

What is already known on this topic

General practitioner with special interest schemes are being developed throughout England

The aim is to improve access to specialist advice by providing a local service and a shorter waiting time than outpatient clinics

Evidence is lacking about whether this type of service produces equally good clinical outcomes to outpatient care or whether it improves accessibility or is acceptable to patients

What this study adds

Patients with non-urgent skin problems allocated to a general practitioner with special interest service had neither better nor worse health outcomes than those allocated to outpatient care

Patients referred to the service were seen more quickly, thought it was more accessible than the hospital, and were slightly more satisfied with their consultations and the facilities

Implications for policy

Our study provides support for the effectiveness, accessibility, and acceptability of this general practitioner with special interest service. However, as shown in the companion paper, these benefits come at considerable additional cost.² If the main purpose of these schemes is to increase capacity to reduce waiting times for appointments, it may be more efficient to achieve this by increasing capacity in hospital.

It is difficult to disentangle whether the benefits and costs of general practitioner with special interest services are related to the fact that the clinician is a general practitioner with special interest or to the community location of the service. Further research should

compare general practitioner with special interests working in hospital settings with those working in community clinics and should compare different models of skill mix such as employing specialist nurses rather than doctors.

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Economic evaluation of a general practitioner with special interest led dermatology service in primary care

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Abstract

Objective To carry out an economic evaluation of a general practitioner with special interest service for non-urgent skin problems compared with hospital outpatient care.

Design Cost effectiveness analysis and cost consequences analysis alongside a randomised controlled trial.

Setting General practitioner with special interest dermatology service covering 29 general practices in Bristol.

Participants Adults referred to a hospital dermatology clinic who were potentially suitable for management by a general practitioner with special interest.

Interventions Participants were randomised 2:1 to receive either care by general practitioner with special interest service or usual hospital outpatient care.

Main outcome measures Costs to NHS, patients, and companions, and costs of lost production. Cost effectiveness, using the two primary outcomes of dermatology life quality index scores and improved patient perceived access, was assessed by incremental cost effectiveness ratios and cost effectiveness acceptability curves. Cost consequences are presented in relation to all costs and both primary and secondary outcomes from the trial.

Results Costs to the NHS for patients attending the general practitioner with special interest service were £208 (\$361; €308) compared with £118 for hospital outpatient care. Based on analysis with imputation of missing data, costs to patients and



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Table 1 Mean NHS costs (£) nine months after randomisation for general practitioner with specialist care or hospital outpatient care for non-urgent skin problems

Resource item	General practitioner with special interest group (n=354)	Hospital outpatient group (n=202)
Hospital consultations:		
Doctor	8.26	66.99
nurse	0.36	0.54
General practitioner with special interest service consultations:		
General practitioner	121.06	0
Nurse	11.26	0
Total specialist care	140.94	67.53
Visit to doctor's surgery	13.79	11.95
Home visit by general practitioner	0.05	0
Surgery visit to practice nurse	2.85	1.69
Home visit by district nurse	0.17	0
Total primary care	16.86	13.63
Total consultations	157.80	81.16
Investigations:		
Biochemistry	0.06	0.07
Haematology	0.32	0.12
Histopathology	7.65	4.84
Immunology	0.04	0.07
Microbiology	0.08	0.28
Mycology	0.51	0.68
Patch test	4.27	6.16
Radiology	0.13	0.07
Skin prick test	0.27	0
Virology	0	0.05
Total	13.33	12.33
Treatments		
PUVA course:		
Provided by general practitioner with special interest	0	0
Provided by hospital	1.73	0.50
Excision:		
Provided by general practitioner with special interest	1.02	0
Provided by hospital	0	0.55
Incisional biopsy:		
Provided by general practitioner with special interest	0.56	0
Provided by hospital	0.22	0.16
Punch biopsy:		
Provided by general practitioner with special interest	0.99	0
Provided by hospital	0.04	0.55
Curettage and cautery:		
Provided by general practitioner with special interest	1.00	0
Provided by hospital	0	0.28
Triamcinolone acetonide injection:		
Provided by general practitioner with special interest	0.02	0
Provided by hospital	0	0
Hosiery:		
Provided by general practitioner with special interest	0.01	0
Provided by hospital	0	0
PUVA course:		
General practitioner with special interest	0	
Hospital	1.73	
Excision:		
General practitioner with special interest	1.02	
Hospital	0	0.55
Incisional biopsy:		
General practitioner with special interest	0.56	
Hospital	0.22	0.16

