THE UNIVERSITY of York

CENTRE FOR HEALTH ECONOMICS

The Need for General Medical Services: A Literature Review

Roy Carr-Hill

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by

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A LITERATURE REVIEW

EXECUTIVE SUMMARY

General Medical Services (GMS) are provided mainly through Family Practices, on a demand led basis: that is, there is no cash limit expect for certain specified selected services such as Practice Nurses etc. Nevertheless, since 1948, the Medical Practices Committee (MPC) have influenced the delivery of GMS through a system of allowances for areas designated as under-doctored; and, of course, there are deprivation payments (mostly in urban areas) and the rural practice allowance. However, there have been questions about the extent to which the provision of GMS - and specifically the distribution of General Practitioners (GPs) between areas - is equitable. The purpose of this review of the literature on the need for GMS was to provide a background to discussions about ways in which the current methods being used to guide the MPC decisions about the distribution of GPs could be improved.

In the first section, this context and the current situation are briefly described. Before discussing the determinants of consultations workload, we show, in the second section, how the proportions actually getting as far as a consultation are considerably smaller than the proportions claiming at any one time to be ill, and set out a crude model of the pathways to a consultation, which sets the framework for the subsequent review. We also discuss the controversies over the measurement of workload itself: ideally, we want to be able to measure 'real' utilisation including both the length and complexity of the consultation, whilst controlling for variations between general practitioners.

The factors influencing the demand for primary care are considered in the third section. Demand for primary care consultations is influenced by certain socio-economic factors (age, sex, housing tenure, unemployment, social class, family structure/marital status, rural/urban residence, ethnic group) which are related to the prevalence and incidence of illness. Less reliable, but equally important determinants of demand, are the pathways to primary care charted by individuals on the basis of the patient's perceptions of illness and illness behaviour which are set out in section two.

Other factors affecting the demand for primary care consultations are considered in the fourth section under the headings of accessibility and organisation of primary care. Accessibility whether in terms of cultural, financial; or physical barriers does make a difference: proximity to a primary care facility increases consultation patterns whereas distance decreases consultation rates. Appointment systems do influence patient demand: in particular follow-up appointments may increase because of the transfer of services from secondary to primary care. Second, there is no conclusive evidence that list size affects GMS utilisation although large list sizes may restrict the amount of time available for individual patients: in some circumstances this may reduce the quality of care provided. Third, preventative services, whilst not always utilised by those most at risk, generate significant added workload. Fourth, the 1990 contract has increased administrative burdens and, by virtue of the availability of clinics, generated added medical workload.

In the fifth section, supply issues are briefly considered. Patients do attend A&E departments - especially when they are close - for conditions often more appropriate for primary care but the reasons for this behaviour are complex and difficult to reverse. There are statistical techniques available for adjusting for supply, although this will always be a complicated procedure in this area unless analysis is restricted to individual data.

The characteristics of high attenders or those demonstrating increased SPCRs can be summarised:

- Frequent attendance is often associated with a defined illness whether physical or mental, and this is reflected in a substantial number of GP initiated follow up appointments.

- High users perceive themselves to be ill and are anxious or fearful about their symptoms but have faith in the GP rather than a belief in self care.
- Increased GMS utilisation is associated with: families with high attendance rates; social classes 4 and 5; ethnic minorities; women; the unemployed; mobile populations; and people from deprived areas.

Patients whose response to illness is less likely to be to consult a GP are less prone to worry about symptoms; feel in greater control of their lives; are more sceptical of the effectiveness of the GP's treatment, sometimes as a result of an unsatisfactory past or family experience; and are more prone to use and believe in self care and rely on/possess social/friendship networks.

There are therefore a wide range of factors associated with consultations. The few multivariate analyses that have been carried out are discussed in the sixth section: their results demonstrate that both self-reported ill-health and socio-economic deprivation independently affect the level of consultations.

There has therefore been a considerable amount of research; in the concluding section we argue that more of the same will not help. The problem is that the different data sets available - although leading to very similar conclusions - each only provide a partial picture. In order to improve on existing evidence, we need data on consultations from a representative sample of practices over a period where data is recorded on both the length and markers for complexity, whilst the patients on their lists are asked to complete a brief questionnaire about both their self-perceived health and their socio-economic status.

Nevertheless, despite these problems - which are not, in principle, any more severe than those confronted in other areas where resource allocation formulae have been developed - there is a consensus about the factors influencing the need for GMS (even though there are queries about the consultation measure itself):

- first, self-reported ill-health does reflect real morbidity as well as trivial complaints and is a powerful determinant of the propensity to consult; and
- second, there are a range of socio-economic factors which are associated with the likelihood of consultation over and above ill-health whether measured in terms of self-report or ‘objectively’.

On this basis, a formula could therefore be developed incorporating both a morbidity variable and a combination of socio-economic variables.

THE NEED FOR GENERAL MEDICAL SERVICES: A LITERATURE REVIEW

SECTION I: BACKGROUND TO THE ASSESSMENT

General Medical Services (GMS) are provided on a demand-led basis: that is, there is no cash limit except for certain selected services (e.g. re-imbursement for practice nurses). Of course, since 1948, the Medical Practitioner Committee (MPC) have influenced the delivery of GMS through a system of allowances for practising in areas designated as under-doctored. Nowadays, no new payments are being made for this purpose although a very small and declining number of doctors may be receiving payments under this heading, because of the long taper attached to the payments (Ellis and Chisholm, 1997, p.63). Yet, the issue of the equitable distribution of General Practitioner's - and therefore of the equitable delivery of GMS - is regularly raised (Birch and Maynard, 1986; Bloor and Maynard, 1995). The purpose of this review of the literature on need for GMS is to examine whether there is any room for improvement in the current methods being used to guide the MPC decisions about the appropriate distribution of General Practitioners.

In the context of the way in which resources are allocated to other sectors of the National Health Service, this situation is relatively unusual. In other areas of the health service, the general approach has been to search for a plausible set of 'needs' factors that are closely associated with resource utilisation, after taking account of the influences of supply. In order for such an approach to be acceptable as a basis for informing the distribution of GPs, it has to be based on acknowledged 'needs drivers'. It was, therefore, thought that a review of the literature about the patterning of need for the GMS delivered by GPs would be useful.

In the remainder of this section, we very briefly review the approach to the allocation of resources in the rest of the National Health Service and the implications for examining the literature in respect of the need for GMS; the current situation in respect of funding of GMS; and what we are doing in this report.

I.1 Resource allocation elsewhere in the NHS

The 1974 Resource Allocation Working Party, which was set up to develop an equitable formula for the distribution of resources to Hospital and Community Health Services (HCHS), described its terms of reference as:

> "to reduce progressively, and as far as possible, the disparities between the different parts of the country in terms of the opportunity for access to health care of people at equal risk"

Subsequently, there have been two revisions to the HCHS formula (DHSS 1988 and DH 1997); and, of course, the development of a number of other formulae for other fractions of the BHS budget including the Market Forces Factor and the cash-limited GMS budget.

The remit for RAWP did not include allocations to GMS, and whilst a component of expenditure on GMS is now distributed according to a formula (the so-called cash-limited GMS), the bulk of expenditure - on the remuneration of GPs - is not subject to formula.

Since the middle 1970s, therefore, allocations to HCHS have been based on a formula; whilst payments to GPs (the bulk of expenditure on GMS) are a combination of *capitation, fees* for a variety of items of service, *re-imbursement* for certain expenses and some *compensation* payments for practising in specific areas. Most of these depend on the way the GP wants to practice; the only part of the payments to GPs which is *allocated* is the cash-limited budget covering some staff, equipment and the cost rent scheme which was originally directed by Family Practitioner Committees (subsequently the Family Health Service Authorities and now incorporated into the Health Authorities).

I.2 The current situation

The funding of GMS in England has therefore had a complicated history. Although the allocation of resources for GMS have not been regulated by formula as such, there have been different capitation amounts for different age groups for sometime (currently, under 65, 65-74, and 75+), and there have also been Rural Practice Payments to compensate for the extra time required to deliver services in rural areas. Moreover, there has been some attention to directing additional resources to 'needy' areas since the inception of the NHS: thus, there were incentives in the 1950s to direct GPs to under-doctored areas (Klein, 1983) although these have now tapered out (Ellis and Chisholm (1997). More recently, of course, a deprivation payment has been introduced as one of the package of allowances for GPs, intended to compensate for the presumed extra difficulty of treating patients living in particular areas. This 'deprivation' payment is based on the Under Privileged Area Score (UPA8)[1] which has a number of conceptual and empirical drawbacks (Carr-Hill and Sheldon, 1991; and section III.4).

In practice, this latter index tends to favour urban areas - e.g. by including the proportion of ethnic minorities - rather than indices of issues of concern in rural areas - e.g. the lack of public transport. Only 3% of rural GPs in the UK qualify for deprivation allowances (Galloway, 1992), although there are the specific additional payments for patients in rural areas (> 2 miles from surgery) and many more rural practices receive payments as dispensing practices. Note, however, that the same problem will occur with any other index based on census variables as it is generally acknowledged that there is no easy way to use a combination of the current information collected in the census to reflect rural deprivation.

However, regardless of whether or not there is a formula, the central policy issue is to allocate resources according to needs which can be met efficiently through primary care to produce health gain. In practice, this means organising the distribution of GPs, of the resources available to them, and of any special needs payments, so as to improve the overall distribution of the quality of primary care provided according to the needs in the community. Indeed, as mentioned above, the distribution of GPs between Medical Practitioner Committee (MPC) areas has been

[1] Based on the weighted sum of eight standardised variables from the 1981 (and now 1991) census, viz: Lone Pensioner, Under 5, Social Class V (unskilled), Unemployed, Lone Parent, Overcrowding, Change of Address, and Ethnic Minorities (Jarman, 1983).

systematically reviewed by the MPC since the foundation of the National Health Service in order to ensure that there are not undue discrepancies between areas.

The advent of primary care groupings, responsible for all patient care, does not directly affect the non-cash limited payments for GMS (because the unified budgets do not include non cash-limited GMS). The bulk of the resources for GMS cannot therefore be directed towards need in the same way as in other health service budgets. The lack of coherence between the two main sectors of NHS expenditure is particularly problematic given the current convergence of DHA, FHSA and GP activity. But the general move towards rationalisation has led to interest in the extent to which there is equitable provision of GMS across the country and whether the current payment system - including not just the deprivation payments but also the age weightings and rural practice payments - is sufficiently close to reflecting the relative need for GMS. Moreover, it is proposed to move towards an (indicative) prescribing budget which would be based on some form of weighted capitation and, of course, the possibility of some re-structuring of primary care in the context of the overall goals for the NHS, raises the general issue of the extent to which the provision of GMS, i.e. the distribution of GPs between areas, is equitable.

I.3 Basis for formulae

Allocations in other areas of the health services, whilst increasingly employing statistical analysis of data relating patterns of utilisation to patterns of need, have always relied on expert judgement as to what affects the need for the service in selecting the kinds of variables that will be examined in such analyses, and on the interpretation to place on those results, although the exact balance between empirical evidence and judgement has varied.

We have to decide whether the resources are to be targeted towards where they are most needed (i.e. for health gain as per Health of the Nation), or whether the intention is to work towards a formula to compensate GPs appropriately for workload. In other sectors, there has been general agreement that, for the purposes of resource allocation, one should focus on the extent to which the service is meeting need, and that, the final allocation of resources should aim at equalising inputs with the objective of equity in access for those in equal 'need'. Whilst it is important to recognise that, in the case of GMS where the majority of inputs reflect professional time on task, there is a very substantial overlap with workload, the overall focus is on the extent to which those professional inputs provide equal access for equal need.

The focus on 'meeting need' then poses two other general problems. First, there is the issue of whether we are talking about the 'need for health care' defined in terms of the individual's level of morbidity or defined in terms of their capacity to benefit from treatment; and second whether we should presume that the role of health care is to 'compensate' in some way for deficiencies elsewhere. In other sectors, it has usually been possible to agree that the concept of need for health care should be limited to the capacity to benefit and that deficiencies outside the health service should be ignored. But, in the case of GMS, this is particularly tricky because nearly half (about 45% according to the most recent National Morbidity Survey) of consultations are adjudged by the general practitioners to be 'trivial' by which they mean either illnesses commonly treated without recourse to medical advice or minor

self-limiting illnesses which require no specific treatment; and a further substantial fraction are seen to have their origin in socio-economic circumstances outside the remit of the health service.

This means that care has to be taken where it is proposed to base formulae on quantitative/statistical analyses of consultations with GPs. We have to distinguish, at least, as far as is possible, between consultations which are generated out of an 'objective' need and those which result either from variations between patients in their propensity to consult for a given 'objective' need or from 'supplier-induced demand' according to practice style.

I.4 What are we doing in this report

As implied above there are three distinct distributional issues which are associated with the patterning of GMS which could potentially be reviewed:

- Geographical distribution of practices;
- Allocation of resources to existing practices;
- Allocation of resources according to geographical distribution of need.

All three are important issues. Although the policy context is the appropriate distribution of (weighted time equivalent) GPs, the appropriateness of that distribution depends directly on the distribution of need for GMS. The bulk of this review is therefore concerned directly only with the third but is, in principle, related to the other two so we should clarify the relationships between them.

1) The MPC has spent considerable effort on the criteria governing the appropriate and equitable distribution of practices and of general practitioners. They have elaborated a list of 60? Factors which should be used to guide location decisions. However, from the point of view of the need for GMS, there is only limited evidence about the way in which the geographical distribution of practices or of general practitioners affects the provision of GMS to populations (see section IV.2).

2) The discussion of the extent to which resources are or are not appropriately allocated to existing practices requires much more detailed data on the nature and type of GMS that are delivered and received, probably on a longitudinal basis (see section VII).

The review in this report therefore is concerned almost entirely with the assessment of the 'needs drivers' for utilisation of GMS (although there will also be some remarks about the relevance of supply factors especially in the context of a Small Area Analysis).

Specific objectives

The specific objectives of the review are to:

- outline the important determinants of need for GMS
- compare the various models, indices and data sets which have been used to explain utilisation of GP services
- provide a critical commentary on the strengths and weaknesses of the literature for resource allocation purposes

The review therefore examines: what should be the basis for a formula for GMS; controversies over the measurement of activity in primary care (utilisation versus workload); accessibility and quality of services (the issue of unmet need); changes since the 1990 contract and morale; and assessing the influence of alternative supply on that workload. The second part of the review examines the evidence about factors affecting utilisation (workload). In this section we distinguish between analyses which have been based on individual data, on area data or on practice data sets; and the validity of their conclusions is assessed in terms of whether they are based on univariate analyses or on a model taking other factors into account. In the third section, we review the best source of data for developing indices and the comparative performance of the models that have been proposed. In the final section, we discuss the problems of calculating an index, and of linking the allocation of resources to their actual utilisation.

Sources

There are four main areas of research to be addressed: access, equity, need and workload. We have profited from the recent review by Goddard and Smith (1998) who were asked to examine equity of access to all types of health care; and a review of literature concerned with resource allocation issues by the Scottish Office. We have also been able to draw on earlier work we did both when analysing the relationship between census variables and utilisation using the MSGP4 data (see Carr-Hill, Rice and Roland, 1995), and when examining the issue of capitation and workload (see Carr-Hill, Jenkins-Clarke and Rice, 1997).

We have trawled through MEDLINE, and other databases since 1990 with a combination of keywords centred around Access, Equity, Need and Workload (see Annex 1). Through this we have identified articles and letters which are listed in the bibliography.

SECTION II: FROM SYMPTOMS TO CONSULTATIONS

A patient's decision to access medical care by consulting a GP constitutes the final outcome (seeing the doctor) of a complex process. This process is constructed in an intricate social, economic and demographic nexus that is initiated by experience of symptoms. In addition to the experience of illness itself, a patient's decision to consult depends also upon illness behaviour characterised by attitudes, beliefs, expectations, life events, perceived health status and socio-economic and demographic variables. Non-medical factors are often as important as symptoms in determining an individual's response to illness. It is important to stress that pathways and influences on health seeking behaviour are many and varied. As the Department of Health report "*Health of the Nation*" says measures based on use of services reflect not only morbidity but also the availability of services and individuals' propensity to use them.

The purpose of this part of the review is to set out some of the pathways between the experience of illness and consultation with a general practitioner by identifying literature and data in the areas listed below:

- To consider whether the extent to which the experience of symptoms by individuals is predictive of GP consultation patterns.
- To discuss the impact of nationally observable variables on GMS utilisation.
- To consider factors which suppress/increase demand for and patient choice of GMS rather than any alternative.

Throughout this section one comparative statistical measure is frequently used when assessing the impact on GMS utilisation/consultation patterns of various determinants. This measure is the Standardised Patient Consulting Ratio (SPCR) as used by McCormick and Rosenbaum (1990) and McCormick, Fleming and Charlton (1995) in their analysis of the Third and Fourth National Studies of Morbidity Statistics from General Practice (referred to as MSGP3 and MSGP4 respectively). The measure refers to the extent to which the numbers consulting differ from average levels over the whole census-linked study population - at all times the average weighted figure is 100. Any number above 100 represents a higher than average consultation ratio, and any number lower, a below average consultation ratio.

Of course, a crude or standardised consultation measure does not perfectly reflect a person's accessibility to GMS for a given need. We have already mentioned the importance of distinguishing, as far as is possible, between consultations generated out of an 'objective' need and those which result either from variations between patients in their propensity to consult for a given 'objective' need, or from supplier induced demand' according to practice style. We should also recognise that those in greater need may not only generate more consultations but consultations for more serious conditions which therefore tend to be longer, more complex (or which require more attention even if they are not necessarily any longer or more diagnostically complex). Where possible, we shall therefore include literature which examines these issues as well.

II.1 Being ill and seeing a doctor

II.1.1 Definition and prevalence of ill-health

Definitions

There is no simple or unitary definition of health and people vary in how they define and react to their own health. Blaxter defines five components to health: the absence of disease, freedom from illness or the feeling of illness, freedom from limitation of function, physical fitness, and psychosocial well-being (Blaxter 1985). The meaning attached to and the response to a symptom/morbidity by an individual are as important as the symptom itself and people evaluate and respond to them differently (Banks et al 1975, Murray 1985, Cope et al 1994). Individuals display different patterns of illness behaviour (Mechanic 1962) which are often explained by cultural and social determinants and personal characteristics. Murray (1985) has suggested that such determinants consist of both enduring factors (i.e. personality attributes) and more changeable factors (i.e. social support).

