

the briefing

VARIATIONS BETWEEN GENERAL PRACTITIONERS

Introduction

The Government's National Health Service reforms are designed to increase cost effectiveness, widen consumer choice and improve the quality of care. In making the case for these reforms, the White Paper *Working for Patients* (CM 555) pointed to the wide variations in performance throughout the health service. Variations in the average cost of treating acute hospital in-patients of up to 50 per cent between health authorities, two-fold variations in the medicine costs per head of population, and twenty fold variations in the rates at which general practitioners (GPs) refer patients to hospitals were all cited as evidence of inefficiency. It is the Government's aim to reduce these variations and to raise the standards of all hospitals and GP practices to those of the best.

It is by no means clear, however, that the way in which the problem of variations is being approached will achieve this goal. By concentrating on high levels of activity (and cost)—whether these relate to prescribing, referrals or intensity of hospital service provision—there is a real danger that crude cost containment will displace the more relevant aim of cost effectiveness.

To ensure the efficient use of resources in health care it is necessary to establish the appropriate or optimal level of treatment. This can only be determined in relation to the costs of treatment, its clinical outcomes and the patient benefits associated with different outcomes. Unfortunately, there are few areas of clinical activity where knowledge of all these factors is precise or complete enough to form the basis of actual policy. Nonetheless, there is sufficient evidence to demonstrate that present levels of under-treatment (and the denial of potential health benefits to patients) are possibly as important as wasteful over-treatment.

In the light of these concerns, and in the belief that it was in this context that variations in doctors' behaviour should be examined, a symposium was organised by the Office of Health Economics to consider factors influencing clinical decisions in general practice*. This Briefing reports some of the main findings of this symposium. It is divided into three main sections. First, the evidence on variations in GP's referral rates of patients to hospitals is examined. Second, variations in GP prescriptions for medicines are considered. And third, current policy responses towards these variations are discussed briefly with an assessment of their likely impact upon the cost and quality of care.

* The Office of Health Economics intends to publish the full proceedings of its symposium *Factors Influencing Clinical Decisions in General Practice* later this year. In the meantime, this Briefing seeks to improve understanding of two major areas of GP activity—namely, hospital referrals and prescribing—at a time when they are the focus of government reforms of the NHS.

Referrals to Hospitals

Early research suggested that there were twenty-five fold variations in the rates at which GPs referred patients to hospitals (Acheson, 1985). Indeed, the Government actually cited twenty-fold variations as evidence of inefficiency in *Working for Patients*. However, more up-to-date and sophisticated measurements suggest that this figure is almost certainly a substantial over-estimate. Much of the dispersion derives from statistical variations obtained by researchers when using small sample sizes. Most informed researchers now believe that the real level of variation is around four fold (Wilkin *et al.*, 1987).

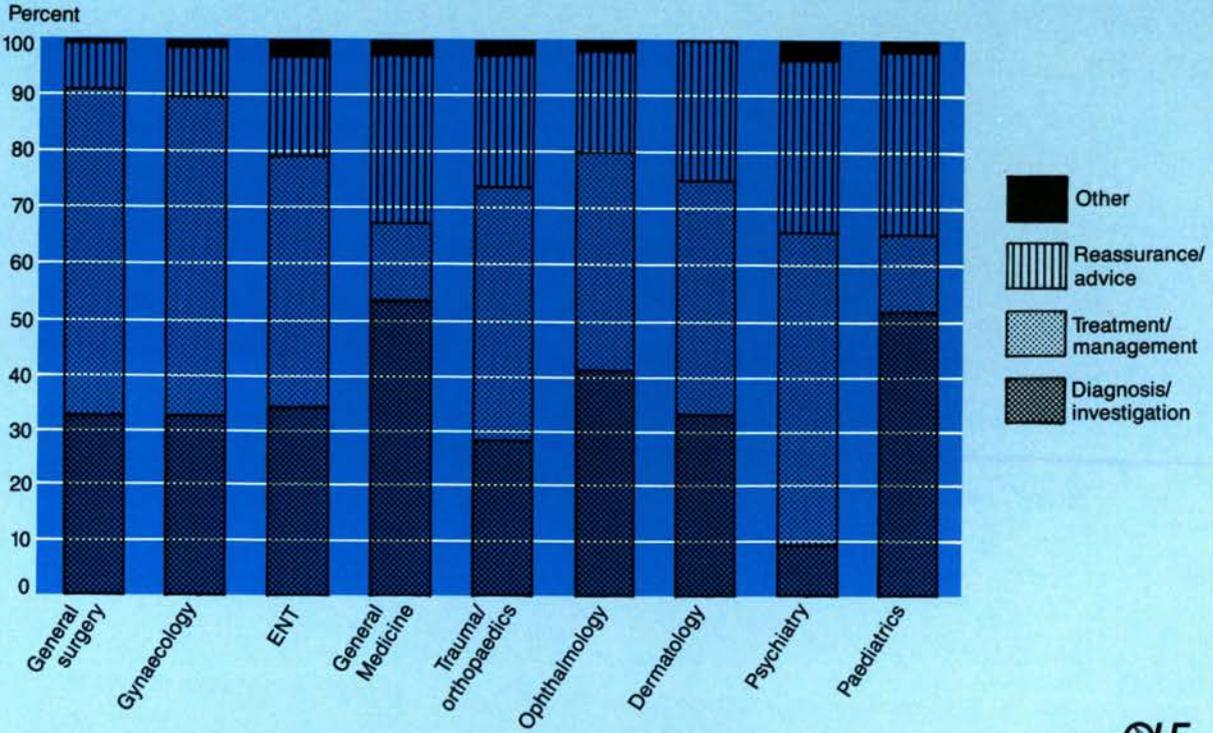
Nonetheless, this is still a sizeable variation and prompts the question: are some GPs referring patients unnecessarily? The answer is possibly, but that to concentrate solely on overall referral rates can be grossly misleading. What is required is an indication of the appropriateness of referral. GPs with identical referral rates may be referring quite different proportions of appropriate cases. A comparison between high and low referrers *per se* says nothing about the number of appropriate referrals (see Box page 3).