Table 1 continued Mean NHS costs (£) nine months after randomisation for general practitioner with specialist care or hospital outpatient care for non-urgent skin problems

Resource item	General practitioner with special interest group (n=354)	Hospital outpatient group (n=202)
Punch biopsy:		
General practitioner with special interest	0.99	
Hospital	0.04	0.55
Curettage and cautery:		
General practitioner with special interest	1.00	
Hospital	0	0.28
Triamcinolone acetonide injection:		
General practitioner with special interests	0.02	
Hospital	0	0
Hosiery:		
General practitioner with special interests	0.01	
Hospital	0	0
Total	5.61	2.04
Specialist care drugs	22.22	12.26
Primary care drug	8.95	10.34
Total cost to NHS	207.91	118.13

PUVA=psoralens plus long wave ultraviolet radiation.

companions were £48 and £51, respectively; costs of lost production were £27 and £34, respectively. The incremental cost effectiveness ratios for general practitioner with special interest care over outpatient care were £540 per one point gain in the dermatology life quality index and £66 per 10 point change in the access scale.

Conclusions The general practitioner with special interest service for dermatology is more costly than hospital outpatient care, but this additional cost needs to be weighed against improved access and broadly similar health outcomes.

Introduction

Little evidence exists on the cost effectiveness of services provided by general practitioners with special interests compared with standard hospital outpatient care. Some evidence shows that an outreach model of care, where consultant dermatologists hold clinics in general practice surgeries, is more costly,^{1 2} and general practitioner with special interest diabetic clinics have been shown to incur broadly similar costs to those of hospital clinics.³

We compared the costs and cost effectiveness of a general practitioner with special interest service in dermatology with routine hospital outpatient care, taking into account access as an important outcome of the service.

Methods

Our study was carried out in parallel with a randomised controlled trial from which effectiveness data were obtained.⁴

Our economic evaluation was carried out in two forms. Firstly, we used cost effectiveness analyses to compare costs from an NHS perspective with the two primary outcomes from the trial: change in the dermatology life quality index and accessibility of care.

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Table 2 Mean costs (£) to patient and companion, and lost production costs with and without imputation for nine months after randomisation to general practitioner with special interest care or hospital outpatient care for non-urgent skin problems

Resource item	General practitioner with special interest care		Hospital outpatient care	
	Without imputation	With imputation	Without imputation	With imputation
Patient and companion costs*:				
Patient travel to hospital (n=295, n=106)	0.53	0.70	3.32	2.35
Patient travel to general practitioner with special interest service (n=271, n=198)	3.98	3.88	0	0.04
Patient travel to primary care (n=271, n=198)	0.34	0.34	0.55	0.53
Companion travel (n=282, n=143)	0.04	0.06	0.23	0.19
Over the counter drugs (n=211, n=120)	26.36	33.65	36.23	38.53
Private practitioners (n=192, n=110)	1.00	0.66	0.82	0.45
Unpaid time off work (n=170, n=100)	7.48	8.92	9.36	9.21
Total	39.73	48.21	50.51	51.30
Lost production*:				
Associated with patient (n=177, n=98)	23.38	24.55	27.37	29.66
Associated with companion (n=256, n=142)	0.59	2.59	2.69	4.69
Total	23.97	27.14	30.06	34.35

*Patient numbers relate to general practitioner with special interest service and hospital outpatient clinic, respectively.