Prevalence

There is widespread physical and psychological morbidity in the community: symptoms of some disturbance are a common part of the daily life of most people. Blaxter's (1990) analysis of the Health and Lifestyle Survey found that colds/flu and headache are the two most common symptoms followed by painful joints and backache). The large number of symptoms dealt with outside the medical care system has been termed 'the illness iceberg' (Last 1963) or the 'symptom iceberg' (Hannay 1979). Surveys report high levels of reported symptoms in the population with the prevalence of common symptoms mostly unreported to GPs very high. (Kessel and Shepherd 1965, Freer 1980, Scambler et al 1981, Blaxter 1985, Corney 1990, Macran and Rigby et al 1994). A cross-sectional postal survey of 2,034 patients in the North of England by Croft et al (1993) concluded that the point prevalence of chronic widespread pain was 11.2%.

Limiting long-standing illness

Self-reported long-standing illness is also common. According to the latest General Household Survey (1996), the proportion of middle-aged (45-64) reporting a long term illness is 46%; and the proportion among 16-44 year olds declaring themselves to be in 'not very good health' has doubled over the last 25 years from 14% to 27% again according to responses to the General Household Survey. For some conditions there are arguments that these reports of ill health reflect real increases in morbidity, e.g. asthma related to increased pollution, or obesity related to dietary changes, but it is generally acknowledged that the bulk of the increase relates to changes in perceptions of being ill and expectations of being healthy and of the health care system.

There is evidence, however, that the existence of prolonged limiting symptoms/illness does increase the propensity to and frequency of consultation (Corney 1990; Wright 1988). Schellevis et al (1994) in a study of 962 patients in the Netherlands found that patients without a chronic disease had lower mean consultation rates than patients with a chronic single disease. Patients with co-morbidity (combinations of two or more chronic diseases) consult more than patients with one chronic disease. Bucquet and Curtis (1986), reviewing available evidence, concluded that semi- and unskilled social groups report long-standing illness more frequently - and, indeed, the same population sub-groups with poor health status (for example social classes 4 and 5) also demonstrate higher consultation rates (see next sections).

Illness experienced in the community is much more widespread than illness presented to the GP. Consultation with a general practitioner is one of the end-points of care-seeking behaviour which may not reflect need in the population. In a later section, the factors which account for this discrepancy between the prevalence of symptoms and GMS utilisation are examined. However, despite this overall "illness iceberg", certain factors have previously been found to be associated with high SPCRs and these are now assessed.

II.1.2 From experience of illness to consultation

One theoretical framework which has been used widely to explain responses to illness is the Health Belief Model (Becker and Maiman 1975). This model is based on four key psychological characteristics as determinants of an individual's perception of their own health and health seeking behaviour. These are: perceived susceptibility and vulnerability to illness, perceived severity (of the symptoms), perceived costs (monetary and other) of different types of health seeking behaviour, and perceived benefits of action (including belief in efficacy of the doctor). These psychological characteristics may be modified by demographic factors (e.g. age, sex, ethnic origin) and socio-psychological factors such as social class, personality, and relationships with family and peer groups. In an individual situation the patient may be influenced by 'cues to action' such as advice from others, previous illness in family or friend, and media reports or campaigns.

The response to illness by patients therefore depends upon a number of influences derived from their social and inter-personal milieu. Information/data detailing incidence of patient self referral by disease category is sparse. Banks et al (1975) analysed the likelihood of symptoms leading to a consultation. Although this research is old it nevertheless represents the most complete set of data available. Data collected - on a smaller sample - as part of the current pilot cohort study at Manchester (Nicolaas et al, 1997) gives a similar picture. Patients who attend frequently commonly have a clearly defined illness. Those aspects of illness behaviour which (intentionally or unintentionally) inhibit the self-management of symptoms are concomitantly associated with increased consultation patterns. The steps between the experience of illness by an individual and the provision of medical care for that individual, along with some of the factors which influence how different individuals travel down the pathway, can be summarised schematically as in Figure 1.

Incidents of patient self referral

The universal experience of symptoms of illness does not, therefore, translate automatically into expressed demand for care. Only a small percentage of symptoms are presented to the GP (Hannay 1978, Ingham and Miller 1982, Egan and Beaton 1987). Campion and Gabriel (1984) estimated that one in twelve new symptoms in children results in consultation. More disease specific studies published in the 1990s corroborate this trend. Jones et al (1990), for example, reported a six month period prevalence of dyspepsia in an adult population of 41%, but only one in four of these had attended their GP. Burke (1993) found that 12% of adults report a sore throat during a two-week period but only one in twenty patients with symptoms of sore throat present to the GP - compared to 1:18 found by Banks et al in 1975. Mortimer (1990) suggested that 70% of patients with migraine, which has a population prevalence of 10-15%, choose not to consult their GP. Similarly, the estimated prevalence of varicose veins is 8% in men and 16% in women (see Garratt et al 1993) but the patient consulting rate per 1,000 persons at risk is 8.8 for all ages but within this 5.2 for men and 12.1 for women (MSGP3, 1986).

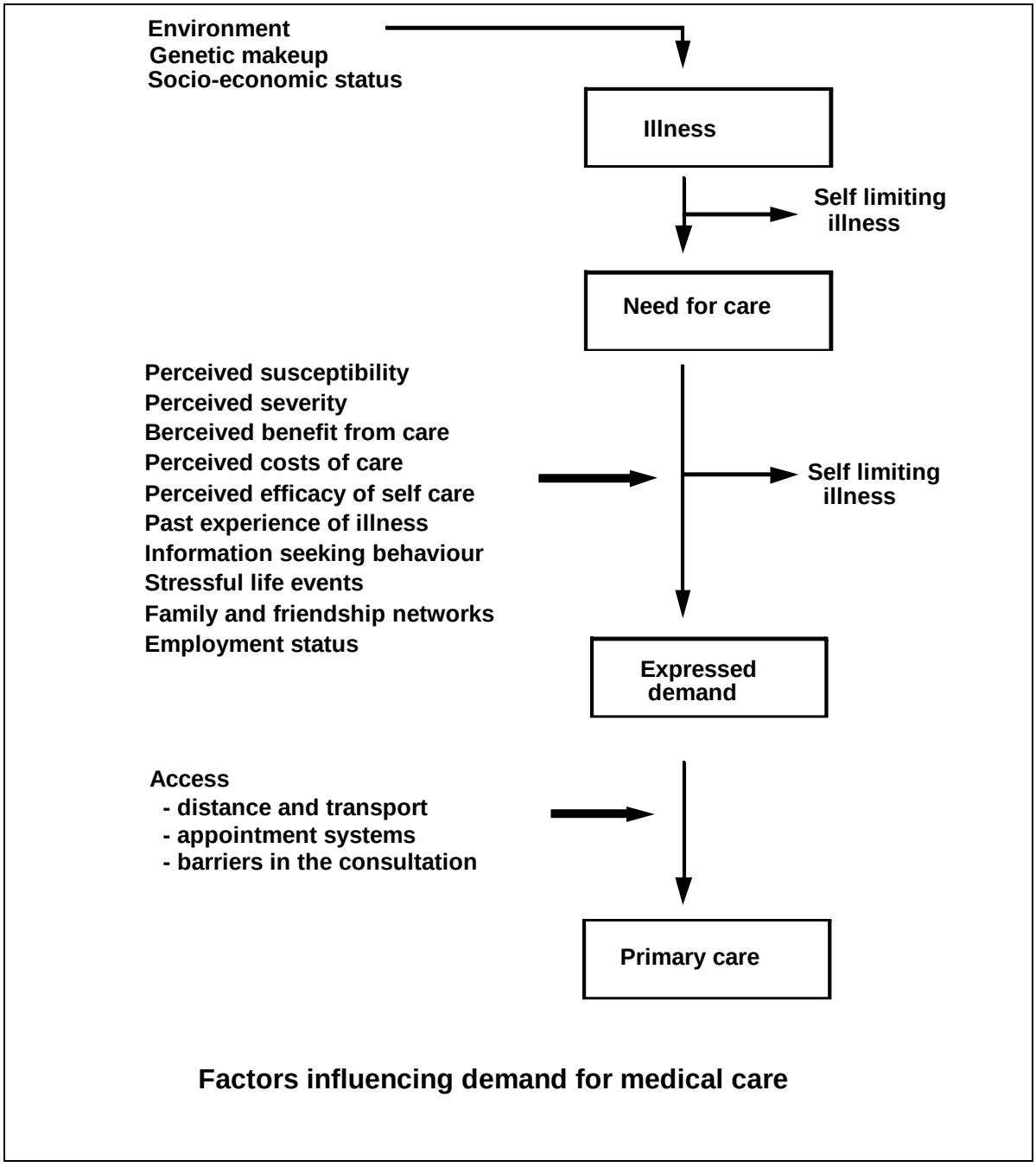

Figure 1: FACTORS INFLUENCING DEMAND FOR PRIMARY MEDICAL CARE

Notes:
+ Socio-economic status variables may affect not only health status, but also the 'objective' need for care, the rate of expression in the form of demand, levels of accessibility and availability, and also GP decision-making.
$ The feedback loops may either be positive or negative.

II.2 The measurement of consultation workload

The problem for those searching for a resource allocation formula is to link routinely available data on 'deprivation' factors reflecting the need for (primary) health care to the levels of utilisation, whilst taking account of variations in the propensity to consult. However, in contrast to other sectors, one of the main issues here is the measurement of utilisation itself; for, whilst in other sectors, the resource consequences of utilisation can usually be calculated from routine data on e.g. rates of hospital in-patient activity, or rates of visits by the community nurses, etc and then weighted according to estimated unit costs, in GMS there is debate over whether raw consultation rates are the appropriate measure of the consultation workload of general practitioners and, if not, how they should be measured.

II.2.1 Numbers

Level and trends in rates of consultations

Consultations are the most obvious aspect of workload for a general practitioner; and based on extrapolation from the Fourth National Morbidity Survey of General Practices, there are 180 million consultations a year. However, this activity (including home and night visits) only constitutes 76% of GP activity (see Doctors and Dentists Review Body, 1995); and there has been a substantial literature pointing to home visits and other patient care activity; and there are also a literature on other constraints on the general practitioners time.

Frischer (1991) documents the sharp reduction in the consultation rate between 1956, 1971/2 and 1981/82 (and the way this has changed over the 1980s is shown in Table 1A). Frishcer suggests that doctors are now limiting their role to primary assessment; but the trend shown in Table 1 would suggest that this trend has been arrested. He suggests that, contrary to the model of generally improving health (e.g. Fries, 1983), further decline in mortality rates would probably be associated with increasing ill-health and greater workloads for GPs among the middle aged and elderly population.

In fact between 1981/82 and 1991/92, there was a substantial shift in the pattern of consultations with the general practitioners. Thus, according to the series of National Morbidity Surveys (RCGP/OPCS/DHSS, 1986; RCGP/OPCS/DH, 1995), there was a nearly 10% increase in prevalence (the proportion of people consulting at least once during the year) over the 1980s. When this is broken down between the prevalence for serious, intermediate and trivial conditions (Table 1B), it is clear that the rate of increase in the proportions of people consulting for 'serious' consultations (27%) is higher than the rates of increase in 'intermediate' or 'trivial' consultations (14% and 15% respectively); however, only relatively small proportions are consulting for serious conditions in the first place. Indeed, because the proportions of people consulting overall has increased substantially, the increase in the numbers of people consulting for conditions which are viewed by the general practitioners themselves as 'trivial' is more than double the increase in the numbers of people consulting for conditions viewed by the general practitioner as 'serious' (Table 1B). Definitions of 'serious', 'intermediate' and 'trivial' are attached as Annex 2; breakdowns by age are in Annex 3 (Table A3.1)

Table 1A: Prevalence of patients consulting for all, serious, intermediate and trivial conditions - 1981/82 and 1991/92

	All	Serious	Intermediate	Trivial
1981-82	7,116	1,439	4,160	5,702
1991-92	7,803	1,829	4,741	6,576

Table 1B: Increases between 1981-82 and 1991-92 in prevalence of serious and trivial consultations per 10 000 person years at risk (for all and for selected ages)

	All Ages	0-4 years	75+ years
Serious	390	551	675
Intermediate	581	643	1008
Trivial	874	533	1034
Ratio of Increases	2.24	0.97	1.53

Source: Third and Fourth National Morbidity Surveys.
Note: all these figures are for prevalence, i.e. persons consulting at least once during the study period.

Frequent Attenders

Neal et al (1998) analyse the workload generated by frequent attenders; and show that the most frequent 1% of attenders accounted for 6% of all consultations and the most frequent 3% for 15% of all consultations. Females and older people were more likely to be frequent attenders. They suggest that if the underlying behaviour could be understood, appropriate management strategies could have an important effect on clinical workload. [also refer Westhead (1985) with respect to the nature of the frequent attenders]

For the practices included in MSGP4, Carr-Hill, Rice and Roland (1996) showed that 12% of the sample (n= 500 000) accounted for 44.4% of consultations during the year. Defining frequent attenders as those attending 10 or more times in the year (just over 9% of the practice list), women were twice as likely as men to be frequent attenders (12% compared to 6%); whilst 18% of the over 70 year olds were frequent attenders compared to 9% of 45-49 year olds and under 2.5% of 5-15 year olds and 13% of those working part-time compared to 7% of those working full-time.

II.2.2 Length and severity of consultations

Content, Type and Length

Other authors concentrate on the content and type of consultations as generating the most stress (which seems to be equated to workload by some). Thus Beale and Nethercott (1988) and others point to the increasing incidence of depression among their patients and how that increases workload; Ho-Yen and McNamara (1991) to the increasing prevalence of chronic fatigue syndrome (estimated at 1.3 per thousand among their patients; and Helliwell and Carney (1997) pointed to the trend towards the concentration of diabetic care with general practitioners. Morrel and Roland (1987) show that the length of consultation varies with the nature of the presenting problem and increases when a new problem is raised. It has also been suggested that consultations were longer with patients diagnosed as psycho-neurotic (RCGP, 1982) and the recent study by Howie, Heaney and Maxwell (1997) showed that more than 30% of such consultations lasted 10 minutes or more.

When the decreasing number of consultations is mentioned, the argument is usually that the lengths of consultations has (and should have) increased. Thus Morrell and Roland (1987) concluded that booking intervals of at least 10 minutes are required to provide good quality care. But Campbell and Howie (1992) assessed the experience of one urban practice in changing its appointment length system from 7.5 minutes to 10.0 minutes. Overall, workload was unchanged but improving the 'fit' between supply and demand for the patients was associated with lack of flexibility for the general practitioner.

Factors affecting length

Moreover, apart from the nature and type of consultation, the evidence over the factors which determine length of consultation is either contradictory or puzzling. Thus, Verhaak (1986) found that women had longer consultations, but Westcott (1977) found no differences. Similarly, there is some disagreement over the effect of age: whilst Westcott (1977) found that 15-29 year olds had shorter consultations and 45-64 year olds longer ones, Wilkin, Hodgkin and Metcalfe (1986) found no association between numbers of children aged 0-4 in the practice and the hours of work in patient contact. Many of these disagreements may be a function of univariate analysis and comparing results using *number* of consultations with results using *length* of consultations.

Equally, in contrast to findings about the numbers of consultations (see below), it has been reported that consultations were shorter for patients in lower social classes (Westcott, 1977; Morrel and Roland, 1987) and that a higher percentage of people in social class I and II were associated with longer hours of work in patient contact (Wilkin, Hodgkin and Metcalfe (1986). Groenewegen and Hutton (1995) find that unemployed have longer consultations, but the publicly insured shorter.

There are equally puzzling relationships between list size and surgery workload. In a detailed study Calnan and Butler (1988) found that list size was inversely related to the estimated length of consultation (estimated by dividing the number of surgery hours by number of patients seen, both self-reported) such that general practitioners with list sizes of 3,000 or more had consultation lengths of 6.1 minutes compared to 8.2 minutes for those with list sizes of 1,500 or

less. In a multiple regression, they found that whilst longer booking intervals were associated with shorter list sizes and with general practitioners working in health centres (op cit, p439), "the overall variance explained by it [list size] and all the other independent variables was low .. other more powerful but unknown influences may be operating." (p.440). Groenewegen and Hutton (1995) reached similarly disappointing conclusions.

Analysing the lengths of consultations with 52 General Practitioners, Carr-Hill, Jenkins-Clarke et al (1998) show that the problem is that, whilst there are indeed relationships between individual characteristics and the length of consultations, there are also large variations between individual general practitioners which overshadow these associations. Equally, Anderson and Mattsson (1989) have suggested that the personal style and different approach of the general practitioner may be a main reason for the variation in lengths of consultation, and others (Howie, Heaney and Maxwell, 1997; Morrel and Roland, 1987) have also pointed to wide variations between GPs. Whilst it might therefore be appropriate to use the relative length of a particular GP's consultation as a marker for severity or - as Howie, Heaney and Maxwell (1997) have suggested for quality - the use of length of consultations as a factor for weighting workload is only possible if one controls for provider characteristics and that is not always easy.

II.2.3 Home visiting and night visiting

These obviously take much longer than when the patient visits the surgery and has often been a concern of GPs. Beale (1991) show that, although there has been a steady reduction in patient-initiated demand for (daily) home visits, this is only true for those under 65. For elderly patients, there was no significant change in the rates of visits requested but of course that fraction of the population has been increasing.

In the early part of this decade there were also several reports about how GPs were finding it difficult to cope with the frequency of night calls (e.g. Richmond, 1996); and also that some of them were for quite trivial reasons. The steep rise in demand seen in the last decade (Hallam 1994) was seen as related to changes in the public's perception of the role of the GP and their expectations of the health care system in general**.** However, with the change in night visit fees (flat rate per GP but a lower fee per visit) and the growth in out-of-hours Co-operatives and Deputising Services, there has been less discussion in the literature about the burden of out of hours work.

SECTION III: PATIENT CHARACTERISTICS AND CONSULTATION WORKLOAD

Obviously, the major factor influencing whether or not someone consults their GP and therefore the consultation workload of the GP is the experience of symptoms; and the major influence on the GP might well be the chronic illness and frequent attenders. However, in terms of resource allocations, the issue is the characteristics of patients which could eventually be used in formula. This chapter looks at five nationally observable variables and their respective affect on patterns of consultation/GMS utilisation. Much of the data is taken from the Third and Fourth National Morbidity Surveys of General Practice (McCormick and Rosenbaum, 1990; McCormick, Fleming and Charlton, 1996) conducted in 1981/82 and 1991/92 (referred to as MSGP3 and MSGP4 respectively).

