changes in patient flows. It is unlikely that this will happen as the majority of patients with suspicious skin lesions and particularly all of those with suspicious pigmented lesions, will continue to be referred to secondary care. However, it might be the case that HRG costs will need to be reassessed in view of the possible changing case mix referred to secondary care. In some areas the more straightforward excisions could be concentrated in primary care with the more high risk and complex cases referred to secondary care. There would then be a potential impact for secondary care if there were a reduced flow of funding resulting from Payment by Results. If this occurred there would then be a need to secure continuity of funding for the secondary care sector to preserve treatment for complex cases.

In the absence of any robust evidence on comparative effectiveness, detailed in Chapter Three of the Evidence Review, it is not possible to determine the cost-effectiveness of GPwSI services in comparison to care provided by a hospital outpatient clinic. Two clinical trials comparing the effectiveness, cost-effectiveness, accessibility and acceptability of a primary care dermatology service and the usual hospital outpatient care are currently underway but will not report until the end of 2005 (details in Appendix A). The costs of existing services presented show the variation in service delivery, sessional rates paid and costing methods. It was not possible to calculate comparisons in cost between the models of GPwSI or between primary care services and those of secondary care. The costs are presented for information, and commissioners should undertake further work at a network level, following the outcome of the clinical trials.

The Guidance states that any doctor who treats skin cancer patients in the community should be a member of a local skin cancer MDT (LSMST) or specialist skin cancer MDT (SSMDT). This will be considered in the next section.

4. Skin cancer multidisciplinary teams

The Guidance states that at a cancer network level, there need to be different degrees of specialisation to deal with different types and stages of cancer. Commissioners should establish two levels of MDTs for the management of skin tumours, namely:

- Local skin cancer MDTs (LSMDTs) in cancer units at district general hospitals
- Specialist skin cancer MDTs (SSMDTs) based in larger hospitals, usually cancer centres, plastic surgery centres or other specialist tertiary services of relevance to skin cancer, with appropriate non-surgical oncology support.

The Guidance acknowledges that substantial changes in working practices may be required to create the services described. It is also recognised that a period of transition will be required before the new pattern of service provision is established.

The number of MDTs across the UK has been increasing since the CHI/Audit Commission Report 2001[10] which found that just 30% of the 22 cancer networks surveyed had skin cancer MDTs that met regularly. Information from the GDG has indicated that this situation has improved since this audit was undertaken and networks have been consulted to confirm current levels of MDT working.

4.1 Structure of MDTs

Factors impacting on the cost of developing fully functioning MDTs within a cancer network include:

- the number of teams needed to serve the network and the configuration of MDTs within the network (for instance, a combined LSMDT and SSMDT or one of either a LSMDT or SSMDT)
- the type, number and location of staff involved in MDT meetings
- the frequency of meetings
- the availability of teleconferencing facilities.

4.1.1 Configuration of MDTs

Due to the diversity of the geographical distribution of hospitals and existing working arrangements between hospitals within networks, the possible patterns of MDT configuration within a network are extensive. The Guidance states that:

- LSMDTs should serve a minimum population of 200,000 (3-6 per network) and meet at least fortnightly and,
- SSMDTs should be established in large hospitals usually cancer centres, plastic surgery centres or other specialist tertiary services of relevance to skin cancer and provide a service for a minimum population of 750,000 population (1-2 per network) and meet at least fortnightly.

4.2 Teleconferencing facilities

The Guidance recognises that video conferencing and teleconferencing could facilitate MDT meetings especially in geographically dispersed areas and where time is a severe constraint.

Additional video conferencing equipment may be required in some PCTs/LHBs and hospitals with shared care arrangements to facilitate MDT working. The cost of video conferencing for a cancer network will vary according to the type of system specified and the number of sites involved. The cost of a video conferencing system with high-quality image transfer capability would be around £15,000 (£18,000 inclusive of VAT and delivery) per centre[11]; comprising a mobile video conferencing unit, two plasma screens (for added functionality), a visual presenter (document camera) for high magnification requirements, installation, software and a three year maintenance contract.

National initiatives[12,13] are in place to ensure that electronic patient recording systems, such as Picture Archiving Communication System (PACS), are installed throughout England and Wales. Where this is not yet in place, additional IT equipment may be required. Local commissioners will need to take such issues into account, as well as costs relating to line rentals which vary considerably between NHS trusts.

Some GPs will have access to teleconferencing facilities in their surgeries as a result of local initiatives, while others may need to travel. Where possible the timing of meetings to coincide with clinic days could minimise this.

It is possible, when teleconferencing is used for MDT meetings, that the team coordinator will need additional preparation time to ensure that all slides, and copies of papers required in the meetings are available and distributed in time.

Recurrent annual costs will vary considerably between networks depending on the number and duration of meetings, the number of sites involved in each meeting and the line packages negotiated with suppliers.

Any travel expenses would be reduced if teleconferencing facilities were used. Separate calculations would need to be undertaken at a local level to ascertain costs as they are dependent upon distances travelled and local agreements with the telecom supplier.

4.3 Cost of MDT meetings

It is assumed that extra resources will need to be made available to enable staff to attend MDT meetings. Meeting costs are derived by estimating the time spent attending meetings by different staff multiplied by their hourly rate (salary and on-costs). Although the norm has been to conduct MDTs out of normal working hours[9] the costs calculated here are based on MDTs being conducted during paid hours of work. The Guidance formally places MDT activity within programmed activities. The costs do not include the cost of time spent by extended team members in MDT meetings. The cost of travelling and parking has not been taken into account. There will be variation between networks concerning the additional costs associated with histopathology. Some MDT coordinators ensure histopathology reports are all present in the notes, while for other MDTs there will be an additional cost for the pathology department. There will also be additional time required by biomedical scientists and medical laboratory assistants in preparing the pathology reports that have not been costed. The costs cited below represent opportunity costs as the staff members involved in MDTs should already be employed.

