A prescribing incentive scheme for non-fundholding general practices: an observational study

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Abstract

Objective—To examine the effects of a financial incentive scheme on prescribing in non-fundholding general practices.

Design—Observational study.

Setting—Non-fundholding general practices in former Northern region in 1993-4.

Intervention—Target savings were set for each group of practices; those that achieved them were paid a portion of the savings.

Main outcome measures—Financial performance; prescribing patterns in major therapeutic groups and some specific therapeutic areas; rates of generic prescribing; and performance against a measure of prescribing quality.

Subjects—459 non-fundholding general practices, grouped into three bands according to the ratio of their indicative prescribing amount to the local average (band A $\geq 10\%$ above average, B between average and 10% above, C below average).

Results—102 (23%) of 442 practices achieved their target savings (18%, 19%, and 27% of bands A, B, and C respectively). Band C practices that achieved their target had a lower per capita prescribing frequency for gastrointestinal drugs, inhaled steroids, antidepressants, and hormone replacement therapy. There were no other significant differences in prescribing frequency, and no reduction in the quality of prescribing in achieving practices. Total savings of £1.54m on indicative prescribing amounts were achieved. Payments from the incentive scheme and discretionary quality awards resulted in £463 000 being returned to practices for investment in primary care.

Conclusions—The prescribing behaviour of non-fundholding general practitioners responded to financial incentives in a similar way to that of fundholding practitioners. The incentive scheme did not seem to reduce the quality of prescribing.

Introduction

The 1991 NHS reforms introduced new funding mechanisms for health care, including the provision for fundholding general practices to manage a fund to pay for selected hospital services, prescribing, and staff.¹ General practitioners who did not become fundholders were set a financial target, the indicative prescribing amount, which was the best estimate of their prescribing needs. The main difference between the indicative prescribing amount and the prescribing element of a fundholder's fund is that the latter is cash limited whereas the indicative prescribing amount is not. Fundholding practices therefore have a financial incentive to control their prescribing budget since they can retain any savings for investment in approved service developments. Non-fundholding practices have no such incentive: if they spend less than their indicative prescribing amount they do not retain the surplus. This may explain

why fundholding practices had better financial prescribing performance than non-fundholding practices over the first three years of fundholding.^{2,3}

We implemented an incentive scheme for non-fundholding general practices as part of a range of measures to influence prescribing behaviour. The scheme enabled these doctors to retain, for approved practice purposes, a proportion of any savings they made when targets were achieved. The impact of financial incentives on doctors' behaviour has been reported both in the UK and USA,⁴ but we believe that this is the first study of their use to influence prescribing among non-fundholders.

Methods

The study area was the former Northern health region, one of the 14 NHS administrative regions in England. Primary care services were coordinated by nine family health service authorities. The region had a population of about 3.1 million. In the year of the study (1 April 1993 to 31 March 1994) about 1670 general practitioner principals worked in 532 practices. The average registered population of each practice was around 6000. Seventy one fundholding practices (13%) served 761 385 people (24% of the population). Apart from three practices with very small indicative prescribing amounts (<£2000 allocated for only occasional specialist prescribing such as school doctors), all remaining non-fundholding practices were included in the regional incentive scheme.

DETAILS OF THE SCHEME

The scheme was based on the indicative prescribing amount, set each year for each practice by its family health services authority. The amount takes into account the practice's historic expenditure, adjusted for changes in demographic, clinical, or other factors.⁵ Because prescribing volumes increase with patients' age the NHS has adopted an age related unit of population, the prescribing unit, arbitrarily set at one unit for every patient aged under 65 years and three for every patient of 65 or over. In our scheme practices were therefore allocated incentive targets according to the ratio of their indicative prescribing amount per prescribing unit to the average amount per prescribing unit for all practices in their family health services authority. Band A comprised those with a ratio greater than 110%; band B those between 100% (average) and 110%; and band C those with a ratio less than 100%. The banding therefore indicated high, medium, and low prescribing budgets relative to the local average.