The danger of simply focusing of referral rates is demonstrated by the results of recent research carried out in the Oxford Regional Health Authority. This study found a clear association between GP referral rates and in-patient admissions (Coulter *et al.*, *BMJ*, 1990). In one sense this may not seem surprising. But it clearly contradicts the view that high referrers are referring unnecessarily—at least in the sense that hospital consultants do not seem to share this view. They actually admitted a similar proportion of patients from high referring practices to those admitted from low referring practices.

The study did, however, show variations in this pattern between specialities. There was a strong association in all surgical specialities but not in general medicine. In surgical specialities two-thirds of referred patients were actually admitted to hospital. On the other hand, a large proportion of patients referred in general medicine or paediatrics were done so primarily for diagnosis or for advice or reassurance (Figure 1). At the moment there is some disagreement among clinicians about whether referral for advice or reassurance is a legitimate use of the hospital consultant's time.

This issue was addressed in a study of orthopaedic attendances at the Doncaster Royal Infirmary carried out over a thirteen week period last Autumn (Roland, 1990). In this study the researchers asked both GPs and hospital consultants for their views on referred patients, and then asked the patients themselves for their views about the referral process.

Figure 1 Percentage of outpatient referrals to speciality clinics according to reason for referral



Source: Coulter et al (1989)



Table 1 shows that the hospital consultants felt that over 40 per cent of referrals were either 'possibly' or 'definitely' inappropriate. In fact, the GPs themselves felt that 11 per cent of referrals were either 'probably' or 'totally' unnecessary but gave the reason for their referral as substantial pressure from patients who were unwilling to follow their advice.

As far as the 'possibly' or 'definitely' inappropriate referrals were concerned, the consultants often judged that the GP should have managed the problem himself and they frequently appeared intolerant of referrals which required management, advice or reassurance only. And yet wanting to know that nothing was seriously wrong was in fact the commonest reason that patients gave for wanting to attend the clinic. Clearly a patient-based definition of appropriateness would appear to involve a far higher level of referrals than a clinician-based one. This fact could have major resource implications for health service reforms that are designed to increase responsiveness to consumer choices.

As we have mentioned already, another danger of focusing attention on high referrers is that it may lead to a neglect of under-referral. This is an area in which there is virtually no research. However, a recent study in Cambridge started to build up a methodology for examining the problem (Roland, 1990). GPs in one group practice were asked to identify, during a two-week period, patients whom they saw with skin problems who they had no intention of referring to hospitals. After excluding those with obviously minor complaints, the researchers randomly selected twenty-three patients who were then invited to come to the practice to see a consultant dermatologist.

Twenty-two patients saw the dermatologist and changes in treatment were recommended for sixteen of these. After six weeks these patients were contacted again; eleven of them had followed the dermatologists advice and six reported a definite improvement in their skin condition. Hence over one quarter of the non-referred sample appeared to benefit from access to specialist treatment. Clearly this is only a small study and it would be quite wrong to seek to generalise its results. But it does nonetheless offer some empirical support for the case of viewing variations in referral in a symmetric fashion—looking at both over and under referrals.

Table 1

General Practitioners

How necessary do you think it is for your patient to see a specialist?

	n	%
Absolutely necessary	156	32
Probably necessary	249	51
Probably unnecessary	43	9
Totally unnecessary	10	2

Consultants

Was the referral:

	n	%
Definitely appropriate	284	57
Possibly inappropriate	152	31
Definitely inappropriate	61	12

Patients

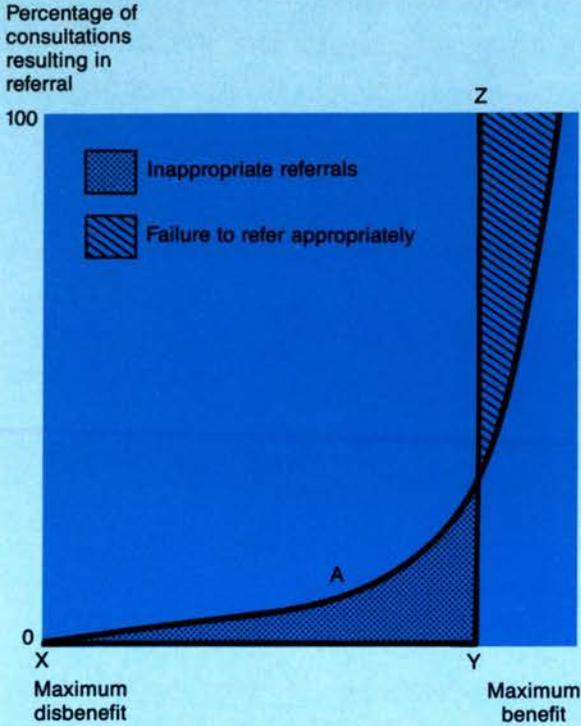
Were you helped by seeing the specialist?

	n	%
Definitely helped	294	65
Probably helped	79	18
Not sure	40	8
Probably not helped	22	4
Definitely not helped	14	3