III.1 Age, Sex and Minority Group Status

Age

Marsh and McNay (1974) found that young children and elderly people consulted more frequently and MacIntyre (1986) notes a steady gradient in self reported chronic illness with age; both MSGP3 and MSGP4 also show increased consultation patterns with age across all social classes and for serious, intermediate and trivial conditions, but particularly for serious conditions in social classes 4 and 5. A link between increased consultation patterns/utilisation of services and increased age is well represented in the literature (Pilowsky, Smith and Katsikitis 1987; Balarajan, Yuen and Machin 1992; Cook et al 1990).

However, whilst consultation rates in general increase with age, within each age group, the propensity to consult is influenced by the presence of illness. Bowling et al (1993), for example, found an association between illness and increased service use in a study of patients over 85 years of age with the strongest predictor of GP consultations being functional ability and that a small proportion of people account for the most expenditure. The initial sample was 640 with a re-interview sample of 256 two and a half years later. Of the re-interview sample 17% had not consulted a GP in the previous year, 20% had consulted once, 37% between two and four times, 16% between five and nine times and 10% had had over ten consultations. The authors suggested that non-consultation is linked to patients who are generally fitter. This relationship holds across all ages.

The Department of Health report "*Health of the Nation*" highlights the ageing population by noting that between 1981 and 1989 the number of people aged 75-84 increased by 16% and those over 85 increased by 39% and concludes that this growth will continue with a corresponding increase in the demand for services. Frischer (1991) in his study of trends in morbidity and general practitioner's workload for middle aged and elderly people between 1956 and 1982, concluded that over this period an increasing proportion of middle-aged and elderly people consulted their GP and the average patient consulted for more illnesses, particularly for circulatory and muscular-skeletal illnesses. Given the ageing population and that each generation reports more illnesses and consults more than its predecessor, Frischer concludes that general practice can expect to face increasing levels of demand for services from elderly patients.

Sex

Frequent attenders are more likely to be women (Corney 1990; Ingham and Miller 1983; Marsh and McNay, 1974) who also have an increased tendency to consult other health professionals, such as physiotherapists or chiropodists (Blaxter 1985). as do the elderly (Bowling et al, 1993). However, older women are less likely to consult a GP than younger women with similar symptoms. Overall, for all diseases and conditions, single adults are least likely to consult a GP, a pattern which applies equally to men and women (McCormick and Rosenbaum 1990; McCormick, Fleming and Charlton, 1996). The overall percentage increase in consulting rates for females for all diseases and conditions between 1970/71 and 1981/82 was faster than for males in all social classes except social class 3 manual; between 1981/82 and 1991/92, the increase was greatest among the elderly.

The difference between men and women is most marked amongst those aged 16-44 where rates are around 50% higher amongst females. The difference is greatest for genito-urinary diseases, mental disorders, diseases of the blood and blood forming organs, and symptoms, signs and ill-defined conditions and smallest for conditions classified as serious (McCormick, Fleming and Charlton, 1996). However, as women display more psychiatric symptoms than men in community surveys (Briscoe, 1987; see also any General Household Survey), this may be due to higher levels of need.

Ethnic group

Patients from the Indian sub-continent consult more than any other ethnic group and this is particularly marked in men especially serious conditions (Balarajan, Yuen and Soni Raleigh 1989; McCormick and Rosenbaum 1990; McCormick, Fleming and Charlton, 1995). The SPCR for all conditions for the Indian sub-continent ethnic group in 1981/82 was 113 for males and 103 for females compared to 100 for the UK ethnic group for males and females - for serious conditions the difference is far greater. Females from the Indian sub-continent and Caribbean origin are more likely to consult for serious conditions than UK females.

Even when controlled for other factors, there appear to be raised rates of consultations among Asians generally, Asian females and Asian boys. A relatively recent national survey found that, compared with the white population and controlling for self-reported health, greater proportions of people of Caribbean, Indian/African Asian and Pakistani/Bangladeshi origin reported consulting their GP in the previous month (Modood et al 1997; Smaje and Le Grand (1997). Others have claimed that, although the consulting rates for Asians are similar, those who do so consult more frequently (Gillam, et al, 1989).

Despite the acknowledged importance of other socio-demographic variables in explaining health care utilisation, most of the studies do not control for these. On this basis, we would privilege the findings of Balarajan, Yuen and Soni-Raleigh (1987), Carr-Hill, Rice and Roland (1996), Smaje and Le Grand (1997) demonstrating higher rates among the Caribbean and Asians, and lower rates among younger Pakistanis females, Chinese and Africans.

It is however noticeable that, for mental disorders, there is evidence of under-consulting by ethnic groups, especially by women from the ethnic group Indian sub-continent (who had an SPCR of 67 in 1981/82). Within GPs' surgeries mental illness is, moreover, more likely to go unrecognised (Gillam et al 1989; Wilson and MacCarthy 1994) with GPs more prone to consider symptoms as trivial (Wright 1983).

III.2 Socio economic variables

There are well known associations between socio-economic and demographic variables and a range of health indicators. The most widely discussed of these are socio-demographic differentials in mortality, which are not only found in the UK (Townsend et al 1988, Mays and Chinn 1989, Davey Smith et al 1990, Carr-Hill 1990), but also in the USA and other European countries (Feinstein 1993). Mortality rates during the 20th century have declined sharply in the developed world with life expectancy subsequently increasing. Whilst all social classes have benefited from this trend, those with lower socio-economic status have continued to be associated with higher mortality rates, with socio-demographic differentials in mortality. Indeed, Feinstein concluded that these differentials may even have increased in recent years. Phillimore et al (1994) emphasised the importance of linking mortality patterns with material conditions rather than individual behaviour.

Associations between economic deprivation are seen with a wide range of other health indicators, from self reported symptoms (Blaxter 1985, 1987 and 1990, Corney and Murray 1988, Aiach and Curtis 1990, Macran et al 1994), and A&E attendances and hospital admission (Marsh and Channing 1986, Balarajan et al 1987). Inequalities in health may selectively affect ethnic minority groups (Karmi 1993; Baxter and Baxter 1988, Donaldson 1986, Murray and Williams 1986, Andrews and Jewson 1993) and vary within social classes particularly affecting the poorest (Blaxter 1987) and the homeless (Victor 1992) and those living in deprived areas (Macintyre 1994). With this background, the material below focuses on access to GP consultations, concentrating on unemployment, social class, housing and urban/rural residence.

Unemployment

Unemployment increases the propensity to respond by consulting a GP, decreases the capacity to cope with symptoms but is also associated with increased morbidity and mortality (Coulter 1993; Wilson and Walker 1993; Yuen and Balarajan 1989; Karmi 1993; Moser, Fox and Jones 1984). Workers in employment who are dissatisfied with their job have been found to possess worse health than those in satisfied employment - with the unemployed placed in the middle (Graetz et al 1993). Morton-Jones and Pringle (1993) have found that the material deprivation and morbidity associated with unemployment is an important determinant of increased prescribing trends. The closure of a factory results in an increase use of primary care in the short term although there are no studies on the long term effects (Morris and Cook 1991). This effect is seen for both major and minor illness. Beale and Nethercott (1988 and 1988a) postulate that recent unemployment leads in particular, to a significant increase in the incidence of chronic ill health (over six times that of controls) and a corresponding increase in the number of episodes for which there are four or more consultations. They conclude that redundancy is a serious health hazard, especially for unskilled men, which augments medical workload. Morris et al

(1994) similarly suggest a causal effect between loss of employment and an increased risk of mortality.

Blaxter's analysis of the Health and Lifestyle Survey 1984-1985 (1990) also demonstrates a clear link between unemployment and poorer health status with unemployed men experiencing more illness, disease and disability than employed men, for every age. Fitness, moreover, deteriorated among the unemployed after the age of 30. Blaxter also found that the health status of wives of unemployed men was also poorer. Blaxter concluded, however, that it is difficult to distinguish between the effect of unemployment and the effect of low income resulting from unemployment. Either way, low income increases the propensity to poor health status.

McCormick and Rosenbaum's analysis of SPCRs in 1981/82 demonstrates a significant impact on increased consultation patterns by those waiting/seeking for work for serious conditions and to a lesser extent intermediate conditions compared to those in either full or part time work. For serious conditions the SPCR for those seeking work is 113 for males and 120 for females compared to 90 for those in full time work (males and females) and 79 and 85 for those in part time work. The analysis in 1991/92 showed that the unemployed had raised rates for all categories apart from preventive health care and respiratory disorders (MSGP4, p.114).

Social Class

The salient factor in discussing social class and GMS utilisation is that the most commonly identified inequality in health is the association between lower social class and poor health (Pill and Stott 1982; Aiach and Curtis 1990; Pereira 1990; Blaxter 1990; Feinstein 1993). Material advantage is associated with better health (Arber and Ginn 1993) and longer life (Blane et al 1990). The poor, it has been argued, are likely to remain unhealthy so long as they remain poor (Smith 1990) as good health status is strongly influenced by income (Blaxter 1990). Arber and Ginn (1993), for example, conclude that elderly men and women who live in advantaged material circumstances in terms of income, housing tenure and car ownership experience significantly better health. This may be partly explained by the MSGP3 and MSGP4 findings that social classes 1 and 2 consult more for preventative conditions. Inequalities in health, moreover, can be seen as hereditary with continuity of social disadvantage being derived from peer and parental influences which, as Blane et al (1993) concluded, accumulate during life. Cartwright (1992), for example, found that money and class postpone death (middle class people die at a later age) and contributes to a better quality of life before death.

For all ages, the number of consultations by age, sex and social class for serious conditions for all diagnoses and by category of condition for males/females in 1981/82 were 87/90 for social classes 1/2, 101/94 for social class 3 non-manual, 104/106 for social class 3 manual, and 112 for social classes 4/5. This trend is evident but less marked for intermediate and trivial conditions but demonstrates clearly that men and women across all ages from social classes 1/2 are less likely to consult a GP.
Adults (16-64 age group) in social classes 4 and 5 have been found to demonstrate higher consultation patterns (Ingham and Miller 1983) and increased chronic and acute morbidity (Haynes 1991). This pattern is particularly significant for serious conditions with the SPCR gradient increasing as the social class decreases (McCormick and Rosenbaum 1990; McCormick, Fleming and Charlton, 1995). This SPCR trend is evident for all categories and

conditions of diseases except for neoplasms. For adults over 65 the same trend in SPCRs can be seen, again excluding neoplasms. The differences between the social classes for all diseases and conditions for children are small especially in the under 5 age group. In the 5-15 age group, however, children from social classes 1 and 2 are significantly less likely to see their GP. Children from socio-economically advantaged families, however, are more likely to contract chickenpox by the age of ten with a higher prevalence in those areas of the country associated with affluence (Pollock and Golding 1993).

Although the fact that social classes 4 and 5 consult more frequently for serious, intermediate and trivial conditions might be taken to represent a behavioural characteristic of disadvantaged groups - and Aiach and Curtis (1990) have argued that the propensity to report illness is influenced by social class - the gradient is greatest for life threatening and urgent conditions and less for trivial complaints. This conclusion has also been found by Blaxter (1984).

In fact, social classes 4 and 5 are known to experience a greater number of self-reported symptoms (Corney and Murray 1988) and this is especially true of women with dependent children (Pill et al 1993). Studies which have controlled for self-reported morbidity suggest that the class bias (in total NHS utilisation) disappears except in the 'not sick' category as did the income bias in GP utilisation. However, as we also know that social classes I and 2 are more likely to report 'trivial' conditions, the true gradient is actually masked by these findings. Crude multivariate analysis of MSGP4 data showed that almost all age sex groups in the manual social classes had a 10% increased risk of consultations for preventive care; and this was mostly confirmed by Carr-Hill, Rice and Roland (1996) who had also controlled for area effects and provider effects. However, analyses of GHS data shows a more complex picture with low income or low social class women aged 16-40 more likely to consult; and low income elderly men less likely to consult (Evandrou et al, 1992).

Housing

Poor health status has been found in relation to poor housing (Smith 1990), the homeless population (Victor 1992) and hostel residents (Usherwood and Jones 1993). Poor housing is, however, often the only alternative for patients with poor health who are economically disadvantaged (Smith 1990). Whilst patients from economically deprived and urban areas have been found to make greater use of services (Wyke et al 1992, Bowling et al 1991), Haynes (1991) using the General Household Survey as evidence concluded that morbidity is more closely related to housing tenure than occupational class. This is supported by Balarajan et al (1987) who also found that council tenants consult GPs more than owner occupiers.

These findings are corroborated by MSGP3 and MSGP4 where analyses consistently shows increased SPCRs for council tenants. The SPCR in 1981/82 for all diseases and conditions for owner occupiers is 99 for both males and females compared to 104 for both male and female council tenants. However, the difference increases for intermediate conditions and especially for serious conditions. The difference for trivial conditions is less stark. Council tenants are particularly likely to consult for mental disorders (89/87 compared to 123/125).

Rural / urban

McCormick and Rosenbaum's analysis (1990) found that patients living in a rural areas are overall much less likely to consult a GP than patients living in an urban area. This effect was found in both sexes except for serious conditions where only women showed the reduced consultation rate associated with rural living. The SPCR for all diseases and conditions for urban areas is 101 compared to 90 and 93 for males and females in rural areas. However, adults of both sexes are 10-20% less likely to consult for intermediate and trivial conditions if they live in a rural area. This trend is particularly marked for ICD chapters infectious and parasitic diseases 103 males/102 females in urban areas 79/82 in rural areas; diseases of the blood and blood forming organs 102/104 compared to 87/73; mental disorders 103 compared to 82/81; diseases of the nervous system and sense organs 103/102 compared to 81/85; diseases of the respiratory system 103 compared to 82/81; diseases of the digestive system 103 compared to 83/78; diseases of the skin and subcutaneous tissue 104/103 compared to 76/77; and for ill-defined conditions 105 compared to 70/67. Only for the categories of neoplasms (100/101 compared to 101/92) and accidents/injury/poisoning 99/101 (compared to 106/95) were unaffected by residence.

There is evidence that individuals living in (deprived) urban areas experience poor health status (Macintyre 1994; Wyke et al 1992; Bowling et al 1991). The lower consultation rate of rural populations could either be due to better health or to reduced access to primary care. The effect of proximity on consultation patterns is discussed later,

III.3 Family structure and marital status

MacIntyre (1986) notes that from the available evidence married people generally have lower death rates than people who have never married, or who are no longer married. Moreover, in general, the literature indicates that women made single by marital breakdown or death are more likely to consult - for themselves and their children - whilst women living in a stable relationship show a reduced consultation rate (Westhead 1985; Ingham and Miller 1983; Ingham and Miller 1986; Benson and Turk 1988). Corney and Murray (1988) conclude that a stable marriage which provides a confiding relationship is a more effective buffer/network for females than a close relationship with a mother, sister or friends. Analysis of SPCRs by marital status shows a consistent trend towards widowed/divorced males/females consulting more often compared to single and married adults, with the exception of diseases of the circulatory system and endocrine/nutritional/metabolic diseases/immunity disorders in men. For all diseases/conditions, in 1981/82, the SPCR for widowed/divorced males/females were 103/104 compared to 101 for married and 96 for single adults. For serious conditions this changes to 104/107 for widowed/divorced, 99 for married and 96/94 for single adults.

Single parent families

McCormick and Rosenbaum (1990), using census data as a proxy, suggest that nearly 6% of children under 16 years of age live in households with one parent. They conclude however that overall there is no evidence that this population sub-group are more likely to consult a GP. However, children from single parent families are significantly less likely to consult for serious conditions (SPCR 82/87 males/females compared to an average of 100 and slightly more likely for trivial conditions (101/105).

It now appears to be agreed that the outcomes for children who have experienced family disruption or lived with a lone parent, or both, is more dependent on the nature of the family disruption may be more important than either the type of family structure that results or the disruption itself (Burghes, 1994; Rowntree, 1998). For example children who have experienced their parents divorce experience poorer health outcomes than children living with a lone parent who has been widowed. Balarajan, Yuen and Machin (1992) and Judge and Benzeval (1993) have concluded that children of single mothers are more likely to consult. Judge and Benzeval, however, emphasise that such children are almost certainly living in poverty and experience relatively higher risks of mortality. Oakley, Rigby and Hickey (1993) extend this association by concluding that such children experience negative health outcomes. A mother's decision to consult for her dependent child, however, has complex origins (Duncan et al 1987) and higher attendance for trivial conditions is found in vulnerable groups (Blaxter and Patterson 1982).

Kinship/friendship networks are as important as individual characteristics in influencing the response to illness. Families influence how illness affects a patient (Dowrick 1992; Buckler and Dwivedi 1994). A family can be seen as a unique small scale society exerting a family culture to the extent that it is the family which is the collective patient (Helman 1991). Individuals who respond by consulting a GP are likely to be members of "sick families" with high attendance rates (Garralda and Bailey 1987; Colling 1967). Frequent attendance by children is often due to a mother with poor health and a mother who is externalising her problems through her children and/or other family members (Garralda and Bailey 1987, Benson and Turk 1988, Leach et al 1993).

Scambler et al (1981) investigated the effect of kinship (friendship) networks. They found that women who derived their support from friendship networks were less likely to consult the GP when compared with women who derived their support from family networks. Whelan (1993) refers to networks as important buffers. There is some evidence that non attenders rely on social networks (Murray and Corney 1988) whilst high attenders have less support networks (Robinson and Granfield 1986; Bucquet and Curtis 1986). Such networks, which are more identifiable among women (Corney 1990), may explain why women self report more illness (Popay, Bartley and Owen 1993; Arber and Ginn 1993). People who move to a new town have been shown to be more likely to consult, as are the homeless and people in temporary housing (Cobbs et al 1983; Victor 1992; Smith 1990) perhaps as a result of the absence of such networks - although Freer (1986) has questioned whether mobility affects consultation rates.

III.4 Jarman index and consultation workload

General practitioners tend to agree with the literature. Thus, the Jarman index which was originally derived on the basis of items chosen by a selected sample of GPs as 'potentially affecting workload'[2] includes many of the same items: for example, variables reflecting elderly living alone, social class, unemployment, ethnic minorities are included in the index. Several authors have shown strong associations between the Jarman index and the distribution of morbidity (e.g.) and take up of psychiatric services (e.g. Cotgrove et al, 1992; Kammerling and Connor, 1993; Thornicroft et al, 1990) and screening uptake rates (e.g. Majeed et al, 1994) although only a few of these studies are directly relevant here.