Practices in the three bands were set different target savings because of perceived differences in the ease of reducing prescribing costs. Practices in bands A, B, and C had to make, respectively, 3%, 2%, or 1% savings on their indicative prescribing amounts to trigger an incentive payment. Payments were also scaled, being 20% of savings for band A, 35% for band B, and 50% for band C. These payments were subject to a minimum of

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£1000 for practices of less than 4000 patients and £2000 for larger practices. The maximum payment was £2500 per principal. Payments were made from savings in the national drugs budget and were in line with national guidelines on incentive schemes.

Practices in band C, whose lower than average costs might indicate difficulties in achieving further economies, were eligible for a discretionary payment, funded locally by the regional health authority. This applied if they did not achieve their incentive target but were nevertheless able to show evidence of sustained, high quality, economical prescribing.⁶

ANALYSIS

Since the scheme included all non-fundholding practices in the region, no control group was available. We therefore examined differences in prescribing behaviour between practices that achieved their financial targets and those that did not in the study year. Within band A per capita prescribing costs had skewed distributions and the non-parametric Mann-Whitney test was used; otherwise prescribing rates for achievers and non-achievers were compared using an unpaired *t* test. Rates for both cost and volume were expressed per patient since prescribing within individual therapeutic groups differs by age and sex in a way that is not necessarily well represented by the prescribing unit weighting. For example, cardiovascular drugs are used predominantly in patients over 40 years, anti-infective drugs are more heavily prescribed in the young and the old, and hormone replacement therapy is principally given to women aged 45-65.

Overall generic prescribing rates for each practice were obtained and a score of prescribing quality derived using criteria and standards set by a consensus group of general practitioners (appendix 1).⁶ In addition, we compared the financial performance of the study region to that of other NHS regions in the study year.

Results

All 459 non-fundholding practices which were set indicative prescribing amounts for the study year were included in the scheme. By the year end there were changes (usually partnership splits, mergers, retirements, or deaths) which resulted in the expenditure in 17 practices being unavailable for analysis. Of the remaining 442 practices, 108 were in band A, 104 in band B, and 230 in band C. The distribution of the 73 dispensing practices in the region was not significantly different from that of non-dispensers.

Overall 102 (23%) practices achieved their incentive target (table 1). Their total saving on indicative prescribing amounts was £1.54m, and they received incentive payments of £420 000. In addition, discretionary awards totalling £43 000 were made to 27 band C practices where prescribing was judged to be of good quality.⁶

General practice prescribing budgets traditionally show overspending. In the study year non-fundholder prescribing costs in each family health services authority exceeded the aggregate of the expected expenditure by 0.6% to 5.8%, with an overall regional overspend of 3.7%. This compared favourably with other health regions' budgetary performance in 1993-4 (table 2), and the overspending in England as a whole was 6.2%. Only Wessex region, which also operated an incentive scheme that year, achieved a better budgetary outturn for non-fundholder prescribing. Ten other regions had incentive schemes, but generally only a fairly small proportion of practices participated.

In all, 19 (18%), 20 (19%), and 63 (27%) practices in bands A, B, and C respectively achieved their incentive targets. Thus, a higher proportion of practices with below average costs (band C) achieved their target than those with above average costs (bands A and B). The

Table 1—Average indicative prescribing amount per prescribing unit, number of practices in incentive scheme, and number of practices achieving incentive targets by family health services authority

Family health services authority	Average indicative amount per prescribing unit (£)	No of practices	No of achievers
Cleveland	52.9	77	17
Cumbria	49.4	89	10
Durham	53.0	63	11
Northumberland	50.2	40	9
Gateshead	50.1	22	5
Newcastle	45.6	41	12
North Tyneside	54.0	32	11
South Tyneside	49.2	28	12
Sunderland	55.6	50	15
Region	51.3	442	102

Table 2—Non-fundholder practice prescribing in England in study year

Region	Total indicative amount (£ million)	% Over-spending	Rank
Northern (study region)	163.3	3.7	2
Yorkshire	159.9	6.4	7
Trent	208.7	7.6	12
East Anglia	97.2	7.8	13
North West Thames	155.9	7.6	11
North East Thames	190.9	7.0	10
South East Thames	178.0	8.7	14
South West Thames	137.5	6.9	9
Wessex	144.7	3.7	1
Oxford	99.4	6.7	8
South West	177.1	6.2	6
West Midlands	249.5	6.1	5
Mersey	114.0	5.2	4
North West	231.3	4.2	3
England	2307.5	6.2	

proportion of practices in individual family health services authorities receiving incentive payments varied from 11% to 43% (table 1).