4.3.1. LSMDT membership

For the purposes of cost analysis it is assumed that the following members attend all LSMDT meetings:

- Two dermatologists with a major interest in skin cancer, one of whom would be the designated lead clinician

- Skin cancer CNS
- A histopathologist
- Primary care accredited practitioners, trust clinical assistants and associate specialists, attending a minimum of four MDT meetings per year
- Surgeon with a designated interest in skin cancer surgery
- Team coordinator/secretary/data manager.

4.3.2 Staff cost of LSMDT meetings

The main cost of MDT meetings is the employment costs of the staff. The calculation assumes that dedicated time would be allocated for MDT meetings, and that it would involve all members of the team for a meeting duration of two hours. Advice was sought from the GDG about the preparation time required by members of the MDT. Additional preparation time of one hour has been included for the lead consultant, three hours for the histopathologist and six hours for the coordinator. A calculation has been included for minimum attendance (51%) and optimal attendance (80%) at meetings for all members apart from the coordinator. The coordinator would attend all meetings. GPwSIs are expected to attend at least four LSMDT meetings per year, and if there was a single GPwSI in the team then s/he would be expected to be present at 51% of meetings; details and the costs are outlined in Table 4.1.

Table 4.1 Estimated employment costs of LSMDT meetings based on a 2 hour meeting

LSMDT members (as Guidance)	**Hourly rate** (£)	**Preparation time** (hrs)	**Minimum attendance per meeting**	**Cost of minimum attendance [1](£)**	**Cost of optimal attendance 80% [1](£)**	**Cost of full attendance [1](£)**
Lead clinician	62.40	1	0.51	95	150	187
Consultant dermatologist	62.40	0	0.51	64	100	125
Specialist skin cancer nurse Band 7 pt 30-35	23.90	0	0.51	24	38	48
Histopathologist	62.40	3	0.51	159	250	312
GPwSI (Associate specialist Grade 10 salary)	52.33	0	0.15	16	84	105
Surgeon	62.40	0	0.51	64	100	125
Oncologist (As local need requires – cost not included)		-	-		-	-
Team Coordinator Band 4 Pt 16	14.34	6	1	115	115	115
Staff cost per meeting				**537**	**836**	**1,016**
Annual cost for fortnightly meetings				**13,954**	**21,736**	**26,415**
Annual cost of fortnightly meetings if 3 LSMDTs per network				**41,861**	**65,209**	**79,246**
Annual cost of fortnightly meetings if 6 LSMDTs per network				**83,723**	**130,417**	**158,493**

1 Calculations rounded to the nearest £; meeting cost estimates include preparation time

The Guidance recommends that LSMDTs should serve populations in excess of 200,000. For a network of 1.5 million it is assumed that there will be between 3 and 6 such teams. The estimated annual cost for one LSMDT meeting when each member attends all meetings is £26,415 allowing some time for preparation. However, with the exception of the MDT coordinator, members are only obliged to attend 51% of the meetings and the GPwSI only four meetings per year (15%); the annual costs related to minimum attendance are £13,954. The estimated annual costs for three LSMDTs per network meeting fortnightly is estimated to be between £41,861 for minimum attendance and £79,246 for full

attendance. For a network with six LSMDTs the costs would be between £83,723 and £158,493. For a network with no GPwSIs, the costs would be lower although there may be a need for an additional consultant or staff grade doctors. There will be variation within and between networks that would require further investigation at a local level.

4.3.3 SSMDT membership

- Two dermatologists with a major interest in skin cancer
- Two surgeons with a designated interest in skin cancer surgery
- Two histopathologists and/or a specialist dermatopathologists
- Diagnostic radiologist
- Clinical oncologist
- Medical oncologist
- CNS
- Palliative care specialist and access to pain management
- Team coordinator/secretary/data manager

4.3.3.1 Staff cost of SSMDT meetings

As with the LSMDT, the main cost of SSMDT meetings are the employment costs of the staff attending the meetings. This calculation assumes that dedicated time would be allocated for MDT meetings and that it would involve all members for a duration of two hours. Advice was sought from the GDG about the preparation time required by members of the MDT. Additional preparation time of one hour has been included for the lead clinician and radiologist, three hours for the histopathologist and 12 hours for the coordinator. A calculation has been included for minimum attendance (51%) and optimal attendance (80%) at meetings. The costs are outlined in Table 4.2.

Table 4.2 Estimated employment costs of SSMDT meeting based on a 2 hour meeting

SSMDT members (as Guidance)	**Hourly rate** (£)	**Preparation time** (hr)	**Cost of minimum attendance** 51%[1] (£)	**Cost of optimal attendance** 80%[1] (£)	**Cost of full attendance** [1] (£)
1 Lead clinician	62.40	1	95	150	187
1 Consultant dermatologist	62.40	0	64	100	125
Surgeons (x2)	62.40	0	127	200	250
Histopathologist (x2)	62.40	3	318	499	624
Consultant radiologist	62.40	1	95	150	187
Clinical oncologist	62.40	0	64	100	125
Medical Oncologist	62.40	0	64	100	125
Specialist skin cancer nurse Band 7 Pt 30-35	23.90	0	24	38	48
Palliative care specialist (assume Nurse specialist Band 7 Pt 30-35)	23.90	0	24	38	48
Team Coordinator (+3 hours preparation time)	14.34	12	201	201	201
Staff cost per meeting			**1,077**	**1,575**	**1,919**
Annual cost of 1 fortnightly SSMDT meeting per cancer network			**28,000**	**40,954**	**49,888**
Annual cost of 2 fortnightly SSMDT meeting per cancer network; or 1 per week in 1 network			**56,001**	**81,908**	**99,776**

1 Calculations rounded to the nearest £; meeting cost estimates include preparation time

It is assumed that there will be between 1-2 such SSMDTs per network and therefore the estimated annual cost for one SSMDT meeting per network is between £28,000 for minimum attendance and £49,888 for full attendance. For two SSMDTs per network, the costs would be between £56,001 and £99,776.

4.4 Current MDT activity

The 37 cancer networks in England and Wales were contacted to establish current patterns of MDT working. Twenty-six networks responded (70%). Four

respondents were unable to provide any information because the network was not sufficiently established and one was unwilling to give any information.