Thus Curtis (1990) examined the relationship between socio-geographic factors and health and consultation with a GP using the UPA8 index among a sample of 1221 drawn from three London health districts. She found that, within different sex and age groups those living in very deprived areas with high UPA scores were more likely to consult the doctor. Hopton et al (1992) showed that distress (as measured by the Nottingham Health Profile) among general practice attenders could be predicted best by not being a home owner. However, whilst the UPA8 score predicted poor sleeping patterns, it did not predict distress compared with more direct measures of poverty.

However, there have been a number of criticisms set out in, for example, Carr-Hill and Sheldon (1991): in addition to the limitations of census data, the weighting of factors and the use of statistical transformations obscures the original policy intent, there has been no validation to support the use of the index as part of a national policy and payments are not linked to the quality of the service provided and perversely increase list size (see also Leavey and Wood, 1985). Moreover, because it was based on a list of possible factors which they thought affected workload, it is neither an index of 'objective' need nor indeed of 'objective' workload. GPs are being compensated on the basis of a 'deprivation' factor, in fact derived from the *perceptions* of *workload* by selected GPs over 15 years ago[3].

Although it is clear that age and socio-economic disadvantage are the major determinants of poorer health status, the decision to consult a GP is also based on a complex mix of physical, psychological and social factors, which are discussed in more detail in the next section. If only one in 37 new episodes of illness are presented to the GP (as per Banks et al, 1975), then very minor changes in the factors identified in these sections could have enormous effects on GPs' workload and on the overall provision of medical care.

[2] For example, 'recently moved' which is one of the variables included in the index obviously affects workload in the administrative sense if the patient changes GP, but has a more tenuous relationship to need depending on stress at the time of moving house.

[3] There have been suggestions that the score tends to emphasise financial rather than social deprivation - although one could argue that three of the variables (elderly living along, lone parent, short term residence) indicate actual or potential social isolation rather than financial deprivation.

III.5 Summary

From the above review it can be seen that a number of variables are associated with increased consultation rates/standardised patient consulting ratios or GMS utilisation, either because they are associated with poor health status or because they reflect differential propensity to consult:

- council tenants
- urban areas
- increased age
- females per se
- poor health status.
- social classes 4 and 5,
- unemployment
- widowed/divorced,
- males in social classes 4/5
- some ethnic groups from the Indian sub-continent

SECTION IV: OTHER FACTORS WHICH AFFECT DEMAND FOR PRIMARY CARE

First, we look at the literature around accessibility - and specifically the barriers to care experienced by ethnic minority groups, patient education, money and access to private health care, and proximity in general; then at how the organisation of primary care affects GP workload through appointment systems, the services offered by the practice and the characteristics and location of general practitioners, and finally at how the changing environment of primary care might have affected workload.

IV.1 Accessibility

Barriers to care experienced by ethnic minority groups

Certain population sub-groups experience barriers to equal access to GP services which, in consequence, suppresses demand for primary care. It has been argued that ethnic minorities find it harder to gain access to a GP (Rashid and Jagger 1992) and that black and ethnic minority groups are subjected to a worse health experience than whites (Baxter and Baxter 1985; Hopkins and Bahl 1993). Asian access to health care has been assessed by Hopkins and Bahl (1998). Of most importance are language barriers for ethnic minorities (McAvoy and Sayeed in McAvoy and Donaldson 1990; Wright 1983) and cultural differences in health perception and behaviour which often inhibit access (Jayaratnam in Hopkins and Bahl 1993). The findings of a postal survey of 141 GPs by Ahmad et al (1991) concluded that GPs held less positive views towards Asian patients perceiving them to require longer and more frequent consultations. As noted above a significant number of consultations are GP initiated. Gillam et al (1989), however, have suggested that Asians are less likely to receive a follow-up initiated appointment.

The Health and Lifestyle Survey showed that, compared to the general population, fewer make GP appointments and that the average waiting time in surgery is 18 minutes for the general population, 27 minutes for the Afro-Caribbeans, 30 minutes for Indians, 33 minutes for Pakistanis and 50 minutes for Bangladeshis (Rudat and Carr-Hill, 1995). Unsurprisingly, a higher proportion of the latter groups feel that the wait is too long which may reduce their rate of consultation.

The main issue for research in this area has been the issue of communication. This could generate a higher or lower level of consultation because they are discouraged or a higher level because they are required to make repeat visits to make themselves understood. The HEA Health and Lifestyle Survey suggested the latter.

Patient Education

There is considerable evidence that many consultations are for trivial or self limiting conditions which do not require a GP's involvement (Morrell et al 1980). Indeed, McCormick and Rosenbaum's analysis of the second and third national studies of morbidity statistics from general practice show a 11% and 13% increase in consultations for "trivial" conditions for males and females respectively between 1970/71 and 1981/82 (see also Table 1 above). The increase is

greatest in social classes 4 and 5 but significant in each social group. In the previous section on estimating demand, however, it was emphasised that individuals are influenced in their illness behaviour by a complex range of factors ranging from the family culture to socio-economic influences.

The medical model of health education assumes that increased knowledge and information results in patients making more appropriate consultation decisions due to a positive change in illness behaviour (Fullard et al 1984). However, lay definitions of health are not always compatible with medical definitions (Kirchgassler 1991) and doctors' and patients' perceptions of health differ (Martin et al 1991). Albert and Chadwick (1994), moreover, found that practice leaflets often fail simple tests of readability. Despite this, there is evidence that patient education can discourage inappropriate consultations. Rutten et al (1991) concluded that patient education about cough does alter behaviour to follow the general practitioner's guidelines and Jenkinson et al (1988) and Watkins et al (1987) found that self management booklets for asthma and hypertension respectively can increase patient knowledge. Usherwood (1991) described the use of a booklet which provided advice for parents on the home management of cough, sore throat, fever etc in children and recommendations as to when to consult medical opinion. The overall impact of the booklet on parent initiated consultations was a non-significant decrease but this was offset by an increase in out of hours consultations. Morrell et al (1980) found that consultations decreased for symptoms included in a booklet on common minor symptoms whilst those minor illnesses excluded remained unchanged. The authors concluded that such patient education does not deter patients from seeking care when it is desirable.

Income and wealth and access to private health care

Income and wealth

From the analysis in the previous section, which consistently demonstrates that the higher social classes consult less frequently and experience improved health status, it can be argued that money as defined by income and wealth has a positive impact on health which in turn reduces patterns of consultation. Blaxter (1990), for example, emphasises that good health status is strongly influenced by income.

Access to private health care

The prevalence of private health care in the UK is increasing (see Health Services Journal 1991). The vast majority of consultations with GPs, however, are not private. The 1992 General Household Survey found that 3% of consultations with GPs by males and 2% by females in the 14 days prior to interview were paid for privately. More common is an NHS consultation with a GP by a patient in order to seek (advice on) a private referral to secondary care. Patients with private health care schemes and those who pay for a GP consultation still rely on their GP to arrange private referrals. A study by Higgins and Wiles (1992) found that 28.8% of patients in a study sample of 649, sought their GP's opinion about whether to use private medicine although the majority had decided to bypass the NHS even before the consultation. Patients were, however, influenced by the GP's advice on the choice of consultant and hospital. The authors

concluded that most of these patients had very limited knowledge of the options available or the likely cost of treatment.

Coulter et al (1991) in their study of hospital referrals by 30 general practices in Oxfordshire found a wide variation in the use of private medicine with the proportion of patients referred privately ranging from 4% to 53%. Roland and Coulter (1992) discuss the 1990/91 Office of Population Censuses and Surveys study which found that out of 45,617 outpatient referrals, 20% went to private clinics (with a range of 5-50%). The authors concluded that this reflects the relatively high rate of use of private care among, particularly middle-aged, patients in Oxfordshire, probably in consequence of employer-subsidised health insurance and the fact that elective surgery is more common in the middle-aged group. Private referrals were most common to clinics in general surgery and orthopaedics and less common for psychiatry and paediatrics.

Proximity of and access to services

There is clear evidence that distance from a health facility is negatively associated with utilisation as outlined in chapter one. McCormick and Rosenbaum (1990) conclude that patients living in rural areas are overall much less likely to consult a GP than people living in urban areas: rural patients in their study had a standardised consulting ratio for all illnesses of 90 for men and 93 for women compared to 101 for urban areas. The differences are, however, most marked for trivial and intermediate conditions. Carr-Hill, Rice and Roland (1996), in their analysis of MSGP4, showed that the effect remained even after controlling for other factors, and that those living closer to a practice within urban areas consulted significantly more than those living further away.

The relatively low consultation rate of rural population has been found by others (Balarajan et al 1987, Bowling et al 1991, Haynes 1991), and even within towns, those living near the GP's surgery are more likely to consult than those living further away (Parkin 1979, Ingham and Miller 1983, Robinson and Granfield 1986). Whitehouse (1985) found that those living close to the surgery consulted one third more often than those living over two and a half miles away. This "distance decay" exists even though the lack of other alternatives such as Accident and Emergency Departments means that patients are more reliant on GP services (Fearn 1987).

It is not known to what extent the lower consultation rate of rural populations represents an important disadvantage, and Watt et al (1994) conclude that further research is needed into the impact of distance upon health service utilisation although they conclude that accessibility is a quality of care problem for rural areas. It may be that rural populations are not significantly disadvantaged in terms of access to care for the more significant medical conditions but this might not be the case for less serious conditions. Others have suggested that it is the old and disabled who are particularly affected by reduced access, and are most disadvantaged by lack of a car or rural bus service (Bentham and Haynes 1985). Whitehouse (1985) suggests that patients who might be expected to have transport difficulties are low users of GP services, and Haynes (1991) draws particular attention to the lack of a car in rural areas being an inhibiting factor on consultation patterns. Carr-Hill, Ivins and Watts (1996) showed how potential patients had to make all kinds of arrangements (with neighbours, relatives, etc) in order to visit their GP.

IV.2 Organisation of primary care {and interface with secondary}

Appointment systems

Those with higher expressed need and poorer health, particularly social classes 4 and 5, may be less able to cope with appointment systems and may therefore be selectively disadvantaged in an organisational system that is over rigid. Frequent attenders are more likely to attend without an appointment and are more likely to default on their appointments (Virji 1990; Cosgrove 1990). Although access is unlikely to be denied, this pattern of care may produce a more subtle form of disadvantage as patients requiring urgent or 'on the day' appointments are likely to see a duty doctor rather than their own doctor. Problems in providing care to this group of patients are, therefore, compounded in that not only do they have difficulty organising their medical care but the care which they receive may be more fragmented.

Hill-Smith (1989) demonstrated that the time a patient can expect to wait increases exponentially as the appointment interval is reduced, with an appointment interval that is less than the median consultation length resulting in much longer waiting time for patients. Shorter but more frequent surgeries, however, save time for patients but do not increase the doctor's waiting time, which argues for doctors breaking very long surgeries into two or more sessions. Fallon et al (1990) in a study of one inner city practice concluded that both patients and practice staff dislike appointment systems that are too rigid, with the former emphasising that the doctors seem rushed. It may be, however, that in areas with lower consultation rates such as rural /suburban areas, there is less opposition to appointment systems.

GP initiated appointments

A significant number of consultations are GP initiated (Armstrong et al 1990). Martin et al (1991) for example found that a third of appointments were at the request of the GP. Doctor initiated appointments are likely to increase as a proportion of GP workload as an increasing amount of chronic disease follow-up, previously carried out in hospital, is transferred to primary care. Doctor initiated visits also result from preventative activities in primary care. The Family Heart Study Group (1994), concluded that the subsequent intervention and follow-up generated by health checks is daunting and that 79% of patients may warrant follow-up for at least one risk factor. This suggests that a significant proportion of a GP's surgery workload is spent in consultation with patients whose need has been expressed/identified by the doctor.

How long should appointments be?

Bradley and Gude (1992) concluded that most doctors consult between 6 to 8 patients per hour (i.e. 7-10 minutes per patient) whether or not an appointment system is used. The issue, however, is not the length but the quality of the consultation and the impact on consultation patterns. Howie et al (1997) concluded that shorter consultations are associated with and predictive of poorer care, with less time spent with a patient resulting in less good care. Patients also express less satisfaction with shorter consultations. Morrell et al (1987) found that patients were more satisfied when offered a longer consultation, health promotion was more likely to be discussed and more problems were likely to be identified and dealt with. Campbell and Howie (1992) found that increasing the appointment length from 7.5 to 10 minutes increases the mean consultation time from 8.6 to 9.1 minutes and reduces the waiting time from 19.1 to 14.6 minutes - changes welcomed by patients and medical staff alike. Whilst these changes left the overall

workload unchanged they inhibited supply meeting demand by being associated with a loss of flexibility. The authors suggest that an appointment scheme, calculated according to list size and estimated demand, must have sufficient vacant slots at the start of each day to cater for all patients and prevent congestion. Norman et al (1991), however, found that as the length of surgeries increased, GPs were more likely to arrange follow-up appointments.

Services offered by the practice:

Preventative services

Poorer health status is associated with lower social class. Social classes 4/5, however, have been found to use preventative services less than higher social classes (Coulter 1993; McCormick and Rosenbaum 1990; Marsh and Channing 1986). The SPCR for preventative medicine for social classes 1 and 2 are 118/112 for males/females compared to 94/97 for social class 3non-manual, 90/95 for social class 3 manual, and 92/90 for social classes 4 and 5. McCormick and Rosenbaum also found that children (especially boys) from single parent families consult less for preventative medical services including advice.

In general, non-attenders at screening programmes and at health checks are from social classes 4 and 5 even though they are at greater risk; as a consequence, services tend to be offered to those at least risk (Jones, Cronin and Bowen, 1993; Thorogood et al, 1993). Although there are some exceptions - for example, those from social classes 1 and 2 appear to be at greater risk of breast cancer or malignant melanoma and osteoporosis (Torgerson and Donaldson, 1994), Thompson (1990) similarly concluded that attenders at health checks are generally healthy and Coulter (1993) found evidence that high risk groups are not being screened for blood pressure measurement.

One of the most controversial elements of the 1990 contract, according to Stott (1994) was the requirement for GPs to offer health checks to the public despite previous research having shown such checks to be ineffective. Significantly, the British Family Heart Study (Family Heart Study Group 1994) and the Imperial Cancer Research Fund Oxford and Collaboration health check (OXCHECK) Study Group (1994) have corroborated previous research and concluded that it remains unknown whether or not cardiovascular screening is actually producing any favourable change in risk factors. Both studies covered a large number of patients (OXCHECK sample 2,136; FHSG sample 12,472), included trained nurses and aimed to change the main risk factors for cardiovascular disease. However, despite intensive intervention only modest changes in the intervention groups were found and both sets of authors have concluded that the impact of health checks on public health is marginal. In particular, OXCHECK concluded that general health checks by nurses are ineffective in helping smokers to stop smoking. Whilst they do help patients to modify their diet any improvement thus derived depends on whether it is sustained. The FHSG concluded that the government's screening policy cannot be justified by the results of the study and emphasised that primary care alone cannot provide a population approach to reducing cardiovascular risk. Both studies recommended the need for greater emphasis to be placed on more effective public health policies.

Family planning services

Pretlove (1991) concluded that general practices are the most convenient setting for many people to go for family planning advice, whether from the GP or practice nurse, and indeed Aston et al (1994 - HCNA) found that 98% of GPs provide some sort of family planning service, although information is scarce on how many doctors and other practice staff are family planning trained. The national family planning consultation rate is 472.2 family planning consultations per year per 1,000 females aged 16-44. This translates into approximately 212 consultations for family planning each year per GP. Aston et al (1994) concluded that younger people tend to use family planning clinics and other agencies such as Brook Advisory Centres rather than GPs probably due to issues of confidentiality, although not every district has a clinic or centre geared towards the needs of young people. There may be groups who are disadvantaged by the lack of alternative provision, especially in relation to the "*Health of the Nation*" target to reduce teenage pregnancy.

Characteristics and location of the general practitioner

Salisbury (1989), using a postal questionnaire of 447 patients, concluded that patients lack consumerist behaviour in choosing a GP, with most people registering with their nearest doctor. However, the characteristics of the GP, as defined by the patient, can influence a patient's decision as to whether to consult or not. In particular there is evidence that women both prefer to see and do consult with a female GP both in general terms (Van den Brink-Muinen et al 1994; Graffy 1990) and for more specific services such as family planning (Ashton et al 1994 HCNA). Graffy's study of 909 patients suggests that the sex of the GP is 2.3 times more important in determining whether or not to consult than the presenting problem for a women patient. The 1990 contract, however, it has been argued, has done little to encourage women principals in general practice (Hayden 1991) and Bradley and Gude's study of 267 practices in Devon and Cornwall found that only two-thirds of patients had access to a female GP (1992). Ahmad et al (1991) found that Asian patients, irrespective of sex, were significantly more likely to consult an Asian GP, although a greater proportion of Asian women than men consult a female white doctor. Consequently, whilst the sex of a GP was important in patient's choice, for Asian patients the doctor's culture and language were more important.

The geographical distribution of GPs has been examined by a number of authors attempting to match availability with need at an area level; and all have concluded that inequalities exist (Benzeval and Judge, 1996; Bevan and Charlton, 1987; Birch and Maynard, 1987; Bloor and Maynard, 1995). Gravelle and Sutton (1998) have attempted to construct access variables based on a spatial analysis of general practices and the populations they service - that is by calculating a summary statistic of the physical distances between resident populations and surgeries across the country - but they have had no significant controls at the individual level: this is especially important as Carr-Hill, Rice and Roland (1996) have shown that most area effects disappear when individual level variables are taken into account.
Jenkins and Campbell (1996) in a study based in Lambeth practices, show that ‘weaker’ practices have catchment areas three times as large as those of the strongest practices. Presumably, the implications are that they take longer home visiting? However, a report by Wyke Campbell and McIver (1992), based on a survey of patients in two contrasting areas within Greater Glasgow in the localities of 31 practices, found few systematic differences in the structure of general practice. They conclude that the ‘stereotype of poorly resourced, low quality primary care in inner city areas may apply in London, but not elsewhere.