Table 3 illustrates the differences between practices classified as achievers and non-achievers in overall prescribing frequency and cost for major therapeutic groups. These broad headings are defined by chapters in the *British National Formulary (BNF)*.⁷ Table 4 provides similar information for five more specific therapeutic areas, defined by *BNF* sections. Within band C achievers were significantly different ($P<0.01$) from non-achievers in cost for most therapeutic areas examined but in frequency only for gastrointestinal drugs, antidepressants, and hormone replacement therapy ($P<0.01$) and inhaled steroids ($P<0.05$). In band B, except for gastrointestinal drugs, there were no significant differences in the therapeutic areas studied between achieving and non-achieving practices. In band A the cost per patient for endocrine and central nervous system drugs was significantly lower ($P<0.01$) for achievers than non-achievers. There was also evidence ($P<0.05$) of lower costs for gastrointestinal drugs and hormone replacement therapy.

Table 5 shows that rates of generic prescribing were higher in achieving practices in all three bands. Quality scores were also higher in achieving than non-achieving practices, indicating that the criteria of good prescribing quality being assessed were not impaired by any prescribing changes made in pursuing incentive targets. Proportionally fewer dispensing practices achieved an incentive award (10/73 *v* 92/369 non-dispensing practices).

Table 3—Net ingredient cost (£) per patient and items dispensed per 100 patients overall and in leading chapters of British National Formulary for general practices in three incentive bands (A, B, and C) for study year

Drug group	Cost per patient			Items per 100 patients		
	Band A	Band B	Band C	Band A	Band B	Band C
Total:						
Non-achievers	85.99**	74.25**	64.43**	1145	1050	928
Achievers	79.78	68.83	55.53	1191	1047	888
Gastrointestinal:						
Non-achievers	14.00**	11.76**	10.40**	100.8	90.8	80.3**
Achievers	13.43	10.38	7.93	104.3	87.6	72.2
Cardiovascular:						
Non-achievers	17.16	13.97	11.80	217.8	190.1	170.2
Achievers	16.11	13.41	11.21	240.2	203.1	169.9
Respiratory:						
Non-achievers	10.29	9.52	7.56**	109.4	108.4	90.1
Achievers	9.00	8.65	6.66	113.9	103.4	90.7
Central nervous system:						
Non-achievers	11.06**	9.46	8.06**	243.2	223.5	188.3
Achievers	10.51	9.04	6.46	256.0	225.8	179.8
Infections:						
Non-achievers	5.44	4.65	4.01**	117.4	111.9	96.2
Achievers	4.93	4.33	3.41	118.4	112.0	95.9
Endocrine:						
Non-achievers	5.11**	4.63	4.37**	59.6	53.4	50.6*
Achievers	4.20	4.21	3.78	60.1	53.2	46.3
Musculoskeletal:						
Non-achievers	6.85	5.37	4.51*	70.1	59.1	51.9
Achievers	5.97	5.04	4.00	67.3	58.8	48.7

*P<0.05; ** P<0.01 between achievers and non-achievers.

Table 4—Net ingredient cost (£) per patient and items dispensed per 100 patients in five specific therapeutic areas for practices in bands A, B, and C for study year