The current patterns of MDT membership and meeting frequency vary between networks. Not all the existing MDTs correspond to local and specialist teams. In some cases respondents indicated that particular teams would function as a SSMDT. When this was not the case, the number of consultants in the MDT was used as a guide; four consultants in the local teams and eight for specialist teams.

Based on the data from 22 cancer networks, 14 networks reported having MDTs that broadly function as SSMDTs and six networks reported having between three and four MDTs that broadly function as LSMDTs. Four networks had one LSMDT and the remainder had none (Table 4.3). Many respondents commented that they were awaiting publication of the Guidance before establishing or expanding their teams.

Table 4.3. Number of MDTs per network in England and Wales (based on 22 responses from 37 networks)

MDTs	Number of networks that have no MDTs (%)	Number of networks that have 1 or 2 MDTs (%)	Number of networks that have 3-4 MDTs (%)
LSMDT	11 (50%)	5 (23%)	6 (27%)
SSMDT	8 (36%)	14 (64%)	0 (0%)

The meeting frequency was fortnightly,except for three teams that held weekly meetings and four that met monthly. However meeting frequency was not always stated by respondents. Similarly, not all respondents gave membership information and membership varied between networks.

Membership of MDTs that would equate to being SSMDTs was broadly in line with the recommendations in the Guidance, except that only one team included a palliative care specialist. Not all teams had either medical and clinical oncologists or radiologists. Four teams had no histopathologists attending, although three of these had pathologists attending; this could reflect differences in terminology. Two teams were without a CNS and only two SSMDTs had two CNS. Four teams had no coordinator. Two teams had a data or audit manager. Some MDTs, both local and specialist, had either associate specialists or SpRs attending.

Four LSMDTs had no coordinator. Two were without a CNS. While two teams had a GPwSI member, two others mentioned that GPwSIs were invited but did not attend. One team had no histopathologist and two reported to have pathologists attending; again this might reflect reporting differences.

4.5 Additional costs of MDT meetings

Assuming the data from the 22 networks is representative of all networks, it is estimated that 36% of all networks require at least one SSMDT. It may be that some networks will need more than one SSMDT depending on population and incidence levels. Fifty percent of networks require 3-6 LSMDTs with a further 23% requiring a further 2-4 LSMDTs. The costs of these scenarios are presented in Table 4.4 together with a sensitivity analysis of ± 25% to reflect uncertainty in the estimate, in particular variation in salary scales and numbers of staff attending. We have assumed full attendance at meetings to enable sufficient resources to be allocated.

Table 4.4 Estimates for additional annual resources per network for MDT meetings

Network requirement	Additional annual costs (£)	Sensitivity analysis -25% (£)	Sensitivity analysis +25%(£)
1 SSMDT	49,888	37,416	62,360
2 LSMDT	52,831	39,623	66,039
4 LSMDT	105,662	79,246	132,077
3 LSMDT and 1 SSMDT	129,134	96,851	161,418
6 LSMDT and 2 SSMDT	258,268	193,701	322,835

4.6 Additional staff requirements

Staffing issues will be significant in some areas. More staff will need to be involved, with additional time spent in meetings and additional travelling requirements, in order that MDTs can function in accordance with the Guidance. Shortages of radiologists, histopathologists and oncologists may hinder development of fully functioning MDTs. Therefore, MDT development will need to evolve gradually over a number of years. Our survey indicated that not all teams have a full complement of staff attending and this will need to be considered by local commissioners. If our sample is representative then this would be an additional cost for most networks. Additional staffing as a result of the Guidance will be considered in Section 5.

In order to establish the numbers of coordinators required, telephone interviews were conducted with six coordinators/managers in October 2004. Based on these interviews, 0.5-1 WTE clerical and administration Grade 4 or 5 posts would be required for each MDT where 10-15 cases were discussed; more cases (40-70 were cited) would be included for audit purposes but not discussed. The role of the coordinator includes:

- managing meetings, arranging meetings and minute taking
- collating patient notes
- ensuring notes and histology/pathology are complete
- monitoring the patient pathway, for example, ensuring that appointments are made and non-attenders are contacted
- data entry for local and national databases.

Each team will require a MDT coordinator/data manager. The role of MDT coordinator is not necessarily full-time at a centre/unit level, however it is likely to be so if the job description includes audit. Coordination between LSMDT and SSMDTs would also be required to ensure continuity of patient care both within and between skin cancer teams and with MDTs for other tumour sites such as head and neck cancer, ophthalmic cancer, soft tissue sarcomas, childhood malignancies, haematological cancers and gynaecological cancers, as well as the local palliative care team.

There is an additional requirement in the Guidance for the local MDT to have responsibility for auditing the occurrence of NMSC (including BCCs) that have been excised but which have not been discussed at the MDT meetings. This audit is to be presented quarterly. It may be possible to combine the data manager role with that of the coordinator, but this would be a matter for local decision makers. Only two of the MDTs who provided information had a data manager present at MDT meetings. Eight of the MDTs currently operational do not have MDT coordinators.

At present, the annual costs of employing each MDT coordinator/data manager is £22,582 (Agenda for Change point 16). It is anticipated that an additional two to four coordinators will be required per network with an employment cost of £44,470 to £88,941 per year.

4.7 Discussion

The organisation of skin cancer services into MDTs will have significant resource implications in some networks. The cost of service re-configuration for an individual network will vary according to the existing MDT configuration and

staffing levels. This will require further investigation by local commissioners.

The increased time commitment for MDT meetings will have an opportunity cost for all staff members, particularly where there is an existing shortfall in consultant numbers. Without additional staffing there may be a reduction in other consultant activity, particularly while additional staff are being trained. Methods may need to be considered to share neighbouring expertise when there is a shortage of personnel.

Teleconferencing offers the advantage that travel time is eliminated, making more efficient use of scarce specialist staff. If there is no time available for the MDT meeting to be held on the same day as the clinic then teleconferencing may be advantageous.

The cost analysis has explored a limited number of potential variations. Costs would obviously change if teams served a larger or smaller population or were combined in line with local need. The analysis does not take into account the costs of providing facilities, parking or transport costs, and is intended as a guide rather than being definitive.