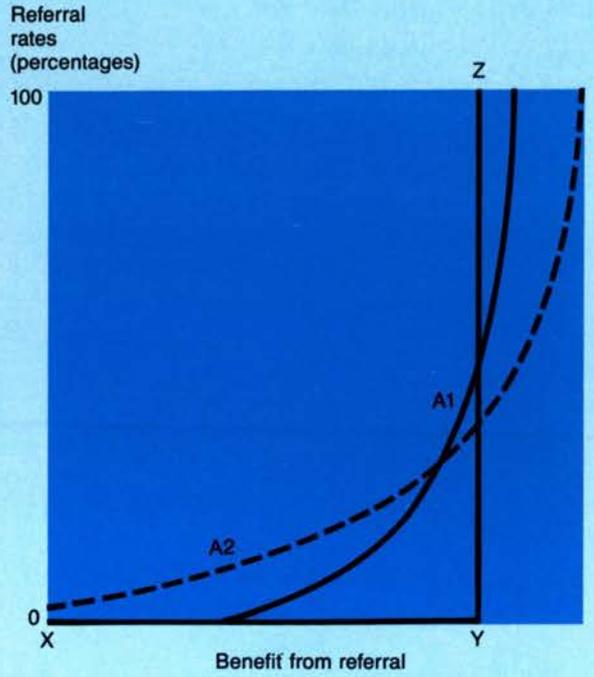
Source: Roland, 1990

Perhaps an equally important message to emerge from this brief review is that we should move away from focusing on the referral decision in isolation and become more concerned with the overall effectiveness of treatment. Referral of patients to hospitals by their GPs is but one decision among many in the complex process of treatment. Of course, it is important to try to agree whether it should be undertaken in terms of patients' anxieties and preferences, as well as on purely clinical grounds. But to develop an effective consensus on appropriate referral criteria will ultimately require a comprehensive assessment of the entire treatment process, and will probably require far more research evidence, ideally from prospective outcome studies.

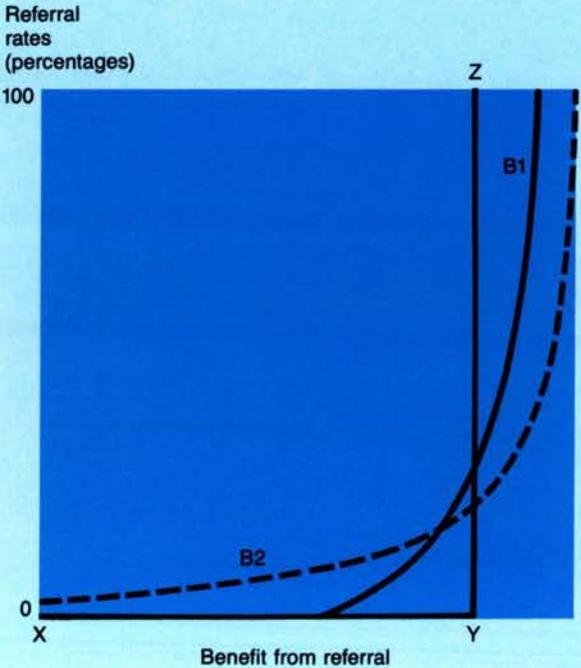
A Consultations classified in terms of benefits which could be derived from referral to hospital



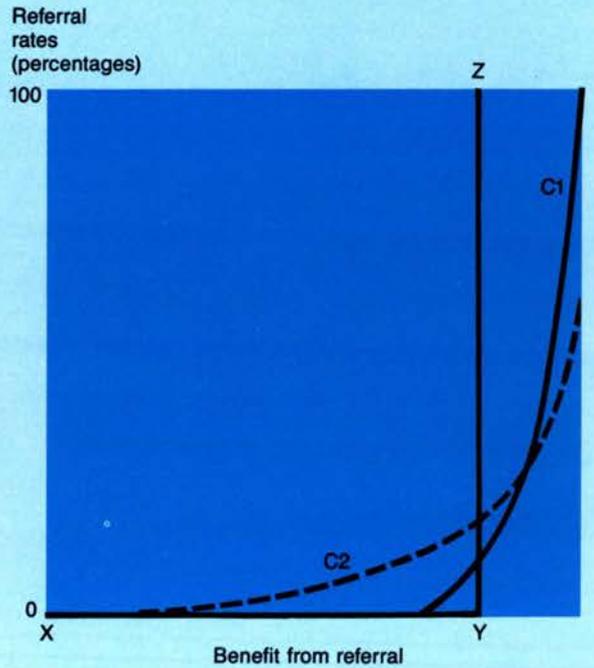
B High referring GPs



C Average referring GPs



D Low referring GPs



In Chart A it is assumed that it is possible to rank referrals in terms of the benefit (or disbenefit) the patient receives. With limited resources it is clearly desirable to refer those patients who will receive the maximum benefit. This situation is depicted by the line XYZ. In the range XY no referrals should take place; thereafter everyone is referred. In practice, referral systems will inevitably fall short of this ideal. Line A depicts a feasible pattern with both inappropriate referrals and failures to refer appropriate cases.

Charts B, C and D indicate pairs of high, average and low referring GPs with each pair (ie A1, A2; B1, B2; C1, C2) having the same overall referrals rate but very different proportions of appropriate referrals.

Clearly, in order to achieve the objective of increasing appropriate referrals it is necessary to change the shape of the curve rather than simply changing the referral rate.

Based on Wilkin *et al*, 1989.