Secondly, we used a cost consequences analysis to compare costs from several perspectives (NHS, patient and companion, and lost production to society) with both primary and secondary outcomes, where secondary outcomes additionally included patient satisfaction with the consultation, satisfaction with facilities, attendance rates, and waiting times.

Collection and valuation of resource use data

We collected data on use of resources for all patients enrolled in the trial for nine months after randomisation. Most data on use of NHS resources were obtained from computerised systems in the hospital, general practitioner with special interest service, and general practice surgeries. Data included information about numbers and types of consultations (including hospital, general practitioner with special interest, general practitioner, and district nurse), investigations and procedures carried out, and dermatology drugs prescribed. Additional NHS data came from two sources: detailed time and motion studies carried out to obtain information about the time spent with patients with non-urgent conditions in the hospital outpatient setting; and nurses use of consumables.

Information about the resources used by patients and their companions was obtained from questionnaires six weeks after the first appointment and nine months after randomisation. Information collected included over the counter drugs, use of non-NHS

practitioners, travel, care of dependants during consultations, and unpaid time off work.

We obtained information about lost production (time off work to attend appointments) from the patient questionnaires and linked this with information about the number of appointments attended. We then applied unit costs, including VAT, in 2004 sterling prices from UK sources (see table 1 on bmj.com).

Statistical analysis

Where possible we present data on both resource use and costs. Data on use of NHS resources were complete but data were missing from the questionnaires that provided information on costs to the patient and companion and lost production costs. We present data both with and without imputation (see bmj.com).

The primary outcome measures (dermatology life quality index, access score) were combined with mean NHS costs to estimate incremental cost effectiveness ratios. These represent the additional cost per additional dermatology life quality index point gained and the additional cost per additional 10 point increase on the access scale. Uncertainty was represented through the use of cost effectiveness acceptability curves obtained using bootstrapped data. These curves show the probability that the use of the general practitioner with special interest service is cost effective compared with the outpatient appointment for a range of values that the decision maker might be willing to pay. We include only NHS costs in these analyses.

Sensitivity analyses

We used sensitivity analysis to account for structural uncertainties: firstly, whether the longer waiting period for a hospital appointment would result in resource use within the hospital arm of the trial taking place later than that within the general practitioner with special interest arm. For this reason, we also collected data on use of NHS resources for 12 months from the date of randomisation.

Secondly, there was concern that the scheme was underutilised during this trial with a consequent influence on unit costs. Overall, 22% of appointments

Table 3 Mean cost to NHS (£) and effectiveness information for those patients for whom outcome data are available, and ICERs (incremental cost effectiveness ratios) for general practitioner with specialist care over hospital outpatient care for the two primary outcome measures

Primary outcome	General practitioner with special interest care	Hospital outpatient care	Difference between groups	ICER for general practitioner with special interest care over hospital outpatient care
Gain in dermatology life quality index score:	(n=257)	(n=155)		
NHS costs	224.87	127.61	97.26	540.33 per 1 point gain
Effectiveness	2.54	2.36	0.18	
Access scale:	(n=266)	(n=125)		
NHS costs	243.71	140.97	102.74	65.61 per 10 point change
Effectiveness	76.13	60.47	15.66	

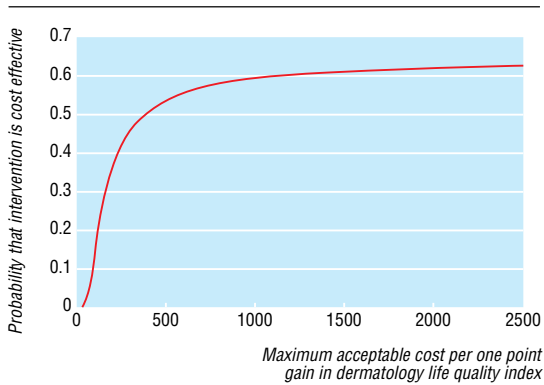


Fig 1 Cost effectiveness acceptability curve showing probability that care by general practitioner with special interest in dermatology is cost effective for a range of decision makers' maximum willingness to pay for a one point gain in dermatology life quality index score

were unfilled; costs assuming that these appointments were filled were used in the second sensitivity analysis (£60.05 for an appointment with a general practitioner with special interest; £55.28 for an appointment with a nurse).