IV.3 The changing environment of primary care

Shift from secondary to primary care

Assessing the impact of the shift from secondary towards primary care, Pederson and Leese (1997) claim that there is no evidence that this generates more workload. That article probably generated more correspondence than any other (e.g. Hart, 1997; Helliwell and Carney, 1997; Sidford, 1997). However, there have been a few serious studies of the effect of shared care arrangements on GP workload over the last decade. the 'evidence' - such as it is - is summarised in Table 2.

Workload: impact of 1990 contract

List size and frequency of consultations

Earlier, Leavey and Wood (1985) had shown that doctor-patient rates were highest (list sizes were lowest) in wards with the highest UPA scores (which might mean that some of the components of the index are reflecting supply). The 1990 contract encourages GPs to increase list size in order to maximise income potential. Marsh (1991), however, contends that a large list size and good professional care are not incompatible if there exists an integrated primary care team with each member performing an important role. Butler and Calnan (1987) conclude that there is little evidence associating GP performance and standards and list sizes, although in the case of home visiting there was evidence of a link between higher standards and smaller lists. There is, however, a logical inconsistency in that *if* longer appointments are better then, for a given workload, large lists may not be compatible with optimum care. Roland (1989) concluded that if the list size allows, a consultation interval of 10 minutes is preferable but calculated that at current patient consultation rates it would not be possible to offer ten minute appointments if list sizes were over 2000.

Table 2: Studies of the Effectiveness of 'Shared Care'

Care Type	Effect on general practice workloads
Home based versus inpatient /outpatient care for psychiatric patients	No increase in GP visits
Day hospital versus inpatient care for emergency admissions with neurosis, adjustment reaction and personality disorder	0.5 extra GP visits per patient 3 weeks after admission
Long stay psychiatric disorder versus community care	79%-89% of patients make use of GP services; 31%81% of patients make use of district nursing services
Shared care scheme for asthma	No increase in GP visits for asthma
GP follow-up versus outpatient follow-up of general surgical patients	0.25 extra GP visits per patient in the 6 months after discharge
Hospital-at-home scheme for fractured neck of femur patients	22 hours of nursing time per patient in the first 12 days after discharge
Ophthalmic outreach clinic versus referral to a hospital	35% of GPs participated in the clinic for an average of 3 hours per year. Use of rooms for 1 day per month

Source: Scott and Vale (1998)

Al-Bashir and Armstrong (1991) suggest that practices which increase their list size to benefit from capitation payments might, depending on their characteristics, attract predominantly healthy people and increase patient numbers without a commensurate increase in workload. However, a study by Dixon et al (1997) of patient choice showed that there appeared to have been very little 'cream-skimming' of this sort by fund-holding practices.

Hannay, Usherwood and Platts (1992) comparing workload in Sheffield practices before and after the new contract concluded that there has been a significant increase in GMS work, due primarily to more patients being seen in clinics (for which there is remuneration to the GP), with no reduction in the time spent per patient in surgeries. The added workload resulting from clinics, might therefore, be explained by the financial incentives which accrue from offering clinics to patients.

Paperwork

Chambers and Belcher (1993) compared the work patterns of general practitioners before and after the introduction of the 1989 contract. In 1991, general practitioners reported spending significantly more evenings on paperwork than in 1989 and significantly more reported being exhausted or stressed at the end of five or more working days. However, there was no difference between 1989 and 1991 in the number of surgeries carried out per week or the number of nights on call each month. They concluded that it has become more common for general practitioners to complete paperwork at home and report exhaustion or stress since the introduction of the 1990 contract because of the increased administrative workload. Myerson (1992) also studied workload in 1989 and 1991 with response rates of 80% (120 doctors) and

88% (102 doctors); 49 took part in both years. Eighty two worked more than 5 hours extra and 102 more than 10 hours extra since the introduction of the new contract. Increased paperwork was given as the reason by 101, increased number of clinics by 49 and 45 blamed interruptions.

Night Visiting

Baker et al (1994) considered the impact of the contract on night visiting and found that rates of night visiting increased by 33% when visits made by deputies fell 19% (a finding at least partly explained by the associated financial incentives). The effect of the new contract was to increase visiting to those sub-populations where demand would be expected to be higher, most notably the elderly; but also increased rates of visiting to more affluent areas were reported signalling a break with pre-contract trends. On the other hand, Carlisle, Johnston and Pearson (1993) showed how the Townsend score explained variation in night visiting rates among the wards served by one practice.

Whichever the 'correct' direction of the relationship, GPs were increasingly dissatisfied with the arrangements for out-of-hours care as reflected in a BMA national survey showing that 82% wished to be able to opt out of 24 hour responsibility (GMSC 1992). However, with the change in night visit fees (flat rate per GP but a lower fee per visit) and the growth in out-of-hours Co-operatives and Deputising Services, there has been less discussion in the literature about the burden of out of hours work.

SECTION V: SUPPLY ISSUES

V.1 Assessing the influence of alternative supply

The Samaritans

The Samaritans do not collect national datasets. Statistics are, however, gathered by volunteers from each local branch. The Samaritans emphasise the non-systematic nature of this data collection. In 1993, The Samaritans (1994) received 3,532,000 calls. 31% of these calls were "silent" with the caller not making verbal contact. However, in 2,423,000 cases verbal contact was made representing an increase of 35% since 1983. This suggests that The Samaritans play a vital, perhaps for some people even a pivotal, role as a conduit for people seeking a psychological non-medical "consultation". Suicide was discussed in 73% of contacts and 21% of these callers expressed suicidal thoughts or feelings. No information is available to suggest whether or not these callers contact The Samaritans rather than consult their GP or whether callers are more likely not to be registered with a GP, although there is some informal anecdotal evidence that callers can express anger if asked if they have consulted their GP. Moreover, the Department of Health report "*Health of the Nation*" (1991) found that, prior to a suicide attempt, 40% of people will have made contact with their GP; perhaps suggesting contact with both a GP and The Samaritans. The Samaritans identify some groups in society who are at a higher risk of suicide; young people (15-24) whose rate of suicide has increased in the last ten years; older people with regard to loneliness, illness and grief; disabled people; farmers who are almost twice as likely to die by suicide as other men of comparable age; prisoners and certain ethnic groups.

Accident and emergency services

There is evidence that the distinction between the designated roles of primary and hospital care is fairly well understood by patients. However, many attendances at A&E departments might be more appropriate in primary care but the patient has presented to Casualty (Bedford et al 1992; Nguyen-Van-Tam and Baker 1992). Green and Dale (1992) concluded that attempts to deflect such consultations will meet with limited success as, whilst GP attenders and A&E attenders show similar socio-economic indicators, the A&E attendances are for problems which are not typical of general practice workload. Walsh (1990) concluded that any analysis of inappropriate consultations must also take into account the differing definitions of what constitutes appropriate consulting behaviour by patients and the medical profession.

A number of reasons which patients give for presenting illness to A&E have been identified (see also Singh 1988; Walsh 1990; Green and Dale 1992):

- the patient's perception of the problem is an important determinant of self referral to A&E
- the patient's perception of access to their GP
- The proximity of an A&E department also has a bearing on attendance rates
- perceived need for specialised treatment,
- mistrust of the GP
- not being on a GP list.

Practice nurses

Marsh and Dawes (1995) discuss the potential for a minor illness nurse to see patients with

acute minor illness in general practice but do not provide the data to show whether or not doctor's workload has been affected. A follow-up letter from Campbell et al (1995) confirms that that the introduction of a nurse led children's surgery has not increased the consultation rate. Huddart (1996) objects that the interpretation and counselling for even the most routine of procedures should be seen as a vital part of the general practitioner's workload. Following an editorial by Venning and Roland (1995), Thompson (1995) suggests that much of a general practitioner workload consists of dealing with trivia and routine tasks and that nurses could halve GPs workload if they carry out many of the routine tasks. Although practice nurses are well-qualified, it is important that their role, professional skills and working facilities are defined, supported and monitored (Peter, 1993).

Paxton (1996) showed how practice employed nurses initiated more of their own appointments following implementation of the New Contract and saw fewer GP referrals. Routine treatment room work had decreased and their level of therapeutic listening had increased for both practice employed and health board attached nurses. Hibble (1995), assessing the change in practice nurse workload before and after the introduction of the 1990 contract, showed that the proportion of time spent on 54% administration had increased to 19% and that the number of different procedures had increased from 36 in 1989 to 54 in 1992.

Charlton et al (1991) assessed the effect of a nurse-run asthma clinic on practice workload. They found that consultations with a general practitioner fell from 818 in the 12 months prior to the introduction of the clinic to 414 in the 12 months after the clinic started (substituted by 496 consultations with the nurse). Rees and Kinnersley (1996) report on nurse led management of minor illness in a GP at surgery showing how nurses can relieve much of the pressure on doctors; although they also warn against nurses becoming overloaded. Gallagher, Huddart and Henderson (1998) report on the impact of telephone triage of patients who wished to see GPs the same day conducted by a practice nurse. In three months, 1,263 consultations were recorded. Doctor workload fell from 1,522 to 664 consultations compared with the three previous months.

V.2 Adjusting statistically for supply

The problem posed for analysis is therefore to develop a model linking 'deprivation' factors reflecting the need for (primary) health care to the levels of utilisation, whilst taking account of not only variations in the propensity to consult *but also* variations in practice signature. Inasmuch as the analyses can be carried out at individual level, then the argument above suggests that there is unlikely to be substantial distortions at the level of each individual doctor-patient consultation although variations in practice signature will have to be taken into account as far as that is possible.

The question of adjusting for supply, and whether or not there is potentially a problem of endogeneity of supply variables, needs to be considered at both the individual and aggregate levels when analysing patient consultation behaviour.

V.2.1. Individual level

At the level of the individual doctor-patient consultation, whilst there may be a joint decision-making process - for example when a decision is being made about referral - which could be construed as real-time simultaneity, this is likely to be rare; and, in any case, the data is rarely available to test this hypothesis directly (intensive observation data would be required). Moreover, in policy terms, individual demand is too small to influence supply. There is not, therefore, *prima facie*, likely to be a severe problem of endogeneity at the level of the individual doctor-patient consultation.

However, where data is collected over a period (e.g. as in the National Morbidity Surveys or in the Scottish Continuous Recording System), there has to be an adjustment for supply, as the numbers of consultations for a given episode (an instance of morbidity) may well be influenced by the quality of the GP's care provided at the beginning of the episode. However there could be a contrary effect: eg there may be need for follow-up which is only picked up by some GPs. It is important to note that such effects are likely to be common across all the patients on the list of the same GP; and so can probably be incorporated in the analysis most simply by including variables reflecting the characteristics of the practice.

In order to take account of the variations between practice style, the appropriate methodology is to treat the consultation samples in each practice as clustered - because of variations not only in practice styles but also between areas. Moreover, to the extent to which data is made available at the practice and district level, it will also be possible to adjust for factors measured at the district as well as the practice level. The more comprehensive the data available at the higher levels, the more it becomes possible to control for variations in supply unrelated to need at the different levels.

V.2.2 Aggregate level

For any small area analysis, the availability and quality of primary care provision in an area may well influence the level of expressed demand: it will therefore be necessary to include variables in the model at the level of the area and of the practice catchment area to represent these effects. However, it will also be necessary to take into account the possible simultaneity between the provision of primary care services and their actual use (in terms of workload). Although there is no arithmetic translation into services, some FHSAs do allocate discretionary GMS resources between practices according to an index of deprivation and/or perceived need.

If substantial endogeneity is encountered and cannot be eliminated, the appropriate procedures are those used which were used in an earlier analysis for developing the national formula for Hospital and Community Health Services.

SECTION VI: MOVING TOWARDS FORMULAE

The reviews in the previous sections have demonstrated substantial consensus among researchers as to the pattern of health-care seeking behaviour, the socio-demographic characteristics associated with consultations with the general practitioner, the barriers to accessibility for certain groups and the constraints imposed on utilisation by the organisation of care. Clearly many of these factors overlap: which means that we cannot simply add up the effects of different characteristics upon utilisation, We have to disentangle the various inter-relationships and overlaps; and this involves testing models of the various relationships to examine which are the most powerful. These studies are reviewed in the first part of this section. Assuming that a robust set of variables can be identified such that, in principle, the resulting indices could be used to guide the allocation of resources, the problem arises of calculating those indices for general practice populations and this is considered in the second part of the section.

VI.1 Multivariate model-based analyses

The kind of models that are appropriate for analysing the data are different whether the data is being analysed at the individual., area or practice level; and so they are considered separately here.

VI.1.1 Individual data

The basic data that have been used are either the General Household Survey (or similar large scale interview surveys) or the National Morbidity Surveys.

General household survey

Reijneveld (1996) reports on an interview survey with 5,121 subjects in Amsterdam in 1992/93. Data was collected on their contacts with a GP in the previous 2 months and on their socio-economic background. Univariate and multivariate analysis show that most of the Jarman indicators are associated with increased consultations. Not surprisingly, the relative importance of the indicators was different; but, more importantly, they show that the indicators are inter-related at the individual level.

Balarajan, Yuen and Machin analysed general practitioner consultations in the General Household Surveys of 1983-87. They used the GHS data for 1983-87 (and age-gender weights from MSGP3) to estimate odds ratios for different socio-economic variables based on logistic regression of individuals . They developed separate models for children (0-15), men (16-64) women (16-64) and elderly people (65+) including age, sex, marital status (of mother), country of birth, housing tenure, socio-economic group, access to car, and elderly living alone. They found that council tenure increased likelihood of consultation as did access to no-car, birth in New Commonwealth countries, manual socio-economic group (for women and elderly people) and lone parenthood for children.
The recent analyses by Carr-Hill and Rice (1997/8) of the General Household Survey data from 1991/92 to 1995/96 data using a multi-level model with individuals nested within the

GHS Primary Sampling Units has shown that:

- limiting long term illness is a powerful 'needs' driver for the number of consultations;
- the other 'need-related variables such as employment status (not in employment), income and tenure status (not being an owner occupier) are also important needs drives for consultations;
- when aggregated values for limiting long term illness, for non-employment and nor non-owner occupation are included it makes some difference.

These results were in general consistent across the five years of the General Household Survey data (although there is a suggestion that the limiting long term illness variable has declined slightly in importance).

National morbidity surveys

Ben-Shlomo, White and McKeigue (1992) analysed data from the Third National Morbidity Survey. They computed a workload score as the weighted sum of consultations at the surgery and elsewhere (with a weight of 2.5) and excluded preventive procedures 'as most are remunerated directly'; and computed the Jarman, Carstairs and Townsend indices based on the individual values. They showed that the Jarman, Carstairs and Townsend indices all predicted workload, but that the Townsend index was the best predictor, with both housing tenure and car ownership (neither of which are included in the Jarman index) being important predictors of workload; whilst neither the overcrowding nor geographical mobility variables used in the Jarman index predicted increased workload.

Carr-Hill, Rice and Roland (1996) used data from the Fourth National Morbidity Survey which collected data on c. 500,000 individuals over a twelve month period. More details on this survey are given in Annex IV. The data were analysed taking into account both the varying number of consultations (0,1,2,..) and the fact that individuals were clustered into 60 practices. They carried out six separate estimations for males and females; children (up to and including 15), adults (16-64 inclusive) and senior citizens (65+), and found that:

- those who were consistently employed were most likely, and those who had lost employment least likely, to consult;
- distance of the patient's home from the doctors surgery is nearly always significant with a negative coefficient;
- Asians were more likely to consult;
- patients in manual occupations often significant were more likely to consult;
- cohabitation/marital status was rarely significant;
- smokers are more likely to consult than non-smokers;
- those in owner occupied housing less likely to consult;
- those permanently sick as defined by employment status highly significant.
- within these age groups, increasing age was associated with more consultations.

VI.1.2 Area data

General household survey

Following an earlier analysis by Jewell (1996) for the Economics and Operational Research Division, Carr-Hill and Rice analysed five years worth of General Household Survey data (from 1991/92 to 1995/96) on consultations with the GP. The data on individuals were aggregated to GHS Primary Sampling Unit level (approximately 40 individual respondents in each Primary Sampling Unit). As above, areas characteristics were measured by aggregating individual values. The best models were all linear.

When the 'raw' (unstandardised) rate of consultations is analysed at this level:

- age and sex have significant but not substantial effects;
- the average value of limiting long term illness in the area dominated these equations but other variables do enter such as employment status (not in employment), income, tenure status (not being an owner occupier) as needs drivers for consultations

On this basis, analyses were repeated after directly standardising the limiting long term illness rate according to the age and sex rates in the whole sample for each year. Analyses were carried out to test for the significance of the standardised limiting long term illness rate, a pseudo-Jarman score constructed as closely as possible from the values for the individuals in each of the Primary Sampling Units and the averages of the values for each of the components of the Jarman score. Whether the dependent was the number of GP consultations or the rate of GP consultations, the Standardised Limiting Long Term Illness ratio was always significant

VI.1.3 Practice data

Although not intended to provide the basis for a formula, the analysis carried out by data collected by Groenewegen and Hutton (1995) is interesting here. They combined four data sources: a three months recording of all contacts between GPs and their patients, a census of the practice population of the GP, a mailed questionnaire among the GPs and a one week diary kept by the GPs. They examined the determinants of a number of 'outcome'/workload variables separating our 'demand-related' factors and 'supply-related' factors. They found that the number of hours spent by GPs on practice activities is mainly determined (positively) by list size and, to a lesser extent, the percentage of elderly on the practice list; running an open appointment system was the only factor on the supply side. In contrast, list size and the percentage of elderly on the list have a negative effect on the office contact rate, while the percentage of low educated persons and the number of practice secretaries per GP have a positive impact. Unsurprisingly, the percentage of elderly on the list is the main determinant of the home visit rate.

Whynes and Baines (1996) investigate the relationship between levels of practice activity and workload (measured as prescribing cost per GP, consultations per GP and referrals per annum) and the characteristics of the practice and the age distribution of those on the practice list. At practice level, they find an R squared of 80%, 59% and 41% respectively based on routine practice data; but the bulk of that statistical explanation is based on list size (and we don't know how much is actually based on deprivation). However, their results were based on data from Lincolnshire; and work by Rice (1999) has shown that there are substantial variations between areas (in respect of prescribing cost per GP).