Additional staff may need to be recruited to allow existing staff the time to attend meetings. Shortages of radiologists, pathologists and oncologists are likely to hinder the development and the ongoing operation of the MDTs. The cost of additional consultants and CNS posts together with their training will be considered in the next section.

4.8 Conclusion

It is anticipated that for those networks not yet having MDTs in place, there will be a cost impact of around £129,134 (± 25% range, £96,851 to £161,418) for three LSMDT and one SSMDT, rising to £258,268 (± 25% range, £193,701 to £322,835) for six LSMDT and two SSMDT.

Indications are that other networks need to expand current MDTs by two to four LSMDTs per network. The costs associated with this would be around £52,831 (± 25%, £39,623 to £66,039) for two LSMDT and £105,667 (± 25%, £79,246 to £132,077) for four LSMDTs.

At SSMDT level, most cancer networks had at least one SSMDT in place and several had two in place. Costs relating to an additional SSMDTs are £49,888 (± 25%, £37,416 to £62,360).

There will be uncertainty in our estimates reflecting variation in staffing levels and actual salaries paid to individuals. Local commissioners will need to consider this further according to their existing patterns of work. Due to existing staff shortages increasing the number of MDTs may not be immediate.

5. Additional staffing and training

Implementation of the Guidance will produce an additional requirement for some key staff in primary and secondary care. An increased level of MDT working and an increased requirement for biopsy and audit will produce a further burden on staff time. In addition the increasing incidence of all types of skin cancer together with the increasing awareness of skin cancer among the general public will cause an increasing demand on services. These services can only be sustained if there are adequate numbers of appropriately trained staff.

The Cancer Group Workforce Team[14] is working to improve the current recruitment and retention issues involved in consultant, nursing and allied health professional (AHP) staffing levels. Initiatives are in place to improve the career progression for radiographers and to provide three histopathology training schools to expedite the training of SHOs/SpRs, as well as piloting extended roles for biomedical scientists[15].

It will be some time before these initiatives start to have an impact on staff numbers. Shortages of specialist radiologists, histopathologists and oncologists will hamper development of specialist MDTs in the short and the long term[15]. It will be difficult for commissioners to recruit staff in line with the Guidance, although this will vary according to the local situation. Methods may need to be considered to share neighbouring expertise when there is a shortage of personnel. The economic impact calculated here is based on the assumption that the staff are available.

The numbers of additional staff detailed here should be regarded as the minimum required as a result of the Guidance. It is likely that there will be an increase in the incidence of skin cancer over the next five years which will be in the order of 10% (see Guidance manual). This needs to be factored in to any network level workforce development plans. Additional staff that may be required as a result of the Guidance are presented in Table 5.1. The data in Table 5.1 and training costs associated with staffing are discussed in the following sub-sections.

5.1 GPwSI training

At present, training for GPwSIs can be gained by working alongside a consultant dermatologist and/or by taking a specific post-graduate qualification. The British

Association of Dermatologists recommends that 100 consultant supervised training sessions per GPwSI are necessary to fulfil all the necessary training[16]. This is in addition to *service provision* time. The estimated cost for 100 training sessions with a consultant would be around £18,900 for consultant time and £21,000 for GPwSI time, inclusive of GP locum costs. The cost of a distance learning post-graduate qualification in dermatology would be in the region of £3,000 per GP[17]. Therefore the non-recurring cost of training each GPwSI would be around £42,900. There would also be the opportunity cost for the consultant. In future, training will have to be undertaken to the accepted level of an accredited course, examples of which will be available in the future and will involve accreditation by all relevant parties including BAD, RCGP, patient groups and the primary care society in dermatology

It is not possible to estimate how many cancer networks will commission GPwSI services. It is estimated that for a network with an average number of PCT/LHBs (8.78 per network) having a service involving three GPwSIs in each PCT/LHB, about 26 GPwSIs would be required.

5.2 Skin cancer CNS training

The British Dermatological Nursing Group recommends courses for nurses who wish to undertake further training to become specialists in dermatology and skin cancer[18]. They are qualified at either first degree or masters level and examples of the services they provide include minor surgery, managing patients with pigmented skin lesions and phototherapy. Some courses are available as distance learning modules. Costs for specialist modules range between £350 - £791 per module[19,20]. For existing staff these costs would be part of annual continual professional development (CPD).

The recent report into the progress of cancer services[15] since the NHS Cancer Plan[21] has indicated that the numbers of cancer CNS has increased but they were unable to state how many there were in total. The British Dermatology Nursing Group do not keep a database of CNS. Enquiries with skin cancer CNSs indicated that there are around 30 in England and six in Wales. The information from the MDT survey of networks supports this finding.

Table 5.1 Additional staffing requirement per cancer network to implement the Guidance

Staff member**	Recommended level by Royal College or similar	Current numbers in England and Wales	Anticipated number required per network	Extra FTE to support Guidance/ network	Additional employment cost (£)
GPwSI		Unknown	3 to 6 (where applicable)	Local decision	(30 sessions = £329,373 ±25% range £247,030 to £411,716)
MDT coordinator		~28[d]	4 to 6	2 to 4	44,470 to 88,941
Skin Cancer CNS	2 per centre[a]	About 30 in England and 6 in Wales[b]	4 to 6 (1 per LSMDT) (Grade G or H)	4 to 5	142,330 to 177,913
Histopathologists		1083 (995 FTE) 123 vacancies*	At least 2	1.75[c]	171,991
Consultant dermatologists (~60% of working time spent on skin cancer)	1 per 85000	445, (378 FTE)* 621 would be needed for 1 per 85000; (shortfall 243)	3 to 6	0.65[d]	63,882
Mohs trained surgeons, usually dermatologists		6 [e]	1 per network	0.84	0[f]
Plastic surgeons (~50% of working time spent on skin cancer)	1 per 100,000[g]	228* Overall shortfall of 372	Any increase in Mohs may increase workload	0.5[c]	49,140
Maxillofacial surgeons (10% to 15% working time on skin cancer)	1 per 180,000-200,000[h]	282* Overall shortfall of 11 to 20[c]	Any increase in Mohs may increase workload	0[d]	0
Radiologists		1901* 143 radiology vacancies	1 per centre	0.89[d]	87,470
Clinical oncologists		1 with a special interest in skin cancer. Overall there are 385*	1 per centre	0.97[c]	95,332
Medical oncologists		216*		0.89[d]	87,470
AHPs, Radiographers Pharmacists			Little impact		
Total additional employment cost per network					**742,085 - 822,138**