Drug group	Cost per patient			Items per 100 patients		
	Band A	Band B	Band C	Band A	Band B	Band C
Angiotensin converting enzyme inhibitors:						
Non-achievers	3.71	2.71	2.42	20.8	14.7	13.3
Achievers	3.88	2.61	2.22	24.4	15.1	13.0
Inhaled steroids:						
Non-achievers	4.54	4.35	3.57**	21.2	21.6	19.0*
Achievers	3.96	4.31	3.05	21.7	21.8	17.0
Antidepressants:						
Non-achievers	3.22**	2.51	2.30**	32.6	27.3	25.7**
Achievers	2.59	2.25	1.47	29.8	25.3	20.5
Antibacterials:						
Non-achievers	4.58	3.83	3.25	105.1	100.6	86.8
Achievers	4.25	3.58	2.90	105.0	100.5	87.3
Hormone replacement therapy:						
Non-achievers	1.55*	1.39	1.35**	9.8	8.2	8.7**
Achievers	1.21	1.21	1.04	7.9	8.4	7.2

*P<0.05; ** P< 0.01 between achievers and non-achievers.

Table 5—Rates of generic prescribing 1993-94 and quality marker score

Incentive band	No of practices		Average generic rate (%)		Average quality marker score*	
	Achiever	Non-achiever	Achiever	Non-achiever	Achiever	Non-achiever
A	19	89	49.9	45.9	1.95	1.49
B	20	84	54.4	50.5	2.75	2.20
C	63	167	51.2	49.0	4.02	3.54
Overall	102	340	51.6	48.6	3.38	2.68

*Derived from criteria standards set by a consensus group of general practitioners.⁶

Discussion

The method of setting general practitioners' prescribing amounts in the study year was essentially historic. Relatively little account was taken of proxies for clinical

need, and per capita allocations varied widely. In effect, slightly different targets were set for practices in different areas, since the overall rate used for allocating practices to bands was that for the area in which the practice was situated. Local averages varied from £45.60 to £55.60 per prescribing unit. However, the proportion of practices achieving their incentive targets was almost identical in authorities at these two extremes (table 1).

Overall, the historically more expensive prescribers in band A were less likely to achieve their targets than economic prescribers in band C. Arguably the higher target savings set for the more expensive practices were less easily achievable. The graded targets of 3%, 2%, and 1%, and the graded scale of payments, were set to avoid "windfall" savings in high cost practices.

In the study year the budgetary overspending for non-fundholders in the region was low in national terms. Although we cannot ascribe this effect entirely to the incentive scheme, we believe it was an important contributory factor. The attitudes of practitioners are important in determining whether, and how, they achieve their savings. Practices that tried to achieve their incentive target cited increased generic prescribing as the commonest strategy.⁸

The more economical prescribers (band C) tended to prescribe fewer items per head at a lower cost per item, but overall there was no significant difference in the total items prescribed between achievers and non-achievers in any single band. There were, however, some therapeutic areas where achievers appeared to have prescribed significantly fewer items. The main concern relates to the apparently lower use of hormone replacement therapy by achievers in bands A and C. Other areas included gastrointestinal drugs, antidepressants, and to a lesser extent inhaled steroids. These differences need not necessarily mean less effective patient care. We have previously shown wide differences in gastrointestinal prescribing that would be amenable to modification without detriment to patient care.⁹ Similarly, inhaled steroids are also sometimes prescribed for indications in which they may not be effective,¹⁰ although this difference does raise concerns. Achieving practices fared at least as well as non-achievers on another index of prescribing quality, set by a consensus group of general practitioners to support discretionary rewards for good prescribing behaviour.⁶ Since we have not been able to examine long term prescribing trends in individual practices we do not know whether the differences we observed reflect an established pattern of prescribing or a change in the study year. This aspect requires further analysis.

Our findings suggest that non-fundholding general practitioners may respond in a similar way to fundholding practitioners¹¹ and change prescribing patterns in response to financial incentives. Whether these savings are sustainable over a longer period has been questioned for fundholders.^{12 13} Nevertheless, the observed prescribing differences were associated with financial savings of £1.5m in achieving practices (about 1% of the total non-fundholder allocation), though we cannot know what savings these practices might have made in the absence of an incentive scheme, and the region as a whole overspent. Including the £43 000 for discretionary "quality" payments, nearly £500 000 was returned to non-fundholding practices for investment in primary care services. Our findings suggest that an incentive scheme can be an important component of a prescribing strategy.