Medicine Prescriptions

Over the past decade prescribing costs have grown over threefold in cash terms: from £657 million in 1978 to £2,046 million in 1988. However, after adjustment for price inflation, the real growth over the period amounts to only 46 per cent. As a result, the share of NHS spending devoted to pharmaceuticals has risen only slightly from 10.3 per cent in 1978 to 10.8 per cent in 1988.

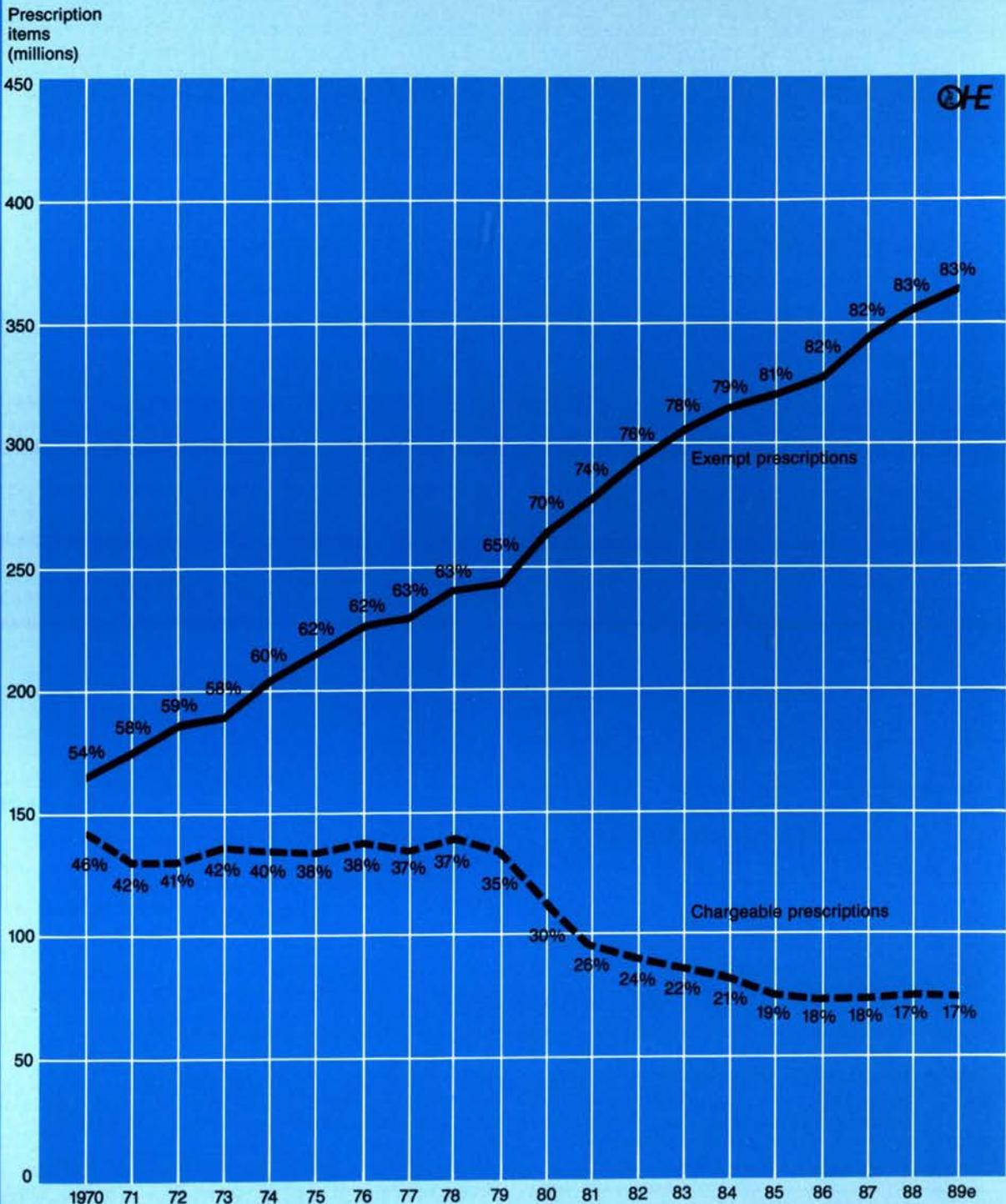
Nonetheless, the combined effect of the growth in cash spending, the increase in numbers of prescriptions exempt from charges (Figure 2), and wide variations in patterns of prescribing between medical practitioners, has attracted

attention and made prescribing an obvious target for cost containment.

This theme was taken up in Working for Patients (Working Paper 4) *Indicative Prescribing Budgets for General Practitioners* which stated:

“It is generally recognised that some prescribing is wasteful or unnecessarily expensive. The object of the new arrangements (viz. indicative prescribing budgets) is to place downward pressure on expenditure on drugs in order to eliminate this waste and to release resources for other parts of the health service”.