Results

Overall, 556 adult patients with non-urgent skin problems were randomised: 354 to care by a general practitioner with special interest and 202 to hospital outpatient care.

Physical resources associated with each form of care are shown in table 2 on bmj.com. Table 1 shows the mean cost per patient achieved by combining NHS resource use with information on valuation. Total NHS costs associated with general practitioner with special interest care are about 75% higher than those associated with hospital outpatient care. Patient or companion costs and costs of lost production are, however, higher for the hospital arm (table 2).

For patients with available data for both primary outcomes, care by the general practitioner with special interest is both more beneficial (albeit not necessarily noticeably so on average) and more costly (table 3). Uncertainty around the estimates of incremental cost effectiveness ratios is represented by the cost effectiveness acceptability curves (figs 1 and 2).

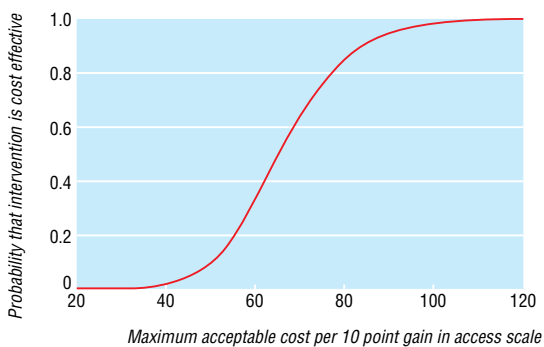


Fig 2 Cost effectiveness acceptability curve showing probability that care by general practitioner with special interest in dermatology is cost effective for a range of decision makers' maximum willingness to pay for a 10 point gain in access scale score

Table 4 summarises the costs and effects across all different perspectives and for all outcomes assessed.

Sensitivity analysis

Comparison of the costs for use of NHS resources by all patients at 12 months with costs at nine months did not indicate that carrying out analysis using nine month data had adversely affected the costs of care by a general practitioner with special interests (see bmj.com).

Using a reduced cost for care by a general practitioner with special interests to reflect possible underutilisation, resulted in a reduced cost to the NHS of £176.80 for the general practitioner with special interest arm. This was still greater than that for outpatient care.

Discussion

Costs incurred by the NHS for a general practitioner with special interest service for non-urgent skin problems were about 75% higher than those for care provided in a hospital outpatient clinic. The major contribution to the increased costs in the service was the higher unit costs associated with consultations rather than with hospital specialist consultations. The main reason for these higher costs is that the patients always see the relatively costly general practitioner with special interests, whereas outpatients might see the relatively costly consultant but may also see the registrar or clinical assistant who is less costly. Mean costs to patients and companions were slightly lower in the general practitioner with special interest service, but the confidence intervals were similar. Health outcomes for general practitioner with special interest services were slightly better, but the difference was minimal. Benefits were, however, found with access, satisfaction, waiting times, and facilities in the general practitioner with special interest service. The cost effectiveness acceptability curve for the access scale suggests that a decision maker who is willing to pay £100 for an improvement of 10 points in the access scale would always find the general practitioner with special interest service cost effective.