Hippisley-Cox et al (1997) studied referral rates from 183 practices to all 19 hospitals in the Trust region. After adjusting for the number of partners, percentage of patients aged over 65 and fixed holding status, they found that the UPA8 score was the strongest predictor of referral rates. They were criticised by Sturdy et al (1997) for using an age-dependent deprivation index but showed, in their reply, that the Townsend index was also strongly related to the referral rate. Another commentator, Sturdy et al reported a similar analysis for children, and suggest that broad practices at practice level may be masking associations. [see also Armstrong et al, 1988]

Robb (1997) set out to calculate an equitable budget share for the practices in the Border Health Board in Scotland, after showing that the practice expenditure varies from £701 per head to £375 per head; but then simply apply SHARE weights. There is, in any case, a danger in this method of reproducing existing pattern of expenditure

Porteus (1996) describes the development of a model of need for expenditure on GMS in Scotland based on data on all GP practice in Scotland in 1995. To control for practice characteristics both Two Stage Least Squares and Intermediate Least Squares methods were used; and regressions were weighted by practice list size. The final model of need contained: % of heads of households I manual occupations and % of over 75s living alone. However, it was found that, to take account of the excess costs of delivering services to rural areas, it was necessary to include dummy variables representing list sizes less than 1,200 patients. The models in this case were all linear (see above). The models explained 86% of the variations between practices when weighted by practice list size but were much less with non-weighted data

VI.2 Using indices to allocate resources

Currently, the Jarman index is used at a small area level as a reflection of the extent to which the populations of those small areas will tend to generate more consultation workload because they are more deprived. However, there has been debate about the Jarman score as a measure of deprivation almost since it was introduced (e.g.Charlton and Lakhani, 1985). Carr-Hill and Sheldon (1990) suggested that the Jarman index was more directly related to perceived workload than to deprivation (see also Scrivener and Lloyd,1997). As already mentioned, the variables chosen and the weightings used in the Jarman index were based on GPs (subjective) assessments of the consultation workload generated by different categories of patient

More recently, attention has shifted to the process of allocating deprivation payments. A British Medical Journal editorial (Hobbs and Cole, 1996) suggested that deprivation payments could be allocated at a smaller geographical level; and with finer gradients of payment bands starting at a lower entry score. These proposed amendments to the current system were supported by a series of letter to the British Medical Journal (e.g. Oliver, 1997) and by Professor Jarman himself (Jarman, 1997).

Although the notion of using the enumeration district as the unit of attribution is attractive, there are problems with socio-economic variables in which the numerator (or denominator) refers either to those questions which were asked of 10% of the population or to only a small percentage of the population because of Barnardisation (in which -1, 0 and +1 are added randomly to the counts for confidentiality purposes). For this and other reasons, Majeed et al (1995 and 1996). whilst arguing that enumeration districts would provide a more equitable basis, urge caution; and O'Reilly and Steele (1998) show that introducing finer payment bands would radically increase the potential population attracting payments.

However, in the context of this review, the question of whether the index reflects 'true' deprivation in terms of the need for GMS and the validity of presuming that ward or enumeration district values can be assigned to patients residing in those wards or enumeration districts.

VI.2.1 Does the index reflect 'true' deprivation?

Hutchinson, Foy and Sandhu (1989) compare the impact of using Jarman's UPA8 score and Townsend's material deprivation score for allocating GMS monies to doctors in deprived areas in the context of the 1990 contract. The authors argue that, on balance, the Townsend score is preferable since it has at least been shown to be positively correlated with 0-64 SMRs, percentage of low birthweights and % permanently sick.

Worral, Rea and Ben-Shlomo (1997) set out to cost the relation between socio-economic status and various measures of primary care workload (surgery visits, home visits, home visits out of hours, practice nurse visits, outpatient referrals, accident and emergency attendances) based on retrospective data collected from one inner-city group practice over a 4.5 year period from both computerised and manually filed records. Based on analyses of surgery visits, home visits and nurse contacts together with drugs dispensed and dispensing costs, after adjusting by age group and sex, they found that the difference in costs for patients in social class IV a and V combined compared with those in social classes I and II was about £150 per person per year at risk (£47 for workload and £103 for drugs). Deprivation payments corresponding to those patients only met about half the extra workload cost for patients from qualifying wards.

In contrast, Hannay (1997) reports on a study of 100 general practitioners working ull-time in Sheffield in 1995 apparently showing the opposite. He shows that the correlations between the proportion of patients attracting deprivation payments in 1995 (based on 1991 census and 1995 list sizes) and both the mean hours per week of GMS workload and the mean number of patients seen per week for those working full-time in 1991 were negative. He queries the extent to which doctors working in a deprived area are actually working harder than those

who do not.

In addition, the use of indices of deprivation constrains any allowance for need (or for workload) to a predetermined set and weighting of variables some of which are 'objective' indicators of socio-economic decline (e.g. % car ownership, % owner occupancy) and others are 'direct' measures of the size of vulnerable sub-groups (e.g. lone parents, elderly alone)[4]. There is no reason to make *a priori* decision in this way. In the national resource allocation formula which has just been developed (Carr-Hill et al, 1994), the socio-economic factors included have tended to reflect more the vulnerable groups than 'objective' socio-economic conditions. This may be because the vulnerable groups are becoming sufficiently large to serve also as indicators of socio-economic deprivation as, for example, unemployment does; or it may be that Census measures of socio-economic circumstances are no longer good markers of vulnerability. In either case, when analysing Census data at the small area level it is better to start with single variables from the census rather using than pre-packaged indices which have not necessarily been derived for the specific purpose concerned.

VI.2.2 Attribution problem

One of the major difficulties with weighted capitation in primary care is the problem of 'attribution' - that is assigning to individual patients the characteristics of the electoral ward (or enumeration district) in which they live. Currently, for example, in order to calculate the Jarman deprivation payment, the Jarman scores are calculated for each electoral ward in the country; and then for each practice, the Exeter system produces a count of the number of patients on their list who are living in wards with Jarman scores at each level above 30.

Although patients can choose to register with any GP, the presumption here is that the patients on a particular GP list from a specific electoral ward or enumeration district are representative of that ward or enumeration district; but we have no means of knowing whether or not the particular group of patients who are actually on that GPs list are representative in this sense. Chase and Davies (1991) showed the difference between the underprivileged area score for the practice determined on the basis of 1981 census information and one calculated from responses to questionnaires competed by 773 patients. Crayford et al (1995), Majeed (1996) and Senior (1991) make the same point.

[4] The classification between the two types of components is not exclusive: it is not obvious where to put unemployment for example.

The analyses to date have been of three[5] kinds:

* comparing the proportions of socio-economic variables such as unemployment when attributed via the patient's enumeration district, via the patient's ward of residence, or via a classification of Enumeration districts for a sample for MSGP4 (Hennell, 1996);

* direct comparison of proportion of children estimated to be on a practice list with that attributed by proportions in each enumeration district and ward (Majeed et al 1994) and a similar exercise with the proportions of elderly (Scrivener and Lloyd, 1995)

* direct comparison of proportion of socio-economic variables among the MSGP4 data set when compared to the estimated proportions from data attributed at either the enumeration district or electoral ward level (Carr-Hill and Rice, 1995)

The overall findings can be summarised as follows:

* there are quite wide discrepancies between direct comparisons of age and gender distributions which are sufficient to cause concern;

* direct comparison of other socio-economic variables also show discrepancies and these do not appear to be 'ironed out' by using clusters of enumeration districts and although there is a tendency for enumeration district values to be slightly closer to 'true' values for the enumeration districts but the improvement is not dramatic.

* the behaviour of indices is not substantially better than that of 'single' socio-economic variables.

[5] There have also been comparisons of measured attributes of patients measured via questionnaires with those attributed from Small Area Census data ((Ward et al, 1994).

SECTION VII: CONCLUSIONS AND IMPLICATIONS

VII.1 Quality of the evidence

Ideally, allocations should be built up from the resource requirements generated by different individual patterns of need. However, the majority of analyses of, for example, hospital in-patient activity have been based on small area analyses of rates of utilisation. In this respect, there are many advantages in analysing primary care data.

The lack of appropriate data on utilisation

Thus, there has been a considerable amount of research about the factors associated both with the propensity to consult a General Practitioner and with raised rates of consultation at an individual level; and, whilst there is some argument over what should be the appropriate measure of utilisation, there is little dispute over the kinds of factors which are important. The problem here is that there is no routine data which captures utilisation so that, in order to estimate equations that might be the basis for eventual formulae, analysts have been forced to rely on other surveys (such as the General Household Survey or the Health Survey for England) or special - and very expensive - surveys such as the National Morbidity Surveys.

Data from the General Household Survey and the Health Survey for England are much richer in terms of socio-economic variables, but only contain data on self-reported consultations and so we are unable to identify or distinguish between serious, intermediate or minor consultations, or identify the condition for which the person consulted. In contrast, the National Morbidity Surveys have a wealth of data about the conditions and diagnoses for which the person consulted, but only a very crude categorisation of the consultation into serious/intermediate trivial because the interest was in estimating morbidity rather than utilisation or workload. Moreover, there is no data on health status - and only limited socio-economic data.

The strengths of both the General Household Survey (or the Health Survey for England) and the National Morbidity Surveys should be combined in order to generate a data set with sufficient socio-economic data about the individuals (whether or not they have consulted) together with more detailed information about the consultation itself - and especially about it's length and complexity. It is unlikely that detailed data of this kind would be available in the foreseeable future on a routine basis (although the recording of consultations themselves may become more standardised); however, a representative sample of practices could be asked to monitor its consultations over a period recording data on both the length and markers for complexity, whilst the patients on their lists could be asked to complete a brief questionnaire about both their self-perceived health and their socio-economic status.

Allowing for inappropriate care and unmet need

None of the proposed allocation formulae proposed or implemented to date in other parts of the health service have satisfactorily solved the problems of allowing for inappropriate care or unmet need. Given the 'symptom iceberg', this is, in principle, a very important problem for devising appropriate allocations for GMS. However, the evidence reviewed above suggests that this may not be such a serious problem in practice as those who consult tend to report themselves in poorer health than those who do not, and most of those who consult more often are recognised by the general practitioner as requiring attention; they are not disproportionately consulting for 'trivial' conditions.

Whilst straying outside the brief of usual discussions of resource allocation, perhaps a more serious problem is ensuring that the primary care team provide appropriate preventative services. Whilst these have been encouraged through incentive payments for practices to achieve certain target levels of immunisation and vaccination, etc., progress towards these goals may be hindered by the requirement to be patient-responsive: for example, Al-Bashir and Armstrong (1991) showed how elderly and ill patients were more likely to value second opinions and, conversely, undervalue efficient prescribing, and an emphasis on vaccinations, cervical smears and check-ups.

Collecting data to monitor these types of problems is even more complex. We would need to have pre-existing data on health status as well as the detailed data on consultations discussed above (VI.1.3) and data on other health-care seeking behaviour. Pilot data of this kind has been collected within the National Primary Care Research and Development Centre, and although it would obviously be a very expensive exercise, equally clearly, it would provide an enormous amount of information if collected on a national scale.

VII.2 The research consensus on the important factors

Despite these problems - which are not, in principle, any more severe than confronted in other areas where resource allocation formulae have been developed - there is a substantial research consensus about the factors influencing the need for GMS:

- first, self-reported ill-health does reflect real morbidity as well as trivial complaints and is a powerful determinant of the propensity to consult; and
- second, there are a range of socio-economic factors which are associated with the likelihood of consultation over and above ill-health whether measured in terms of self-report or 'objectively'.

On this basis, a formula could therefore be developed incorporating both a morbidity variable and a combination of socio-economic variables.

ANNEX 1 Search Strategy

Four databases were searched with the following relatively crude categories

Database: CINAHL, Dates searched: 1995 - present

*primary health care/
*family practice/
(general adj practi$).tw.
(primary adj care).tw.
(gp or gps).tw.
(practice adj nurs$).tw.

workload/
(work adj load$).tw.
(case adj load$).tw.
caseload$.tw.

need.ti.
exp *"health services needs and demand"/
(needs adj assessment$).tw.

equity.tw.
equitable.tw.
inequalit$.tw.
*health services accessibility/
*social class/

Database: DHSS DATA, Dates searched: 1995-PRESENT

general adj practi$
primary adj care
gp or gps
practice adj nurs$

workload$
work adj load$
case adj load$
hours-of-work

need$.ti.
health adj need$
need$ with service$
need$ with resource$
needs adj assessment$

equity

equitable

Database: MEDLINE. Dates searched: 1995-present (1991-present for workload search)

*primary health care/
*family practice/
(general adj practi$).tw.
(primary adj care).tw.
(gp or gps).tw.

workload/
(work adj load$).tw.
(case adj load$).tw.
caseload$.tw.

need.ti.
exp *"health services needs and demand"/
(needs adj assessment$).tw.

equity.tw.
equitable.tw.
inequalit$.tw.
*health services accessibility/
*social class/

Database: Social Science Citation Index. Dates searched: 1995 - PRESENT

general practi*
primary care
gp or gps
practice nurs*

workload*
work load*
caseload*
case load*

need* in ti
need* and service*
need* and resource*
need* assessment*

equity
equitable

ANNEX 2
DEFINITIONS of SERIOUS, INTERMEDIATE and TRIVIAL ILLNESSES according to NATIONAL MORBIDITY SURVEYS

Serious diseases include:

* those which, at the time [of consultation], are invariably serious;

* those which invariably require a surgical intervention;

* those which carry a high probability of serious complications or significant recurring disability.

*Intermediat*e diseases include:

* those which though sometimes potentially serious are classified to a morbidity code which spans a wide range of severity, or embraced by a diagnostic term which is used with widely disparate meanings by general practitioners.
* those which though often not serious, are usually brought to the attention of the general practitioners;

Trivial diseases include

* illnesses commonly treated without recourse to medical advice

* minor self-limiting illnesses which require no specific treatment

* diseases which are not included above.

ANNEX 3: TABLES of DISEASES and CONDITIONS by MORBIDITY

All diseases and conditions:

Table A3.1 : Prevalence rates per 10,000 person years at risk in 1981-82 and 1991-92

	Persons	All ages	0-4	5-14	15-24	25-44	45-64	65-74	75+
All diseases	1981-82	7,116	9,846	6,686	7,054	6,768	6,749	7,388	7,890
& conditions	1991-92	7,803	1,221	7,243	7,536	7,537	7,610	8,271	9,082
	Change	+10%	+4%	+8%	+7%	+9%	+13%	+12%	+15%
Serious	1981-82	1,439	649	538	653	865	1,959	3,411	4,439
	1991-92	1,829	1,200	995	940	1,088	2,352	4,015	5,912
	Change	+27%	+85%	+85%	+44%	+26%	+20%	+18%	+20%
Intermediate	1981-82	4,160	6,200	4,004	3,862	3,710	4,021	4,693	4,914
	1991-92	4,741	6,843	4,446	4,390	4,189	4,597	5,554	5,912
	Change	+14%	+10%	+11%	+14%	+13%	+14%	+18%	+20%
Trivial	1981-82	5,702	8,843	5,187	5,922	5,719	5,148	5,195	5,625
	1991-92	6,576	9,376	5,603	6,396	6,343	6,366	6,618	7,659
	Change	+15%	+6%	+8%	+8%	+11%	+24%	+27%	+36%

Specific diseases and conditions:

Table A3.2: Consultations with doctor - rates per 10,000 person years at risk 1991-92 : ICD chapter and category of severity by age; for diseases of the respiratory system and supplementary classifications

Disease Group	Persons, by age group								
	Total	0-4	5-15	16-24	25-44	45-64	65-74	75-84	85+
Diseases of the resp. system	6,200	16,394	7,237	5,355	4,441	4,840	6,695	6,974	7,081
Serious	1,314	2,231	1,543	809	700	1,245	2,508	2,549	2,289
Intermediate	1,933	4,285	2,092	1,715	1,370	1,615	2,288	2,703	3,097
Minor	2,953	9,879	3,602	2,831	2,371	1,980	1,899	1,722	1,696
Supplementary classification	4,764	6,375	846	7,595	6,431	4,042	2,371	3,327	3,436

Note that all the consultations included under Supplementary Classifications are counted as minor conditions; parallel detailed tables from 1981-82 are in Table A3.5

Table A3.3 : Asthma - prevalence rates per 10,000 person years at risk, by sex.

		All ages	0-4	5-14	15-24	25-44	45-64	65-74	75+
Males	1971-72	106	148	193	88	79	82	104	28
	1981-82	200	333	375	186	121	139	215	162
	1991-92	429	994	883	414	258	260	372	345
	81/91 change	+114%	+198%	+135%	+123%	+113%	+87%	+73%	+113%
Females	1971-72	86	72	89	74	84	101	91	59
	1981-82	159	183	205	147	121	181	187	129
	1991-92	422	722	650	470	334	342	412	295
	81/91 change	+165%	+295%	+217%	+220%	+176%	+89%	+120%	+129%

Table A3.4 Asthma - prevalence rates per 10,000 person years at risk - 1981-92.

		All ages	0-4	5-14	15-24	25-44	45-64	65-74	75+
First episodes	1981-82	82	192	146	80	53	58	70	53
	1991-92*	81	339	146	69	47	39	46	29
	Change	-1%	+77%	-	-14%	-11%	-33%	-34%	-45%
First and new episodes	1981-82	214	342	356	200	146	188	227	158
	1991-92*	297	883	545	275	190	182	223	134
	Change	+39%	+158%	+53%	+37%	+30%	-3%	-2%	-15%
Prevalence	1981- 82	178	260	293	166	121	161	199	140
	1991-92*	425	861	755	428	296	300	394	312
	Change	+139%	+231%	+158%	+158%	+145%	+86%	+98%	+123%

Note: 1991-92 age groups are 5-15 and 16-24; detailed table for 1981-82 is in Table A3.3

Table A3.5 Consultations - rates per 10,000 persons at risk ; age group and ICD Chapter ; category of conditions ; 1981-82.

All Practices	All Ages	0-4	5-15	15-24	25-44	45-64	65-74	75+
All Diseases	33961	49149	20783	30001	31367	34990	43753	54038
All Illnesses	29250	40678	19735	21509	24569	32721	41847	51225
Serious	5026	1363	1175	1478	2367	7123	1365	19829
Intermediate	11122	16267	8283	8399	9250	12598	15529	16673
Trivial	13102	23048	10277	11631	12952	13000	12753	14722
Chap VIII Resp.	5444	14783	6652	4408	4071	4260	5474	5575
Serious	867	829	794	416	409	1030	1999	2125
Intermediate	1897	4316	2648	1770	1301	1382	1972	2220
Trivial	2680	9638	3209	2220	2360	1847	1502	1230
Supplementary	4711	8472	1048	8492	6798	2269	1906	2813

Relative Rates of Consultation with Doctor and Nurse

Table A3.6 All consultations - rates per 10,000 person years at risk : home visits and whether consulted doctor or practice nurse by ICD chapter, category of severity and age.