*Numbers taken from Department of Health Statistics where possible, see references 22 and 23
** Administrators to support consultants have not been included

[a] Mid Trent cancer network standard for skin cancer
[b] Emails - September 2004 from two skin CNS
[c] Based on calculations from GDG member
[d] Based on estimates from MDT survey
[e] Email from Mohs surgeon October 2004
f Minimum training cost - £761,700
g Royal College of Surgeons
h BAOMS, British Association of Oral and Maxillofacial surgeons

The anticipated number of specialist skin cancer CNS required to implement the recommendations in the Guidance is between four and six per network to ensure that all MDTs have a skin cancer CNS. In geographically diverse networks or those with a high incidence of skin cancer, there would need to be more. This may be particularly the case in networks that have organ transplant units or where there are services in primary care. Information gained from MDTs indicates that few networks have two skin cancer CNS attending MDT meetings.

It is therefore assumed that a further 4 or 5 skin cancer CNS per network would need to be recruited or trained to fulfil the minimum recommended by the Guidance. This estimate does not include provision for community level care. The annual employment cost of a skin cancer CNS is estimated to be £35,580 including on-costs (Agenda for Change Band 7 Point 30-35), therefore the additional salary cost per network would be between £142,330 and £177,913. This would not be all new money. The cost of training has not been included here as it is likely to be an element of existing staff CPD costs.

5.3 Consultants

The guidance recommends that MDTs will require consultant dermatologists, histopathologists, surgeons, radiologists and oncologists to attend fortnightly skin cancer MDT meetings. This is an additional time commitment of a half a session per week or 0.5 Programmed Activity (PA), for consultants who attend both LSMDT and SSMDT i.e. one PA a week. The costs associated with this have been included in the MDT section.

5.3.1 Histopathologists

The Department of Health is currently modernising pathology services. This report recognised that there are currently too few trained pathologists. As a result, three new training schools were established in 2003-04 and by 2006 a further six will be operational[14]. It will take some time for these improvements to have an impact on current shortages.

The increase in MDT working discussed above would increase the workload of histopathologists. The histopathologist on the GDG estimated increased workloads resulting from the Guidance, including local and specialist MDT working (0.5 WTE), double reporting of severely atypical naevi and melanoma (0.25 WTE) and SSMDT mandatory reviews (1.0 WTE). Tertiary referrals will add

to this workload although it is not possible to predict the exact levels. Approximately two-thirds of the additional workload relates to the SSMDT. It is estimated that approximately 1.75 additional consultant histopathologists/ dermatopathologists would be required per network. The additional annual employment costs of the histopathologists will be around £171,991 per network

Secondary and tertiary histopathological review will require a proportional increase in secretarial and laboratory biomedical staff to handle the cases and undertake additional scientific investigative work, as necessary. For each MDT this is likely to be 0.1 FTE medical laboratory assistant, 0.1 FTE secretarial support and additional biomedical scientists which are more difficult to estimate[24]. Further investigation is required at a local level.

5.3.2 Dermatologists

As with histopathologists there is a national shortage of dermatologists and with the increasing incidence in skin cancer there will be an increasing demand on their services. The British Association of Dermatologists states that there should be one dermatologist per 85,000 population. There are currently 445 dermatologists in England and Wales[22]. Using the figure of 52.79 million people in England and Wales[25], there is a shortfall of 243 dermatologists from the recommended level. The GDG estimates that dermatologists currently spend around 60% of their time treating patients with skin cancer. The evidence obtained for this report from 12 cancer networks indicated that:-

- between two and four dermatologists attend MDT meetings in eight cancer networks,
- one dermatologist attends MDT meetings in three networks and
- in one cancer network no dermatologists attend.

It is assumed that this is indicative of insufficient numbers of dermatologists, therefore it is estimated that a further 15 dermatologists are required, 0.65 per network. This estimate is uncertain and further investigation would be required at a local level. The additional cost averaged over the 37 networks is likely to be £63,882.

5.3.3 Mohs surgeons

The Guidance recommends that:

> *"Mohs surgery should be available in each cancer network and only carried out by those who have received training approved by the lead clinician of the skin cancer site-specific network group*." (Initial investigation, diagnosis, staging and management section)

There are currently six consultants trained in Mohs surgery in England and Wales[26]. Training in Mohs surgery can take up to two years. One or two year Fellowship Training Programs are available in the United States under the auspices of the American College of Mohs Micrographic Surgery and Cutaneous Oncology (ACMMSCO). Each fellow would see between 300 and 500 cases per year; 500 for the 12 month program. Each Program trains one fellow per year. Training is also available in Lisbon and in the UK. In the UK dermatologists, or other consultants, can train with an expert in the technique for three months. There is no charge for this training at present.

The employment costs for training of a consultant with seven years experience would be between £24,570 for three months and £98,280 for twelve months. This will be an additional cost in each of the 31 networks that currently do not have consultants with an expertise in performing Mohs surgery. Additional funds would be needed for locum cover for the trainee. However, this would not be an immediate cost as there is a limited number of trainee placements available each year. In addition to the direct cost, there is an opportunity cost for the consultant delivering the training. These costs would be reduced by introducing a 12 month course in the UK.

The introduction of Mohs surgery also has significant cost and staffing implications for histopathology services. As well as laboratory facilities, this includes staffing at both biomedical scientist and consultant histopathology levels. These must be taken into account in the commissioning of a new Mohs surgery service. Detailed costings for the Mohs service, with histopathology, have not been included in the guidance as they are variable depending on the local model of Mohs surgery introduced.

5.3.4 Plastic surgeons and maxillofacial surgeons

There is a current shortfall from the recommended numbers of both plastic surgeons and maxillofacial surgeons (see Table 5.1). Six of the networks reported having one or two plastic surgeons available, another an oculoplastic surgeon and one included a maxillofacial surgeon. This might indicate that half of the networks are without a plastic surgeon. However it is difficult to estimate what the increased demand on these services will be as a result of the Guidance.