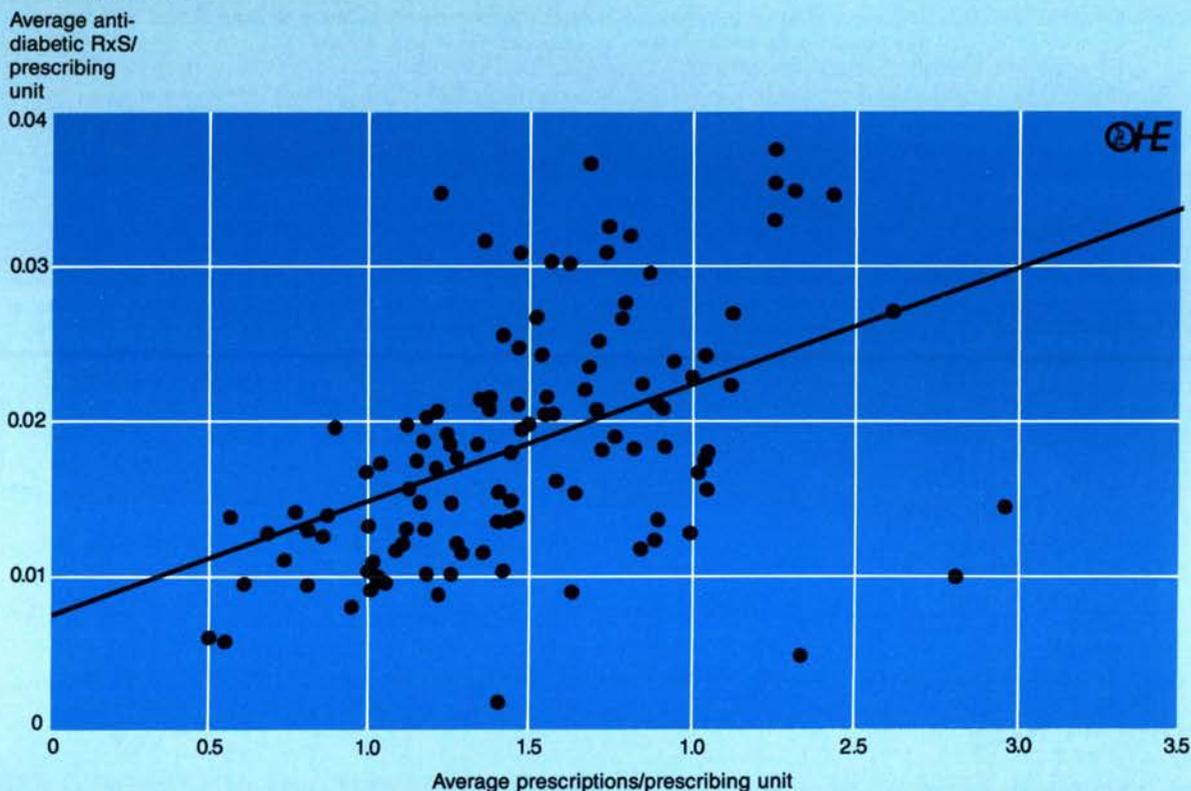
Figure 2 Exempt* and chargeable prescription items, UK



Note: *Based on a sample of 1 in 200 prescriptions in England and Wales (1 in 100 in Scotland) and includes prescriptions dispensed from prepayment certificates

Source: OHE Compendium of Health Statistics, 1989 and Department of Health

Figure 3 Average anti-diabetic prescriptions per prescribing unit against average prescriptions per prescribing unit, $R=0.46$



Source: Teeling Smith, 1990b

The subsequent Working Paper on *Improving Prescribing* (1990), while generally being interpreted as a flexible approach that should ensure that no patients are denied the medicines they need, nonetheless re-iterated the governments' intention of curbing spending on medicines:

"The indicative prescribing scheme will be truly indicative and will not in any way infringe the rights of medical practitioners to prescribe all the drugs which their patients need. The Family Practitioner Services (FPS) drugs bill is expected to continue to rise, although at a slower rate than would otherwise have been the case".

Despite these reassurances, however, many people still have concerns about the proposals. Their unease centres on the Government's insistence on equating reductions in variations, through more rational prescribing, with expenditure reductions. Admittedly, there are almost certainly instances where improved control systems for repeat prescribing, or better prescribing of antibiotics and tranquillizers, could have this effect. But equally there is a growing body of research evidence that points to the existence of serious underprescribing. This is a particularly important shortcoming in cases where more screening and greater use of medicines may raise costs in the short run, but will often prevent the onset of serious illness and prove to be extremely cost-effective in the long run.

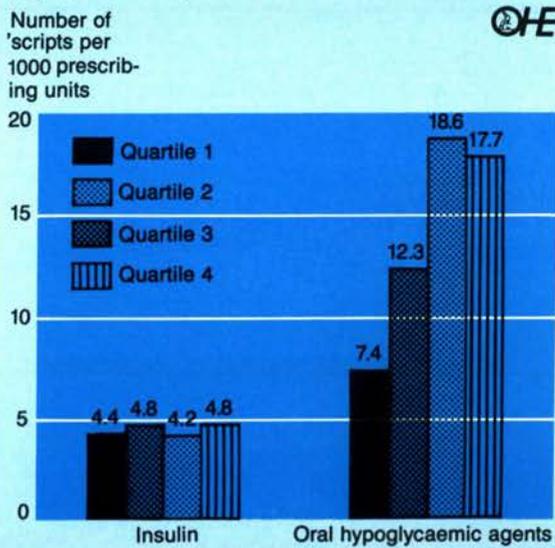
The case of hypertension provides an example. Despite a more general awareness of the risks of stroke among people with high blood pressure, large numbers of people with moderate to severe hypertension remain undiagnosed and untreated. This manifests itself in substantial NHS costs for the treatment of cerebrovascular disease. Teeling Smith (1990a) estimates that more effective use of modern medicines to control hypertension has resulted in savings of over £200 million in hospital costs alone, which would otherwise have exceeded £700 million.

The diagnosis and treatment of diabetes provides

another example of the danger of equating high with unnecessary prescribing. In a study of 114 practices carried out for the Office of Health Economics (Teeling Smith, 1990b) it was found that there was a substantial variation in prescribing with a positive correlation between overall prescribing and prescribing for diabetes (Figure 3).