	Doctor consultations							
	Ages 0-15		Ages 16-64		Ages 65-74		Ages 75+	
	All	Home visits	All	Home visits	All	Home visits	All	Home visits
All diseases and conditions								
With Doctor: All	30,833	2,569	32,793	1,427	45,532	6,540	53,902	21,726
Serious	2,147	185	4,204	317	13,666	2,745	18,215	8,325
Intermediate	13,912	1,327	13,360	640	19,020	2,311	20,091	7,503
Minor	14,774	1,056	15,229	470	12,846	1,484	15,596	2,899
With Nurse: All	2,471	19	3,338	9	6,294	54	6,099	651
Serious	179	1	242	1	790	15	561	45
Intermediate	321	7	733	3	1,964	12	1,514	42
Minor	1,970	11	2,363	5	3,540	27	4,024	564
Diseases of the Respiratory system								
With Doctor: All	10,266	1,081	4,752	279	5,595	1,440	6,998	3,519
Serious	1,770	134	900	69	2,508	630	2,491	1,287
Intermediate	2,817	373	1,518	138	2,288	587	2,791	1,583
Minor	5,678	574	2,334	72	1,899	223	1,716	649
With Nurse: All	216	7	96	1	184	4	111	13
Serious	169	1	68	0	156	2	89	4
Intermediate	10	1	9	0	13	2	12	5
Minor	37	5	20	0	15	1	9	4
Supplementary Classification								
With Doctor	2,675	67	5,878	124	2,371	158	3,351	937
With Nurse	1,699	3	1,983	3	2,789	18	3,163	529

ANNEX 4 ON MSGP4

AIV.1 Origin and limitations of data

AIV.1.1 History of this data collection exercise

The data originates with the Fourth National Morbidity Survey of General Practices (henceforth MSGP4). These have been organised decennially by the Royal College of General Practitioners (RCGP) in conjunction with the Office of Population, Census and Surveys (OPCS) since 1961, based on volunteer reporting by a number of practices. On this occasion it was divided to restrict the practices selected to those that were computerised, thereby, in principle, facilitating data collection. A number of preliminary meetings were held to familiarise the GPs and nurses in each of the practices with the recording instruments.

Data were captured electronically by the sixty volunteer practices between September 1991 and August 1992 on all individuals registered for part or whole of the study period with one of the participating practices (N = c.500 000). Every consultation made whilst the patient was registered with either the doctor or nurse both at the surgery and at home, was in principle, recorded as was every forward referral made by the doctor; both were classified according to the Read classification codes which have then been translated into ICD.9 categories. Aggregate rates divided into serious intermediate and minor were also computed. In addition to the address and therefore postcode of each patient, a brief socio-economic questionnaire was also administered about half way through the study period to every individual whether or not they consulted during the year asking for information on economic position last week and last year, cohabitation/marital status, social class and tenure status. A very high response rate of approximately 85% (n=425 000) was achieved.[6]

These data have been organised into a flat file by OPCS and, via the postcode, linked to information from the Census Small Area Statistics for the Enumeration District and Electoral Wards in which the patients live (aggregates of socio-economic data). There are sample members from some 10 000 Enumeration Districts and some 1 900 Electoral Wards. The same linkage has been used to add on data from the Hospital Episode System (such as the in-patient rates for acute and chronic conditions), Population Vital Statistics such as birthweight and standardised mortality ratios, and Health Service Supply variables (essentially variables reflecting access).

AIV.1.2 Limitations on data set used in this analysis and recording problems

Due to the need to ensure confidentiality of the patients and GPs participating in the MSCGP4 study, the data from the sixty practices were aggregated into nineteen practice groupings. Similarly, partly because of the confidentiality restrictions, we do not have complete, or completely accurate, data at the area level.

[6] In 1981 similar information had been obtained by direct linkage of the individual patient records to the Census

To be precise, whilst there are - in the sample - some 10 000 Enumeration Districts and some 1 900 electoral wards where there is at least one individual patient (from among the 500 000), we have only been given ED or Ward identifiers for those 1 620 EDs and 480 Wards where there are a substantial number of patients (more than 20% of an ED's population; more than 100 in a ward). These 1 620 EDs include approximately 68% of the patients and the 481 Wards include approximately 95% of the patients.

In addition, where the population of the ED is small, then the Small Area Statistics and other aggregate data have been 'Barnardised', that is random additions have been made drawn from a (normal?) distribution between (-1 and +1). Whilst this is not generally important, it is of concern where these counts are used to form rates such as the unemployment rate - which are typically quite small. For example, in a typical ED of 450 individuals, there may be 150 in the labour force; an unemployment rate of 6.7% then refers to a count of 10 (ten), which might in fact represent 9 or 11 individuals, i.e. a true unemployment rate of 6.0% or 7.3%. Whilst the measurement error is not large, it is sufficient to seriously distort the results of a multi-variate analysis.

To summarise, the data available for analysis is organised in a three level structure with information about:

* 19 practice groupings;
* Either 480 wards or 1 620 EDs (with fuller information at the ward level);
* c.500 000 individuals distributed more or less evenly within those area and practice groupings.

The problems of confidentiality are not the only reasons why there might be some measurement error in the data.

AIV.1.3 Specification of the data at different levels

Individual level data

The following data were available for individual patients:

Medical data

Numbers of Consultations for different kinds of conditions (ICD Chapters and Health of the Nation diagnostic groups) and various aggregates, viz.:

* Number of consultations for any illness, or anything (NCONANY)
* Number of consultations for an illnesses (NCONILL)
* Number of consultations for serious illnesses (NCONSER)
* Number of consultations of intermediate severity (NCONINT)
* Number of consultations for minor reasons (NCONMIN)
* Numbers of consultations for ICD Chapter I,II,...,XVII
    * (NCONnn - where nn is the chapter number)
* Number of consultations with the GP (NCONGP)
* Number of home visits for a consultation (NHOMVSD)

Limited socio-economic data - collected at mid-point of year

Age(in five year bands from 0-4 to 80-84, then 85+)
Gender
[a]Cohabitation Status (living alone or with another adult)
[a] Marital Status (Single, Married, Divorced/Separated/Widowed, Other, Missing)
Ethnic Group (White, Black, Bangladeshi/Indian/Pakistani, Other, Missing)
Tenure (Owner Occupier, Council Rented, Private Rent, Other, Missing)
[b] Economic Position Last Week (Working full-time, Working part-time, Seeking Work, Student, Permanently sick, Houseperson, Other, missing)
Economic Position Last Year (Working full-time, Working part-time, Seeking Work, Other (including permanently sick), Missing)
Social Class (RG Classes I or II, IIINM, IIIM, IV or V, Other, Missing)
[c] Living with a Sole Adult (for children under 15 only) (Single Parent, 2+ adults, Missing)
[a] Smoking (Smoking, Not smoking, Missing)

Notes [a]not for children; [b]not for elderly; [c]for children only

Small area statistics data(at level of enumeration data or electoral ward)

The following are only really relevant in the aggregated analysis.

* Hospital Episode System data with rates of utilisation for each of twelve specialties
* [d]Population Vital Statistics including deaths in each of the age groupings
* [d]Supply variables (accessibility of GPs, of Hospital acute in-patient beds, of Hospital non-acute in-patient beds, of places in residential and nursing homes, of private hospitals, and of acute and non-acute beds in Special Health Authorities, accessibility of and Emergency Departments). These were derived in an earlier exercise (Carr-Hill et al, 1993) so as to reflect both numbers of GPs and beds and distance. Each of these has been calculated in a similar fashion as a *weighted sum* of the ratio of numbers of personnel or beds at *each* outlet in the country to a weighted distance from *each* synthetic ward in the country (see Annex ?).

Note [d]At Electoral Ward level only

Practice Grouping

This has been derived from: the number of trainers in the practice, whether or not the practice is a dispensing practice, the numbers of nurses per thousand and the number of doctors per thousand.

AIV.2 Quality, sufficiency and validity of data for the tasks to be performed

Quality

Socio-economic data has been provided on economic position last week, ethnic grouping, social class and tenure status. For all adults (16-64) there is also information on whether or not they smoke, cohabitation status and marital status[7] and economic position last week and last year; for elderly, there is information on whether or not they smoke and marital status, but not on economic position last week or last year. In addition for children there is also information on whether or not they are living with a sole adult (and the variables of economic position last week and last year and ethnic group refer to their guardian rather than to themselves).

These data (except for the smoking variables) are collected regularly in other surveys and in the Census itself. On the whole, experience from other surveys - and from the Census validation exercises themselves - suggests that these data, including the ethnic grouping variable in *these broad categories*, can be assumed to be reasonably reliable. The difficulty is with social class variable for women.

This is a problem because the social class of the husband is being taken to apply to the spouse. This was an appropriate assumption for Stevenson (1923) in 1911 when the social class classification was derived to reflect culture and lifestyle. It is inappropriate now (*pace* Goldthorpe, 1983). However, the supply of an additional data set including information on women's social class does not necessarily solve the problem. As Arber et al (1986) and Roberts(1987) have argued, the occupational structure is defined in male terms, so that an unhelpfully large proportion of women end up being classified as Social Class III non-manual; worse still, when using occupationally defined social class as an empirical classifier, Carr-Hill and Pritchard (1992) show that, in many cases - and especially for health-related data - it performs poorly in that there is no monotonic gradient and the numbers omitted are rather large.

Sufficiency

At the same time, there is a question of the extent to which these data are sufficient for the task of testing the kinds of hypotheses that can be derived from the literature review: for example, the review above has highlighted several other factors which are relevant to the decision to consult such as the subjective health status of the patient and their symptom tolerance. This has to be borne in mind when developing the approach to modelling these data and discussing the implications of the results.

[7] Both cohabitation status and martial status variables have been considered in the analysis, because there is some literature to suggest that the former rather than the latter which is most associated with illness.

AIV.3 Consultation rates available

AIV.3.1 Aggregate consultation rates

For the *individual level* analysis, the possible generic dependent variables are:

* use or non-use of primary care during the year (consultation or non consultation for a range of different reasons and for a selection of aggregates as per the data provided, note that this does not include a severity rating
* among users, numbers of consultations for a range of different reasons - as per the data provided (see below).
* numbers of home visits by the doctor and numbers of preventive health case consultations.

In carrying out a separate *small area level* analysis of primary care utilisation, the possible dependent variables are:

* rates of use or non-use of primary care during the year (or rates of consultation or non consultation for a range of different reasons - as per the data provided)
* among users, average numbers of consultations for a range of different reasons - as per the data provided
* average consultation rate across all registered patients
* rates of referrals for a range of reasons

[Clearly, the third variable is a composite of the first two]

These, and other variants, have all been explored in the first part of the contract period, in order to see whether any combined or weighted averages of consultation rates which behave similarly to many of the individual variables can be used in the analysis to simplify policy decision.

AIV.3.2 Separate analyses by ICD chapters

Examination of the consultation rates for the different ICD Chapters in MSGP3 suggests that, using a minimum rate of 200 consultations per 1000 patients, the following Chapters could, *in principle*, be analysed separately:

V. Mental Disorders
VI. Diseases of the Nervous System and Sense Organs
VII. Diseases of the Circulatory Organs
VIII. Diseases of the Respiratory System
IX. Diseases of the Skin and Subcutaneous Tissue
X. Diseases of the Musculoskeletal System and Connective Tissue

Note that, whilst there is high rate of consulting for Chapter XV1. (Symptoms, Signs and Ill-Defined Conditions), the category is too heterogenous to analyse separately. Also, because not all individuals were in the study for the whole year, their rates have been weighted by (n of days in study)/366; those with fewer than 100 days in the study have been omitted as they occasionally generated very large outliers in the data.

The main difficulty is the extent to which the sample members in each ED or ward can be taken as representative of their EDs or wards. For many of the 9604 enumeration districts and 1 900 wards where there are patients in the sample of voluntary practices, only a very small percentage of the ED's or ward's population are included in the MSGP4 sample. In fact, the data made available for analysis excludes the very sparsely represented EDs or wards, reducing the sample to the 1 604 EDs where more than 20% of the EDs population was included in the MSGP4 sample or to the 476 wards where there are at least 100 individuals (out of an average electoral ward population of c.5 000). One potentially fruitful avenue that might be explored in the small area analysis is the possibility of weighting those wards with a higher percentage of individuals in participating practices more heavily in the analysis.

In attempting to identify the needs drivers for patient consultation, we are forced in MSGP4 to rely on consultation data with relatively little data on the patient's morbidity status. There is therefore a danger that, despite technical sophistication in modelling, some of the factors identified will in fact be factors which influence workload but which do not reflect need. It is for this reason that we shall also analyse data from the Health Education Authority's Health and Lifestyle Survey where there is a range of data on the health status of the potential patients as well as information on the use of primary care services (see section on Supplementary Data).

In carrying out the analysis (especially of the links between primary and secondary care), there was a choice between analysis at the level of enumeration districts or electoral wards.

[Note however that, in the analysis of patient consultation behaviour and given the general strategic approach preferred here of multi-level modelling, then there is in any case more flexibility in including patients from sparsely represented EDs or wards, precisely because the multi-level modelling approach allows for the introduction of district level variables at the same time as and separately from the individual level data. ED or Ward variables are introduced to reflect locality effects rather than as a proxy for aggregate individual characteristics. In the analysis being proposed, it is therefore not a requirement that the individuals should be (more or less) representative of their EDs or wards (although one would want to exclude areas with very few individuals indeed because of the likely instability of the estimates).]

It would seem essential, whichever level or mode of analysis is adopted, to carry through some sensitivity analysis to examine the effect of restricting the sample to be analysed to progressively larger fractions of the small area populations being included within the practices participating in MSGP4. Realistically, however, given the time available, this has only been possible on a very limited scale.

REFERENCES

Abbott PM (1990) Jarman indices and 'new chronic' inpatients (letter) *British Journal of Psychiatry*, 156: 133

Ahmad WIU., Kernohan EEM., Baker MR. 1991. Patients choice of general practitioner: importance of patients' and doctors' sex and ethnicity. *British Journal of General Practice*. 41: 330-331

Aiach P, Curtis S. 1990. Social inequalities in self-reported morbidity - interpretation and comparison of data form Britain and France. *Social Science and Medicine*. 31 number 3: .

Al-Bashir MM, Armstrong D. Preferences of healthy and ill patients for style of general practitioner care: implications for workload and financial incentives under the new contract. *British Journal of General Practice* 1991 Jan;41(342):6-8

Al-Bashir MM., Armstrong D. 1991. Preferences of healthy and ill patients for style of general practitioner care: implications for workload and financial incentives under the new contract. *British Journal of General Practice*. 41 (342): 6-8.

Albert T., Chadwick S. 1994, How readable are practice leaflets? *British Medical Journal*. 305 (6864): 1266-1268.

Anderson JAD., Buck C., Danaher K., Fry J. 1977. Users and non users of doctors - implications for self care. *Journal of the Royal College of General Practitioners*. 27: 155-159.

Anderson, S-O and Mattsson, B. Length of consultations in general practice in Sweden: views of doctors and patients. *Family Practice* 1989; **No 6**: 130-4.

Andrews A, Jewson N. 1993. Ethnicity and infant deaths. *Sociology of Health and Illness*. 15: 137-154.

Appleby J. Fairer Primary Care Budgets. *Health Service Journal* 1995 9 November 36-

Arber S, Ginn J. 1993. Gender and inequalities in health in later life. *Social Science and Medicine*. 36 (1): 33-46.

Armstrong D, Britten N, Grace J. Measuring general practitioners referral rates: patient, workload and list size effects. *Journal of the Royal College of General Practitioners* 1988;38:494-7

Armstrong D., Glanville T., Bailey E., O'Keefe G. 1990. Doctor-initiated consultations: a study of communication between general practitioners and patients about the need for re-attendance. *British Journal of General Practice*. 40: 241-242.

Arthritis and Rheumatism Council for Research. Backache and Disc ('slipped disc') disorders.

Aston JR., Marchbank A., Mawle P., Hotchkiss J. 1994. Family planning, abortion and fertility services in Stevens A., Raftery J. (eds.) *Health Care Needs Assessment*.

Azeem FA, Marlin D, Crayford T. Deprivation payments to general practitioners: Limitations of census data. *British Medical Journal* 1996 313: 669-70

Bain J. General practitioners and the new contract; Reactions and Impact
British Medical Journal 1991 302;1183-86
Baker CD. 1976. Non-attenders in general practice. *Journal of the Royal College of General Practitioners*. 26: 167.

Balarajan R., Yuen P., Machin D. 1992. Deprivation and general practitioner workload. *British Medical Journal*. 304: 529-534.

Balarajan R., Yuen P., Machin D. 1987. Socio-economic differentials in the uptake of medical care in Great Britain. *Journal of Epidemiology and Community Health*. 41: 196-199.

Banks MH., Beresford SAA., Morrell DC., Waller JJ., Watkins CJ. 1975. Factors influencing demand for primary medical care in women aged 20-44: a preliminary report. *International Journal of Epidemiology*. 4, 3: 189-195.

Baxter C, Baxter D. 1988. Racial inequalities in health: a challenge to the British NHS. *International Journal of Health Services*. 18 (4): 563-571.

Beale N. Daily home visiting in one general practice: a longitudinal study of patient-initiated workload. *British Journal of General Practice* 1991 Jan(342):16-8

Beale N, Nethercott S. 1988. The nature of unemployment morbidity: 1. Recognition. *Journal of the Royal College of General Practitioners*. 38: 197-199

Beale N, Nethercott S. 1988a. The nature of unemployment morbidity: 2. Description. *Journal of the Royal College of General Practitioners*. 38: 200-202.

Becker MH, Maiman LA. 1975. Socio-behavioral determinants of compliance with health and medical care recommendations. *Medical Care*. 13: 10-24.

Bedford HE., Jenkins SM., Shore C., Kenny PA. 1992. Use of an East End children's accident and emergency department for infants: a failure of primary health care? *Quality in Health Care*. 1: 29-33.

Ben-Shlomo Y, White I, McKeigue PM. Prediction of general practice workload from census based social deprivation scores. *Journal of Epidemiology and Community* Health 1992; 46: 532-6

Benson P, Turk T. 1988. Group therapy in a general practice setting for frequent attenders: a controlled study of mothers with pre-school children. *Journal of the Royal College of General Practitioners*. 38: 539-541.