5.3.5 Radiologists

As with the other consultant posts there are existing shortages of radiologists in England and Wales. The survey of MDTs indicates that just four networks have a radiologist attending the MDT meetings. It is estimated that a further 0.89 would be required per network.

5.3.6 Clinical and medical oncologists

The survey of MDTs indicates that not all networks have oncologists among the members of the MDT. It is estimated that a further 0.89 medical oncologists would be required per network and 0.97 clinical oncologists, the latter figure having been estimated by a GDG member.

5.4 Cost relating to additional staff

It is estimated that between £742,085 and £822,138 would be required per network for the employment of additional staff to sustain the increased workload as a result of the Guidance. This money will not all be new. It is likely that the personnel will be existing staff who will, through CPD, train to fulfil such specialist posts. As with other aspects of the Guidance the cost consequence will not be immediate. This is primarily as a result of the increased MDT requirement. The estimates that are based on the survey are uncertain. It is not known whether there are existing staff who do not attend or there is no specialist in post. Therefore this should be investigated by commissioners.

6 Special Groups

The Guidance recommends that all special groups of patients with uncommon risk factors or rare cancers should be managed in the context of SSMDTs by clinicians who have an expertise in these conditions. There may be a need for a specific clinic for these patients in supra-network centres or supra-regional units, when these are commissioned. The costs relating to such teams would require further investigation by the commissioners. The Guidance recommends that transplant patients should be seen in a dedicated transplant patient skin clinic.

6.1 Transplant patients

The Guidance recommends that:

> *"Transplant patients who have pre-malignant skin lesions or who have developed a skin cancer should be seen in a dedicated 'transplant patient skin clinic' either in the transplant centre or in a hospital closer to the patient's home according to the choice of the patient.*
>
> *Close links should be established between the transplant centre, local physician and the dermatologist for the management of transplant patients postoperatively".* (Management of special groups section)

As with other aspects of the Guidance the cost implications of this will vary between networks. It is likely that there will be a need for a transplant patient skin clinic to be established in each of the transplant units. There are 28 units in England and Wales where transplants of kidney, liver and heart are performed[27]. In addition, the Guidance makes provision for patients who wish to attend a clinic closer to home. It is estimated that there would be at least one such clinic established in each network, in geographically disperse networks there may need to be more.

It is anticipated that each transplant patient skin clinic would be led by a consultant, include a skin cancer CNS, plus administrative support. The frequency of the clinic sessions will vary depending upon the transplant population; in some networks there might need to be a weekly clinic and in others fortnightly or monthly. The costs are based on the employment costs of one PA per week for the nurse and consultant and two for the administrative support. The cost estimate for this clinic is shown in Table 6.1. There will be local variation dependent upon the salary point of the health professionals.

Table 6.1 Employment costs for a transplant patient skin clinic

Consultant-led clinic	Employment cost for clinics every 4 weeks (£)[a]	Employment cost for clinics every week (£)[a]
Consultant	2,457	9,828
Skin cancer CNS (Band 7 Pt 32)	953	3,811
Administrative support (Band 3/4 Pt 12)	960	3,841
Total per year	**4,370**	**17,480**

[a] Totals rounded to the nearest £

The annual opportunity cost for the transplant patient skin clinics will be between £4,370 and £17,480 depending on the frequency of the clinic.

Local commissioners need to be aware that treatment of transplant patients with tumours will become progressively more important with the increasing numbers of organ transplants being performed, together with recipients improved life expectancy. As a consequence, increased resources will need to be invested in transplant patient skin cancer clinics. The situation will need to be considered and monitored by local commissioners. There will be a particular educational role for skin cancer CNS due to the need for patients to develop skin protection awareness because of their increased propensity to develop SCCs.

7. Cancer registries

The Guidance states that:

> *"It is recommended that one or more cancer registries should receive additional funding to undertake full registration of skin cancers, including the registration of BCCs. Ideally this should include the registries covering the areas with the highest and lowest incidence of skin cancer." (Background section)*

Two cancer registries (the South West Cancer Intelligence Service and the Northern and Yorkshire Cancer Registry and Information Service) have been contacted in order to estimate the economic implications of this recommendation. One registry has a fully automated data collection system and the other uses a manual data entry system.

The automated data collection system records skin cancers from an electronic pathology report. This registry currently records all melanomas, and the first occurrence of SCCs and BCCs. It is in the process of changing to recording all occurrences of NMSC backdated to 2004. Only NMSC cases that have not been sent for pathology risk being missed. All occurrences of BCC and in-situ SCC can be recorded automatically into the database. A quality assessment of consistency of coding showed that there was poorer consistency of coding by pathologists between topography coding and ICD coding for non in-situ SCCs and therefore these will be entered manually. The new system will be operational in 2005. It is anticipated that there is sufficient capacity within current staffing levels and therefore the recording of all skin cancers would not have any cost consequences for this registry.

In a registry where there is manual data entry, additional staffing will be required to implement this recommendation. Current practice is to record all melanomas, all SCCs, the first BCC and the first Bowen's disease lesion (unless a SCC is already recorded). Additional staffing would enable manual input of data from pathology reports and data extraction from case notes for all NMSC. As with the automated system, there has to be a pathology report for recording to be possible.

It is anticipated that one additional registry input assistant and one or two registration coordinators would be required to fully record all NMSCs to the same level as other cancers. The lead-in time would be one year to enable the registration coordinator/s to be fully trained. The training cost would be one year's salary plus on-costs.

The recurring annual employment costs would be between £35,638 for an input assistant and a registration coordinator and £54,842 for two coordinators and one input assistant. Costs are based on Agenda for Change pay rates for 2005/06, Band 2-4, point 7 and point 12, plus 20% employment on-costs. In practice this may be an overestimate.

An alternative model could be introduced where all BCCs were recorded only from pathology. This would provide a basic registration with details of the excision only (i.e. diagnosis date would equal excision date). This would require some additional resource for an input assistant, but no further resource for data collection from coordinators.