When practices were divided into quartiles on the basis of their overall prescribing levels it was found that there was very little difference in prescriptions for insulin between high and low prescribers (Figure 4). This is not surprising. Early onset insulin dependent diabetes is dramatic in its onset and not difficult to recognise.

Figure 4 Average number of anti-diabetic 'scripts per prescribing unit



Source: Teeling Smith, 1990b

By contrast, late onset non-insulin dependent diabetes is far more difficult to recognise. There is anecdotal evidence that the disease is sometimes first diagnosed by opticians noting retinal damage or even by chiropodists detecting signs of peripheral vascular disease in the feet and toes. However, the survey data indicate that low overall prescribers are significantly less likely to treat non-insulin dependent diabetes than high overall prescribers. Practices in the top two quartiles prescribe nearly twice the number of oral antidiabetic medicines as those in the lowest two quartiles.

These data might suggest that practices with above average patterns of prescribing are actually practising more effectively than their more frugal colleagues. Significantly, however, even high prescribers were generally treating a lower proportion of patients than would be indicated by the estimated incidence of diabetes within the general population.

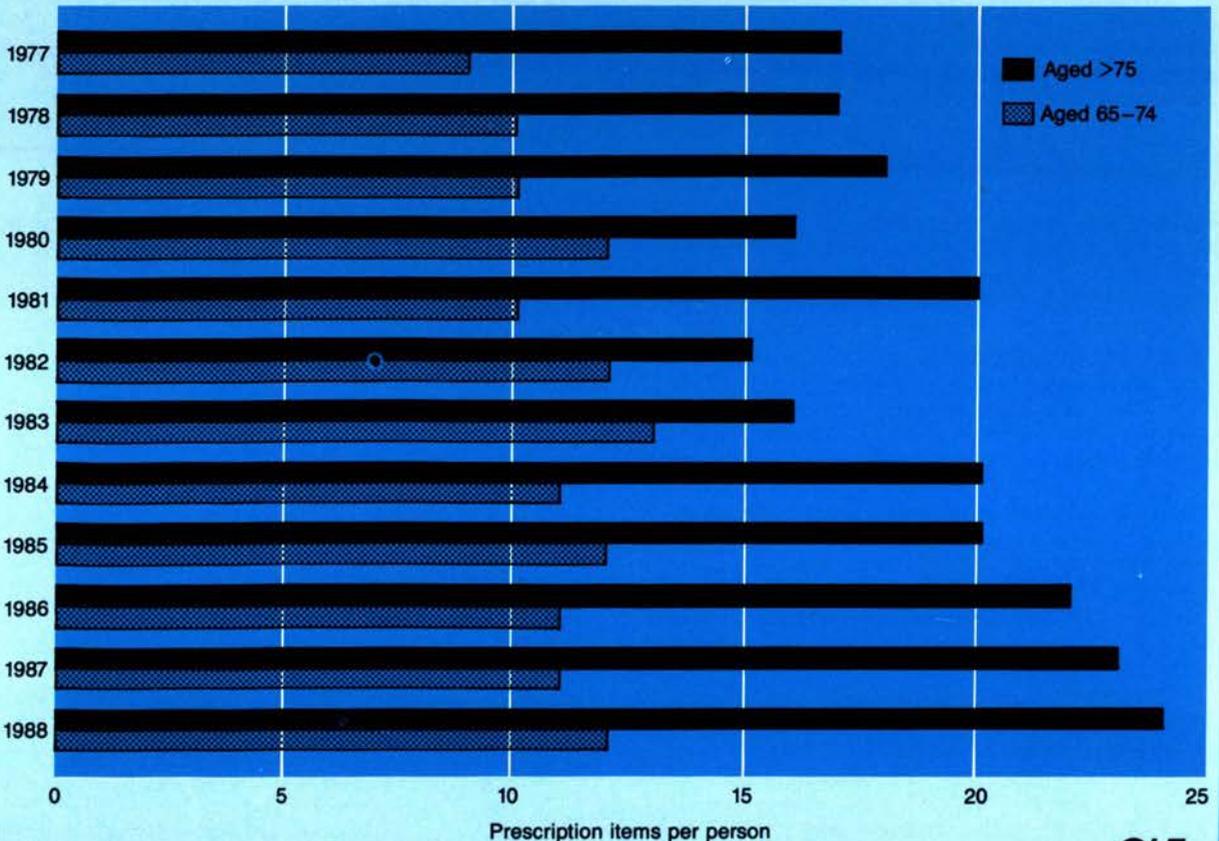
Another concern about measures aimed at bringing all prescribing into line with current average figures is that they may unfairly disadvantage particular groups of patients. Certainly fears have been expressed that, despite assurances from the Government, some general practitioners might face financial pressures which encourage them to discriminate against elderly patients and patients receiving expensive long term treatment. In this connection, it was recently estimated by the Association of the British Pharmaceutical Industry (ABPI) that the average person over the age of 75 receives 24 prescription items per year. This compares with an average of 5.3 items for men and women of working age, and 12 items for the young elderly, that is aged 65-74 years (Figure 5). Projected figures for those aged over 65, over 75 and over 85 (Figure 6) indicate that there will be a large growth in the numbers of people in these three age groups over the next 40 years. As the largest consumers of medicines the elderly are obviously going to be the group who will be most affected by a reduction in prescribing.