This study provides rigorous evidence about the cost effectiveness of a general practitioner with special inter-

Table 4 Cost consequences (mean, 95% confidence interval) comparing care of non-urgent skin problems by general practitioner with special interest service and hospital outpatient clinic over nine months

Variables	General practitioner with special interest group	Hospital outpatient group
Costs (£):		
NHS costs	207.92 (189.51 to 226.32)	118.14 (103.15 to 133.13)
Costs to patients and companions	48.21 (32.51 to 63.91)*	51.30 (31.32 to 71.27)*
Societal costs of lost production	27.14 (8.82 to 45.46)*	34.35 (10.91 to 57.78)*
Outcomes:		
Gain in dermatology life quality index score	2.54 (2.00 to 3.08)	2.36 (1.62 to 3.10)
Access scale	76.13 (73.79 to 78.46)	60.47 (57.43 to 63.50)
Consultation satisfaction	71.05 (69.38 to 72.72)	65.93 (62.98 to 68.87)
Facilities scale	79.83 (78.21 to 81.46)	74.71 (72.04 to 77.38)
Waiting time (days)	72 (69.34 to 75.50)	113 (108.15 to 117.84)

*Using imputed values to allow calculation of confidence intervals.

What is already known on this topic

General practitioner with special interest services are being developed throughout England

No robust evidence exists about the economics of such schemes in terms of their relative cost effectiveness compared with routine hospital care

What this study adds

Patients referred to the general practitioner with special interest service incurred higher NHS costs for little difference in clinical outcome compared with routine outpatient care

The higher cost of general practitioner with special interest services must be offset against the improvements in access measured in several ways

est service from both NHS and societal perspectives. It is based on data collected from a randomised controlled trial, and NHS resource use data were successfully collected from reliable sources for all participants. Data obtained from the patient questionnaire were, however, more variable for quality and completion.

The study is based on one geographical area and its findings may not apply to other settings. Information about resource use is, however, provided separately from information about costs, which allows decision makers in other settings in the NHS to use this information.

A further limitation is the extent to which the general practitioner with special interest service was operating at full capacity. However, the sensitivity analysis suggested that the results would not be changed by increased use of the service. Underutilisation may also have led to greater benefits being apparent, particularly for waiting times, but also potentially for satisfaction with care.

Previous studies of outreach clinics^{1 2 5 6} or shifting care from secondary to primary services,⁷ show the general practitioner with special interest service to be more costly than outpatient care. Other research on service development has also encountered problems of underutilisation.⁷

If this service is typical, then those making the decision about whether the increased cost to the NHS of general practitioner with special interest services is

worth incurring, must set the potential for using these funds to treat others who might benefit from increased outcomes against the benefits noted here for increased access to care. Using the national tariff for dermatology outpatients, the mean cost of commissioning specialist care from a hospital for the patients in this study would have been £127 per patient (based on the new and follow-up consultation rates in the outpatient arm), compared with £182 per patient actually spent in the general practitioner with special interest arm.^{8 9}

Increased NHS costs for the general practitioner with special interests service must be offset against the marginally greater benefits in terms of health and the greater benefits in terms of access.

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Commentary: General practitioners with special interests— not a cheap option

Martin Roland

General practitioners with a special interest are general practitioners with special experience or training that enables them to take referrals which would normally be seen by specialists. The training of a new cadre of general practitioners with special interest was a key part of the UK government's 2000 NHS Plan.

Are general practitioners with special interests likely to be an effective and cost effective way of providing care? A randomised controlled trial by Salisbury et al and an economic evaluation by Coast et al provide some answers.^{1 2} The results show that in dermatology a general practitioner with special interest service was effective: patients were seen more quickly,

were more satisfied, and had similar clinical outcomes when compared with those seen in a specialist clinic. However, the NHS costs of referring patients to a general practitioner with special interest were 75% more than for specialist clinics. The main reason for this was that patients seen in specialist clinics could be seen by both consultants and junior hospital staff, and the junior staff had lower salaries than general practitioners with special interests. In addition, seeing outpatients in concentrated settings (for example, hospitals) provides economies of scale.

These results echo those of a previous strategy to move outpatient clinics outside the hospital setting. In

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