It is anticipated that as the registry becomes increasingly automated these costs will reduce. If the data was to be collected from a neighbouring registry with a semi-automated data collection system then the cost implication of this recommendation would be lower.

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Appendix A. Data from GPwSI survey

Table 1 Costs relating to GPwSI services in Dermatology

Clinic	Referral Criteria	No of patients seen per year	No of GPs and FTE	No of sessions per week	Population served	Annual Costs	Mean cost per patient	Comments
GPs in own surgeries								
1	NMSC	1050	7 FTE not known	Patients seen in own surgeries so not possible to express in sessions	Approx 300,000	£105,000 per year Inclusive of consumables - gloves, sutures, local anaesthetic and disposables plus nurse and receptionist time,	£100	For every 12 patients with NMSC there are an additional 3-6 per month who do not have NMSC
2	All dermatology referrals from own surgery plus patients who have been triaged by a consultant who are referred for treatment	700	1 (0.1FTE)	1 session in surgery, 1 minor surgery and 1 dermatology clinic in DGH	128,435	£16,131 (£5,377 paid per session)	£23.04	No locum included in sessional rate. GPwSI also conducts a minor surgery session and a session at the local DGH

Clinic	Referral Criteria	No of patients seen per year	No of GPs and FTE	No of sessions per week	Population served	Annual Costs		Mean cost per patient	Comments
Specialist GPWSI Centre									
3	NMSC and moderate inflammatory skin conditions	900	2 FTE, salaried Primary Care Specialists	8 dermatology, incl. 3 in neighbouring PCT. 6 minor surgery sessions	100,000	**Services**	**Cost in £,000**	Not possible to separate minor surgery from dermatology	Service supported by 2 FTE nurses and 1 FTE nursing assistant. Training offered for practice nurses, school nurses, GP etc Sited in walk-in centre
						Salaries all staff, incl clerical	240		
						Medical equipment /supplies,	165		
						IT system, front desk and clinical systems	20		
						Medical liability insurance	9		
						Training costs* and travel	10		
						Total	**424**		

Clinic	Referral Criteria	No of patients seen per year	No of GPs and FTE	No of sessions per week	Population served	Annual Costs	Mean cost per patient	Comments
4	All patients who would normally be referred to OP, excluding 2 week wait patients,	752 in 2002/3, 458 for GP and 294 for nurse.	2 GP (0.4 FTE) + 1 FTE nurse	4 and 5 nurse-led sessions / week	180,000	£93,000	£123.67	Most common conditions treated – 38% dermatitis/eczema, 10% psoriasis and 7% kerotosis. 47 (N) minor surgeries completed in 02/03 including cryotherapy, punch and excision biopsies, lesion removal.
5	Benign skin lumps and bumps, Bowens, AK, excema, psoriasis, acne, lichen planus, lichen simplex, etc	2100 new, plus 2000 follow-ups	5 GPwSI (0.5 FTE)	10 sessions / week including 2 minor surgery and 2 follow-up nurse led clinics	185,000	£178,000 per annum	£43.41	Malignant skin tumours are referred to secondary care to Rapid Access Clinic involving 1 of 5 GPwSIs on rotational basis, and 1 consultant.
6	No specific referral criteria	541	2 GPs (0.2FTE)	2 session per week	149,000	£15,000	£27.73	Sessional costs only.

Clinic	Referral Criteria	No of patients seen per year	No of GPs and FTE	No of sessions per week	Population served	Annual costs	Mean cost per patient	Comments
GPwSI located in OP clinic								
7	Lumps, lesions, naves, pigmentations, and eczema, acne, rash, etc.	1200. (600 new patients and 600 follow-ups)	3 GPwSIs (0.3 FTE) plus nurse team	2.3 (120 sessions per year)	209,000	Item: Annual cost GPwSI: 36,000 Nurse: 5,040 Admin: 4,320 Liquid nitrogen: 3,060 Other consumables: 3,000 Total: 51,420	£42.85 average cost per patient contact, (cost of new appt 58.80 and follow-up 26.90)	
8	Open referral to see all conditions	1836	3 GPwSI (0.3 FTE) working with the consultants at secondary care	3 sessions per wk	197,000	£30,940, of which £23,973 for GP sessions	£16.85	GPwSI also provides education al support to local GPS

Clinic	Referral Criteria	No of patients seen per year	No of GPs and FTE	No of sessions per week	Population served	Annual costs	Mean cost per patient	Comments
Consultant-led service in primary care								
9	NMSC, suspicious pigmented lesions, any other lesions. Also rash psoriasis, eczema	2093, (1250 first appt and 843 follow-up)	1 consultant dermatologist, 1 GPwSI, with a 2nd due to start in Sept 04 plus specialist nurse	2 clinics per week. at 4 surgeries. GP assists consultant performing biopsies, minor surgery, excisions, cryotherapy.	100,585	£98,000 per annum. Costs administration	£46.82	Nurse led clinics in addition, nurse also performs minor surgery and patch testing.
General surgeon in primary care								
10	Anything for excision minor lumps and bumps, warts, moles, skin tags, anything except 2 week wait patients	312	2 GPwSI plus 1 general surgeon performing most excisions, 1 dermatology nurse.	1 general surgeon session **per month**	192,109	£39000 including surgeon, nurse, admin, excluding consumables	£125	Service in a GP surgery with a under utilised purpose built theatre. Central triage system - nurse triages all patients to appropriate length of appt. Also takes patients off waiting list.

Scientific Summary of the RCT currently underway – taken from http://www.sdo.lshtm.ac.uk/pdf/access_salisbury_scientific.pdf

Evaluation of a Primary Care Dermatology Service

Lead researcher: Dr Chris Salisbury, Division of Primary Health Care, University of Bristol

Aims: To compare the effectiveness, cost-effectiveness, accessibility and acceptability of a Primary Care Dermatology Service. This service is an example of the model, promoted in the NHS Plan, of services provided by GPs with special interests to other GPs across a PCT area.

Design: Randomised controlled trial, comparing the Primary Care Dermatology Service and usual hospital outpatient care.

Setting: The Primary Care Dermatology Service is based in Knowle West Health Park, providing a service to all general practices (n=30) in one PCT area (Bristol and the South West).