We thank medical and pharmaceutical advisers of the family health services authorities of the former Northern region for supporting this initiative and helping in its implementation and the Prescription Pricing Authority for supplying prescribing data.

Table A1— Criteria for prescribing performance (a standard was set for each criterion by a consensus group of general practitioners.⁶)

Criteria	Standard	Score
Generic prescribing	<40%	-1
40-55%	0	
55-70%	1	
≥70%	2	
Frusemide and bendrofluazide as % of BNF section 2.2 drugs	≥55	1
Atenolol and propranolol as % of BNF section 2.4 drugs	≥75	1
Amitriptyline, dothiepin, and imipramine and lofepramine as % of BNF section 4.3 drugs	≥75	1
12 Antibacterials as % of BNF section 5.1 drugs	≥90	1
Diclofenac, ibuprofen, indomethacin, and naproxen as % of BNF section 10.11 drugs	≥80	1
Diuretic-potassium combinations (BNF section 2.2.8)	≤0.6 items/100 PU per year	1
Cerebral and peripheral vasodilators (BNF sections 2.6.3/2.6.4)	≤0.6 items/100 PU per year	1
Compound antidepressants (BNF section 4.3.3)	≤2 items per year	1
Appetite suppressants (BNF section 4.5)	≤2 items per year	1
Topical non-steroidal anti-inflammatory drugs (BNF section 10.3)	≤2.88 items/100 PU per year*	1
Benzodiazepines	≤5.59 DDD/PU per year†	1
Lorazepam	≤0.0559 DDD/PU per year‡	1

BNF = British National Formulary.⁷ PU = prescribing unit. DDD = defined daily doses. *10th centile of regional range. †Lowest family health services authority rate in region. ‡1% overall benzodiazepine standard.

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ONE HUNDRED YEARS AGO

FOREIGN VIEWS OF LONDON SURGERY

A correspondent writes: Some writers in the American medical papers have been recently making merry over the practice of aseptic and antiseptic surgery as carried out in the hospitals of London, and although we are far from admitting that the accounts given are properly representative of what goes on at all our hospitals, it seems a pity that at any of them practice should lag so far behind theory as to furnish opportunity for such very candid criticisms. One writer in the *New York Medical Record* describes a laparotomy which he saw done. Some of the instruments were boiled, others were not. An officious person seemed to take delight in handling the instruments, although his hands were unclean, and he one time picked up a retractor which had fallen on the floor, and after just rinsing it at the tap returned it to the tray. During the operation, the writer says that the fluid from the ovarian cyst began pouring out on the floor, when the operator, "calmly stooping down turned up his trousers, and then rinsed his hands in a sponge basin and proceeded with the operation." At another hospital, he seems to have been greatly exercised at seeing an ovariectomy done with absolutely no attention to asepsis. Another writer in the same paper (referring, it is true, to the year 1891) describes surgeons operating in their ordinary outdoor coats after rolling their sleeves half way up to the elbows, and washing their hands in soap, and swishing them around in a basin of antiseptic.

At the Samaritan Hospital he had seen a surgeon "hand a needle to a spectator while he changed the grip of the holder, using it at once uncleaned in the abdomen; and his nurse would complacently blow her nose and go on wringing sponges without repeating the tedious formality of washing." He says that "altogether the impression left by London was deep but unpleasant." Nor is it foreigners only who speak in this manner. We find a Radcliffe Travelling Fellow drawing the attention of the Oxford Medical Society to the same subject. He speaks of the old operating coats, the dirty nail brushes, the blankets brought straight from the bed of the patient to the operating table, and remaining there throughout the operation, and other surgical misdemeanours, which, however, all seem to be covered by the fact that the operator dips his hands into a solution of carbolic acid or perchloride of mercury, washes out the wound with some chemical which, he says, partially or entirely kills the tissues with which it comes in contact, and then applies a so-called antiseptic dressing, which is often full of infective organisms. It is to be hoped that this Travelling Fellow has travelled far, and is speaking of times which are now long past. But there is no doubt that even now our foreign visitors look with open eyes and no small astonishment at much which they see in the hospitals in England.

(*BMJ* 1896;iii:33.)