In examining the reasons for variations in prescribing behaviour, a number of recent studies have pointed to several factors which appear to be related to prescribing activity. For example, there are significant differences between the North and the South of England. To take two regions, in 1988 the number of prescription items per head dispensed in North Western Region was 9.2 compared to 6.3 in the Oxford Region (OHE, 1989). In the North prescriptions tend to have a relatively lower net ingredient cost, but are more frequently dispensed, whereas in the South the reverse is true. This may suggest that doctors in the poorer industrial areas of the North are prescribing medicines which their colleagues in the more affluent South would advise their patients to obtain over-the-counter. The larger number of patients exempt from prescription charges in the North is likely to play a part in these decisions. It might be expected that the two variables of cost and frequency of prescriptions would cancel each other out, but on the whole they do not. The North Western Region has the highest cost per head of NHS prescriptions dispensed, and the second highest total prescriptions cost, where as Oxford is amongst the lowest for both.

Unemployment differences between the North and South may also affect prescribing. One study found a positive correlation between the percentage increase in prescriptions dispensed per head between 1975 and 1984 and the levels of unemployment in mid 1985 (Griffin et al, 1986). This study concluded that for a regional increase of 2 percentage points in unemployment, a corresponding increase in the number of GP prescriptions per person per year of between 0.5 and 1.5 might be expected. Data from the Department of Health for 1987 have confirmed that the highest prescribing levels have continued in areas of high unemployment (Rayner, 1989).

Elsewhere a study by Beale and Nethercott (1985) demonstrated a significant increase in family doctor consultations among the families of 129 workers made

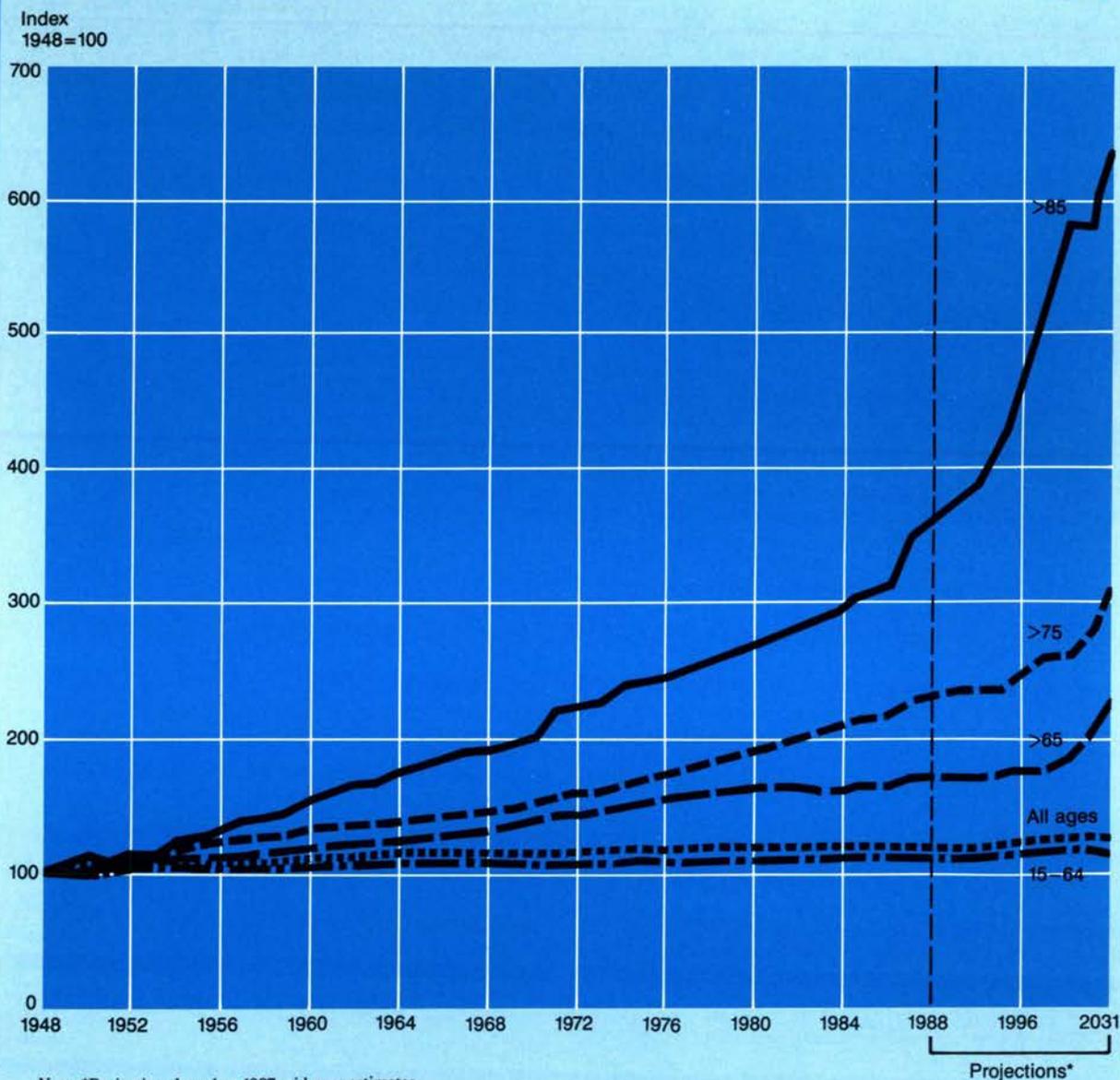
Figure 5 *Estimated prescription items per elderly person, England*



Source: ABPI, Pharmaceutical Briefings 1989-90



Figure 6 UK population and projections



Note: *Projections based on 1987 mid-year estimates

Source: Annual Abstract of Statistics

redundant following the closure of a factory in Wiltshire. Interestingly, the increase in consultations was first observed two years prior to the factory closure when management first announced the possibility. This suggests that the threat of redundancy is a stress which is equal to, if not greater than, that of actual job loss. In the following four years the consultation rates of the study group was 20 per cent higher than matched controls. If it is accepted that unemployment leads to a 20 per cent increase in consultation rates, and that approximately 80 per cent of all consultations result in a medicine being prescribed (OHE, 1989), then the impact of 2 million unemployed on prescription figures and thus the NHS medicines bill has been substantial.