Participants: It is not anticipated that all referrals to dermatology outpatients will be suitable to be seen in the Primary Care Dermatology Service. All referral letters to the dermatology service at the Bristol Royal Infirmary from GPs in Bristol South and West area will be assessed by a consultant dermatologist and a GP with special interest. Those with urgent problems or specified serious conditions will be excluded from the trial, although their details will be recorded. The remaining outpatients are potentially eligible for the trial and will be invited to participate. Patients aged under 16 years are excluded.

Intervention: The Primary Care Dermatology Service will be provided by two 'GPs with special interest' in dermatology, and a specialist dermatology nurse. The intention is that the new service will be local and more accessible, with emphasis on patient education and self management than traditional outpatient services.

Outcome measurement: The primary outcomes are disease related quality of life, assessed using the Dermatology Life Quality index (DLQI) and a global measure of patient-perceived improvement in their skin condition, and accessibility (patient views, DNA rates, waiting times). Patient satisfaction is a secondary outcome. Process measures include activities undertaken (advice,

treatments, minor surgical procedures etc), the proportion of patients not suitable for the primary care Dermatology Service but then have to be referred on from there to outpatients. Economic analysis will be an incremental cost effectiveness analysis (if there is improvement in the primary outcome) or cost minimisation analysis if not. Costs will be assessed from a societal perspective with patient and NHS costs identified separately.

Implications of this research: This study will provide evidence to inform Primary Care Trusts in deciding whether to establish similar primary care based dermatology services, and will also provide some evidence about the likely acceptability and accessibility of primary care based services for other clinical conditions.

Scientific summary

Study to evaluate the impact of specialist clinics run by GPs

Lead researcher: Dr Rebecca Rosen, King's Fund

GP specialist clinics represent a new form of 'specialist' care. They are provided by GPs, trained to manage a range of common conditions in a particular speciality (e.g. ENT, dermatology) and will complement the work of the traditional hospital specialists. GP specialists will accept referrals, in accordance with local guidelines, from *other GPs,* including GPs in other practices. A central aim of GP specialist clinics is to improve access to care - typically in specialities associated with long waiting times for outpatient clinics. The NHS Plan sets a target for 1000 GP specialists by 2004.

Aim

To evaluate the impact of general practitioner specialist clinics (GPSCs) on access to GP and hospital specialist care; on patient and clinician satisfaction with GPSC care and on costs to patients and the NHS.

Objectives

I. To measure changes in activity, referral thresholds and waiting times associated with the
provision of GPSCs.

II. To test the hypothesis that access to a GPSC reduces the risk of referral to hospital
outpatient clinics.

III. To describe patient satisfaction with GP specialist care, with particular reference to
geographical, temporal and financial determinants of access.

IV. To explore clinician satisfaction with the provision of GPSCs and examine their views on the impact of GPSCs on organisation and provision of wider clinical services.

V. To describe the costs of establishing and running GPSCs from the perspectives of the NHS and the costs of using GPSCs from the perspective of patients.

VI. To produce methodological guidance to service providers on how assess the impact of
GPSCs.

Design of study

An observational comparative study of GPSCs and matched hospital control clinics in four clinical specialities. The GPSCs will be recruited from three geographical areas where PCT and Trust staff have expressed an interest in participating in the research - Southampton, Bradford and Southwark. The study will incorporate

a) Combined time series and case control analysis of routine data on access, comparing activity, referrals, waiting times and disposal in communities served by GPSCs in four specialities and in matched control sites.

b) Quantitative and qualitative analysis of costs, case severity, patient and clinician satisfaction with GPSCs and perceived barriers to access in a sub group of 4 case study sites. The case studies will include:

- A questionnaire survey to patients and clinicians
- Focused interviews with GP specialists, other GPs and hospital specialists
- Case note review to assess case severity and appropriateness of referral
- Economic analysis of the costs associated with GPSCs

Analysis

The main analytic techniques will be interrupted time series analysis and odds ratio calculations (of risk of hospital referral) from routine data; cost comparisons; descriptive summary statistics of questionnaire data; comparison of severity scores extracted from case notes and thematic content analysis of qualitative data.

Key outcomes

Observed differences in referral rates, waiting times, numbers of patients seen, disposal decisions and costs between GPSC and hospital clinics. Descriptive summary statistics on patient and clinician satisfaction and qualitative accounts of clinician views about GPSCs

Outputs

Evidence (not currently available) on the impact of GPSCs on access to specialist care to inform future policy decisions on the further expansion of GPSCs. Methodological advice to PCTs and GP specialists about how to monitor the impact of local GPSCs.

Appendix B. Glossary of Health Economic Terms

Opportunity cost

The value of opportunities lost or forgone i.e. funds no longer available to be invested in the next best alternative. The concept of **opportunity cost**, which is at the heart of economics, derives from the notion of scarcity of resources.

Cost-benefit analysis (CBA)

A type of economic study design in which both inputs and consequences of different interventions are expressed in monetary units. This allows their direct comparison across programmes, even outside health care.

Cost-effectiveness analysis (CEA)

A form of economic study design in which both costs and consequences of different interventions are examined. Competing interventions are compared in terms of cost per unit of consequence.

Cost-minimisation analysis (CMA)

An economic study design in which consequences of competing interventions are the same and in which only inputs are taken into consideration. The aim is to decide the least costly way of achieving the same outcome.

Cost-utility analysis (CUA)

A form of economic study design in which interventions which produce different consequences in terms of both quantity and quality of life are expressed as utilities. These are measures which comprise both length of life and subjective levels of well-being (the best known utility measure is the quality-adjusted-life-years or QALYs). In this case, competing interventions are compared in terms of cost per utility (cost-per-QALY).

Economic evaluation

The application of analytical methods to define cost and consequences of interventions and aid explicit decision-making in resource allocation.

Economic modelling

To make the best use of available data, to fill the gaps and to handle the inevitable uncertainties

Resources

Any input into health service production (time, goods, equipment, buildings, specialised knowledge, etc).

Sensitivity analysis

Techniques employed to allow for uncertainty; varying the assumptions underlying the estimates.