Studies of international variations in prescribing can also be instructive as they point to cultural determinants of prescribing that are often independent of patterns of disease. In a study of prescription medicine usage in 16 countries, Griffin and Weber (1985, 1986, 1989) found a clear association between the number of Catholics in a country, the number of medicines prescribed per annum and that country's expenditure on medicines as a percentage of GNP.

Cultural and religious differences may not only affect the quantity of medicines prescribed but also their nature. For example, in Belgium an analysis of prescription data

for 1988 highlighted several interesting differences in prescribing patterns between the Flemish speaking regions—with their higher proportion of Protestants—and the French speaking regions. In the French speaking areas the percentage of the total number of prescriptions written for products classified as hepatoprotective agents was 50 to 100 per cent higher than in the Flemish regions, and in the Flemish regions the percentage of the total number of prescriptions written for products classified as Beta blockers, oral contraceptives, bronchodilators, anabolic steroids and immuno-suppressants was 50 per cent higher than in the French regions (Griffin, 1990).

Within the UK, cultural and ethnic differences may also have some impact on variations in prescribing patterns. Gillam *et al* (1989), in a study of a large group practice (list size 10,877) in Brent covering 67,197 consultations over a 23 month period, found that compared with other ethnic groups male Asians had higher than average consultation rates. Another study by Balarajan *et al* (1989) found that consultation rates in people of Pakistani, Indian and West Indian origin were higher in both sexes compared with white patients, and that the difference was particularly pronounced in the age group, 45-64 years. In considering the use made of health resources by different ethnic groups, however, it is relevant to note that although Gillam *et al* found higher consultation rates among

Asians, they were less likely to leave the surgery with a follow-up appointment, prescription or certificate.

Obviously great care needs to be taken in interpreting such findings. Variables such as race and religion are usually proxies for a highly complex set of factors which determine the use of health care facilities. Nonetheless they do appear to manifest themselves in variations in the work-load and case mix of GPs and in their prescribing.

Conclusion

General Practitioners are the gatekeepers of the National Health Service. Practically all out-patient attendances and non-Accident and Emergency in-patient admissions to hospitals arise through GP referrals. Moreover, approximately 80 per cent of medicines are prescribed by GPs. Clearly decisions taken by GPs have major implications for resource use. As such it is perfectly understandable that any government wishing to improve the way in which NHS resources are used should concentrate a major part of its efforts on this sector. Within the present NHS reform programme, proposals for fund holding GP practices and indicative prescribing budgets, or amounts, are both designed to improve efficiency within general practice.

With sensitive application, these reforms offer the scope for improving the cost-effectiveness and quality of primary care. But as this Briefing has shown there are also pitfalls. Two of these are worth emphasising. First, there is a danger than an asymmetric concern with exerting a short term "downward pressure" on spending will lead to a neglect of the gains to be achieved by addressing undertreatment and underspending. Tight cash limits have already restricted spending on health care to a lower proportion of GDP in the UK than in almost any other comparable country (OECD, 1990). In this context further downward pressure seems less relevant than a policy based on a full assessment of the costs and benefits of additional spending.

A second—and related—point to emphasise is that prescribing medicines and referring patients to hospitals are but two components in the overall process of providing health care. Spending in one sector will often have implications for spending elsewhere. Hence, a full assessment of the costs and benefits of GPs activities should take account of the long run savings in the hospital sector that often result from greater spending on primary care. Unfortunately, the public expenditure planning system—with its emphasis on single, financial year and separate HCHS and FPS budgets—does not encourage this wider, longer term perspective.

In practical terms, as in other areas of the NHS reforms, the success or failure of the reforms in primary care will depend crucially on the way in which they are implemented at the local level. The role of FPC managers and their medical advisers will be vital. They will have the key task of monitoring GP practices, offering advice and disseminating best practice. At the moment, however, there must be some uncertainty about their ability to carry out these duties effectively. Over 50 per cent of newly appointed FPC managers have no experience in the management of Family Practitioner Services. Moreover, a recent simulation exercise of the NHS reforms carried out in the East Anglian Regional Health Authority concluded that FPCs are likely to be the weakest link in the new style health market, suffering from conflicting pressures and lack of certainty about their roles (East Anglian Regional Health Authority/Office for Public Management, 1990). It went on to highlight the fact that, without the specification of quality outcome standards, there was likely to be a threat to service quality posed by purchasers of health care seeking to maximise service provision from within fixed budgets. This is a potential danger which needs to be watched most carefully.

Papers were presented to the OHE Symposium by Dr G F Batstone, Ms A Coulter, Sir Michael Drury, Dr J P Griffin, Professor C M Harris, Dr M Hartog, Dr J A C Hepburn, Dr M Roland, Mr J Smyth, Professor G Teeling Smith and Dr D Wilkin. We are grateful for their permission to draw on material contained in their papers and the discussion which arose from it. None of these speakers is, however, responsible for the contents of this Briefing.

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Office of Health Economics

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