Bentham CG., Haynes RM. 1985. Health, personal mobility and the use of health services in rural Norfolk. *Journal of Rural Studies*. 1: 231-239.

Bentzen N, et al 1989. Self-care within a model for demand for medical care. *Social Science and Medicine*. 29 (2): 185-194

Bevan G & Charlton B. Making access to health care more equal: the role of GMS. *British Medical Journal* 1987; 295:764-767.

Birch S. and Maynard A.K The RAWP Review: RAWPing Primary Care; RAWPing the United Kingdom, Centre for Health Economics, University of York, Discussion Paper No. 19

Blane D., Davey Smith., Bartley M. 1990. Social class differences in years of potential life lost: size, trends and principal causes. *British Medical Journal*. 301: 429-432.

Blane D., Davey Smith G., Bartley M. 1993. Social selection: what does it contribute to social class differences in health? *Sociology of Health and Illness*. 15 (1): 1-15.

Blaxter M. 1985. Self-definition of health status and consulting rates in primary care. *The Quarterly Journal of Social Affairs*. 1 (2): 131-171.

Blaxter M., Patterson E. 1982. Consulting behaviour in a group of young families. *Journal of the Royal College of General Practitioners*. 32: 657-662.

Blaxter M. *Health and Lifestyle. 1990.* Tavistock/Routledge. London

Blaxter M. 1987. Evidence on inequality in health from a national survey. *Lancet*. 4 July 1987: 30-33.

Blaxter M. 1984. Equity and consultation rates in general practice. *British Medical Journal*. 288: 1963-1967.

Blaxter M. 1984. A Comparison of inequality in morbidity*: In Health Inequalities in European Countries.* edited by Fox, A. Gower. Aldershot

Bloor K, Maynard A. Equity in primary care. (1995) York, University of York, Centre for Health Economics, Discussion Paper 141.

Bosanquet N, Leese B. Family doctors and economic incentives

Bowling A., Farquhar M., Browne P. 1991. Use of services in old age: data from three surveys of elderly people. *Social Science and Medicine*. 33, 6: 689-700.

Bowling A., Farquhar M., Grundy E. 1993. Who are the consistently high users of health and social services? A follow-up study two and a half years later of people aged 85+ at baseline. *Health and Social Care in the Community*. 1 (5):277-288.

Bradley N, Gude R. 1992. Survey of services to patients in general practice. *West England Medical Journal.* 107 (1): 10-13

Buckler D, Dwivedi K. 1994. The family in general practice. *Update*. 48 (3): 163-169.

Bucquet D, Curtis S. 1986. Socio demographic variation in perceived illness and the use of primary care: the value of community survey data for primary care service planning. *Social Science and Medicine*. 23 (7): 737-744.

Burghes L. 1994. What happens to the children of single parent families? *British Medical Journal*. 308: 1114-1115

Burke P. 1993. Sore throat. *Practitioner*. 237: 854-856.
Calnan M and Butler J.R. The Economy of Time in General Practice: an assessment of the influence of list size *Social Science and Medicine,* 1988; **26**: 435-441

Campbell DA, Radford JM, Burton P. Unemployment rates; an alternative to the Jarman index
British Medical Journal 303;705

Campbell JL., Howie JG. 1992. Changes resulting from increasing appointment length; practical and theoretical issues. *British Journal of General Practice*. 42 (360): 276-278.

Campbell A, Kearsley N, Herdman M, Maric S. Establishing a minor illness nurse in a busy general practice may reduce doctors' workload [letter; comment]. *British Medical Journal* 1995 May 27;310(6991):1404-5

Campion P, Gabriel J. 1984. Child consultation patterns in general practice comparing "high" and "low" consulting families. *British Medical Journal*. 288: 1426-1428.

Carlisle RD, Johnstone SP and Pearson JCR (1993) Relation between night visits and deprivation measures in one general practice, *British Medical Journal*, 306: 1383-1385

Carr-Hill R. 1990. The measurement of inequalities in health: lessons form the British experience. *Social Science and Medicine*. 31 (3): 393-404.

Carr-Hill R. and Rice N "Is Ed level analysis an improvement" Journal of Epidemiology and Community Health, 49 Winter Supplement, S28-S29

Carr-Hill R. and Rice N "Equitable Distribution of GP Activity: What Does Analysis of General Household Survey Data Tell Us?" Paper for MPC/ACRA Meeting on 9th March

Carr-Hill RA, Rice N, Roland M. Socio-economic determinants of rates of consultation in general practice based on the fourth national morbidity survey of general practice. *British Medical Journal*, 1996; 312:1008-12.

Carr-Hill RA, Rice N, Smith P. Towards primary care resource allocation in the NHS [paper presented at Health Economists= Study Group meeting, York, July 1997]. York: Centre for Health Economics.

Carr-Hill RA, Sheldon T. Designing a deprivation payment for general practitioners: the UPA(8) wonderland. *British Medical Journal*, 1991; 302:393-6.

Cartwright A. 1992. Social class differences in health and care in the year before death. *Journal of Epidemiology and Community Health*. 46: 54-57.

Celantano DD., Linet MS., Stewart WF. 1990. Gender differences in the experience of headache. *Social Science and Medicine*. 30 (12):1289-1295.

Chambers R, Belcher J. Work patterns of general practitioners before and after the introduction of the 1990 contract. *British Journal of General Practice* 1993 Oct;43(375):410-2

Charlton I, Charlton G, Broomfield J, Mullee MA. Audit of the effects of a nurse run asthma clinic on workload and patient morbidity in a general practice. *British Journal of General Practice* 1991 Jun;41(347):227-31

Charlton JRH and Lakhani, A (1985) Is the Jarman Under-priviledged area score valid British Medical Journal: 290; 1714-6

Chase HD, Davies PR. Calculation of the underprivileged area score for a practice in inner London. *British Journal of General Practice* 1991 Feb;41(343):63-6

Cobbs JS., Miles DPB., Limentani AE. 1983. Do patients who move to a new town consult their doctor more often? *British Medical Journal*. 287: 1431-1433.

Colling A. 1967. The sick family. *Journal of the Royal College of General Practitioners.* 14 (64): 181-186.

Cook DG., Morris JK., Walker M., Shaper AG. 1990. Consultation rates among middle aged men in general practice over three years. *British Medical Journal.* 301: 647-650.

Cope H et al. 1994. "Maybe it's a virus": beliefs about viruses, symptom attributional styles and psychological health. *Journal of Psychosomatic Research.* 38 (2): 89-98.

Corney RH. 1990. Sex differences in general practice attendance and help seeking for minor illness. *Journal of Psychosomatic Research*. 34 (5): 525-534.

Corney R, Murray J. 1988. The characteristics of high and low attenders at two general practices. *Social Psychiatry and Psychiatric Epidemiology.* 23: 39-48.

Cosgrove MP. 1990. Defaulters in general practice. *British Journal of General Practice*. 40: 50-52.

Cotgrove AJ, Bell G, Katona C and Katone E. (1992) Psychiatric admissions and social deprivation: is the Jarman underprivileged area score relevant, *Journal of Epidemiology and Community Health*, 46: 245-247

Coulter A. 1993. *Socio-economic influences on health* in Fowler G., Gray M., Anderson P. (eds.) Prevention in general practice. Oxford General Practices Series 23.

Coulter A., Roland M., Wilkin D. 1991. GP referrals to hospital: a guide for Family Health Services Authorities. Centre for Primary Care Research, University of Manchester.

Courtenay MJ et al. 1974. Frequent attendance in a family practice. *Journal of the Royal College of General Practitioners*. 24(141): 251-261.

Crayford T, Shanks J, Byckal M, Langford S. Analysis from inner London of deprivation payments based on enumeration districts rather than wards. *British Medical Journal* 1995 311:787-8

Croft PR., Rigby AS. 1994. Socio-economic influences on back problems in the Community in Britain. *Journal of Epidemiology and Community Health.* 48(2): 166-170.

Crombie DL, Cross KW, Fleming DM. The problem of diagnostic variability in general practice *Journal of Epidemiology and Community Health* 1992 Aug;46(4):447-54

Curtis SE (1990) Use of survey data and small area statistics to assess the link between individual morbidity and neighbourhood deprivation *Journal of Epidemiology and Community Health*, 44: 62-68

Davey CL, Tallis F, Hodson, S. 1993. The relationship between information-seeking and information avoiding coping styles and the reporting of psychological and physical problems. Journal of Psychosomatic Research. 37 (4): 333-344.

Davey-Smith G. Second thoughts on the Jarman index. *British Medical Journal* 1991

302:359-60

Davey-Smith G., Bartley M., Blane D. 1990. The Black Report on socio-economic inequalities in health 10 years on. *British Medical Journal.* 301: 373-377.

Dean K. Conceptual, theoretical and methodological issues in self-care research. *Social Science and Medicine.* 29 (2): 117-124

Demers R et al. 1980. An exploration of the dimensions of illness behaviour. *Journal of Family Practice*. 11: 1085.

Department of Health. Health of the Nation. London, HMSO

Department of Health (1995) Doctors and Dentists Review Body

Dixon P., Gravelle H., Carr-Hill R. and Posnett J. (1997) *Patient Movements and Patient Choice*, York Health Economics Consortium

Donaldson LJ. 1986. Health and social status of elderly Asians: a community survey. *British Medical Journal*. 293: 1079-1082.

Dowrick C. 1992. Why do the O'Sheas consult so often? An exploration of complex family illness behaviour. *Social Science and Medicine.* 34 (5): 491-497.

Duncan JK., Taylor RS., Fordyce ID. 1987. Factors associated with variation in the consultation rates of children aged under five years. *Journal of the Royal College of General Practitioners.* 37: 251-254.

Egan KJ, Beaton R. 1987. Response to symptoms in healthy, low utilizers of the health care system. *Journal of Psychosomatic Research.* 31 (1): 11-21.

Ellis N and Chisholm J (1997) *Making Sense of the Red Book*, 3rd Edition, London, Radcliffe Medical Press

Fallon CW et al. 1990. Introduction of an appointment system in a general practice: surveys of patients and staff. *Health Bulletin.* 48 (5): 232-237.

Family Heart Study Group. 1994. Randomised controlled trial evaluating cardiovascular screening and intervention in general practice: principal results of the British family heart study. *British Medical Journal*. 308 (6294): 313-320.

Fearn R. 1987. Rural health care: a British success or a tale of unmet need? *Social Science and Medicine.* 24 (3): 263-274.

Feinstein JS. 1993. The relationship between socio-economic status and health: a review of the literature. *Milbank Quarterly*. 71 (2): 279-323.

Felce D., Taylor D., Wright K. 1994. People with Learning Disabilities in Stevens A., Raftery J.1994. *Health Care Needs Assessment.*

Fleming DM. The measurement of morbidity in general practice. *Journal of Epidemiology and Community Health* 1991 Sep;45(3):180-3

Fleming DM. 1989. Consultation rates in English general practice. *Journal of the Royal*

College of General Practitioners. 39: 68-72.

Foy C, Hutchinson A, Smythe J. Providing census data for general practice: II Usefulness. *Journal of the Royal College of General Practice* 1987 37;451-4
Freer CB. 1980. Self-care: a health diary study. *Medical Care*. 18: 853-861.

Freer CB. 1986. A study of attendance patterns in general practice over three years. Health Bulletin. 44 (2): 75-80.

Fries. JF 1983 The compression of morbidity *Millbank Memorial Fund Quarterly* Summer 1983: 61(3): 397-419

Frischer M. (1991) Trends in morbidity and general practitioners' workload for middle aged people from 1956 to 1982. *Journal of Public Health Medicine* 1991 Aug;13(3):198-203

Fullard E., Fowler G., Gray M (1984)harlton
Facilitating prevention in primary care BritishMedicla Journal 289: 1585-7

Gallagher M, Huddart T, Henderson B. Telephone triage of acute illness by a practice nurse in general practice; outcomes of care. *British Journal of General Practice*, vol48 no429 Apr 98 1141-1145

Galloway M. (1992) The bitter harvest if rural practice, Doctor, 29th October

Garralda ME, Bailey D. 1987. Psychosomatic aspects of children's consultations in primary care. *European Archives of Psychiatry and Neurological Sciences*. 236: 319-322.

Garratt AM et al. 1993. Towards measurement of outcome for patients with varicose veins. *Quality in Health Care.* 2(1): 5-10.

George S. and Payne N. (1991) Resource allocation and under-privilege (letter) The Lancet, 338: 1528-9

General Household Survey no.23. 1992. (Thomas M et al.eds)

GMS Committee (GMSC).1992. Your choices for the future. A survey. Opinion. *British Medical Association.*

Gilchrist I. 1993. Chronic low back pain. *The Practitioner*. 237: 37-38.

Gillam SJ., Jarman B., White P., Law R. 1989. Ethnic differences in consultation rates in urban general practice. *British Medical Journal.* 299: 953-957.

Graetz B. 1993. Health consequences of unemployment: longitudinal evidence for young men and women. *Social Science and Medicine*. 36 (6): 715-724.

Graffy J. 1990. Patient choice in a practice with men and women general practitioners. British *Journal of General Practice.* 40 (330): 13-15.

Green J., Dale J. 1992. Primary care in accident and emergency and general practice: a comparison. *Social Science and Medicine.* 35 (8): 987-995.

Groenewegen PP, Hutton JBF. The influence of supply related characteristics on GPs workload, *Social Science and Medicine* 1995 Feb vol 40 no3 p349-58

Hadlow J, Pitts M. 1991. The understanding of common health terms by doctors, nurses and patients. *Social Science and Medicine.* 32 (2): 193-196.

Hallam L. Primary medical care outside normal working hours: review of published work. *British Medical Journal* 1994; 308: 249-53.

Handysides S. Morale in general practice: is change the problem or the solution? *British Medical Journal* 1994 Jan 1;308(6920):32-4

Hannay DR, Usherwood TP, Platts M. Workload of general practitioners before and after the new contract [published erratum appears in BMJ 1992 Apr 4;304(6831):887]. *British Medical Journal* 1992 Mar 7;304(6827):615-8

Hannay DR. 1978. Symptom prevalence in the community. *Journal of the Royal College of General Practitioners.* 28: 492-499.

Hannay DR. The symptom iceberg: a study of community health. 1979. London. Routledge and Kegan Paul.

Hannay D., Usherwood T., Platts M. 1992. Workload of general practitioners before and after the new contract. British Medical Journal. 304 (6827): 615-618.

Hannay DR, Usherwood TP, Platts M., Practice organisation before and after the new contract: a survey of general practices in Sheffield. *British Journal of General Practice* 1992 Dec;42(365):517-20

Harborne DJ, Worrall J. Accident and emergency in London. Good primary care reduces workload [letter; comments]. *British Medical Journal* 1993 Jun 26;306(6894):1752

Hart JT (1997) Policies of comprehensive anticipatory care require extra doctors and staff (letter) *British Medical Journal*, 315: 546

Hastings, A (1996) Letter: Deprivation payments should be based on enumeration districts. *BMJ* 312: 183-4.

Hastings A and Rashid A (1993) General Practice in deprived areas: problems and solutions *British Journal of General Practice*, Feb: 47-51

Hayden J. 1991. Women in general practice. *British Medical Journal*. 303: 732-733.

Haynes R. 1991. Inequalities in health and health service use: evidence from the General Household Survey. *Social Science and Medicine.* 33 (4): 361-368.

Helman CG. 1991. The family culture: a useful concept for family practice. *Family Medicine*. 23: 376-381.

Hennel T. (1996) Report on Attribution to NHS Executive

Hibble A. Practice nurse workload before and after the introduction of the 1990 contract for general practitioners. *British Journal of General Practice* 1995 Jan;45(390):35-7

Higgins J and Wiles R (1992) Study of patients who chose private health care for treatment *British Journal of General Practice*, 1992 Aug; 42 (361): 326-9

Hill-Smith I (1989) Mathematical relationship between waiting time and appointment interval for doctor and patients *J Royal College of General Practitioners*, 1989 Dec; 39 (329): 492-4

Hippisley-Cox, J. Hardy, C, Pringle, M. Fielding, K., Carlisle R & Chilvers, C. (1997). The effect of deprivation on variations in general practitioners' referral rates: a cross sectional study of computerised data on new medical and surgical outpatient referrals in Nottinghamshire, *BMJ*, 314: 1458-61

Hippisley-Cox, J. Hardy, C, Pringle, M. Fielding, K., Carlisle R & Chilvers, C. (1997). Authors reply to Scrivner and Lloyd, Sturdy et al, British Medical Journal, 315: 883-884

Hobbs R (1993)Deprivation payments: still awaiting change, *British Medical Journal*, 306: 534-5

Hobbs, R & Cole, T (1996). Deprivation payments revisited (again), *BMJ* 313: 641-2.

Ho-Yen DO, McNamara I. General practitioners experience of the chronic fatigue syndrome *British Journal of General Practice* 1991 Aug;41(349):324-6.

Hodgkin P (1998) Matching policy and incentives in deprived areas (editorial) *Br J Gen Practice*, 48: 1376-7

Hopkins A, Bahl V. Access to health care for people from black and ethnic minorities. 1993. RCP Publications. London

Hopton J, House J, Porter M. Social indicators of health needs for general practice: a simpler approach. *British Journal of General Practice* 1992 Dec;42:543-6

Hopton J, Dlugolecka M. Need and demand in primary care: a comparative survey approach *British Medical Journal* 1995 310:1369-73.

Howie, J.G.R., Heaney, D.J. and Maxwell, M. (1997). Measuring Quality in General Practice, London, Royal College of General Practitioners (Occasional Paper No. 75).

Huddart R. Nurses could halve GP workload [letter; comment]. *British Medical Journal* 1996 Jan 20;312(7024):186.

Hutchinson A, Foy C, Smythe J. Providing census data for general practice: I Feasibility *J R Coll Gen Prac* 1987 37;448-50.

Iliffe S et al. 1993. Assessment of elderly people in general practice. *British Journal of General Practice*. 43: 371-374.

Imperial Cancer Research Fund OXCHECK Study Group. 1994. Effectiveness of health checks conducted by nurses in primary care: results of the OXCHECK study after one year. *British Medical Journal*. 308 (6924): 308-312

Ingham J, Miller P. 1982. Consulting with mild symptoms in General Practice. *Social Psychiatry and Psychiatric Epidemiology*. 17: 77-88.

Ingham JG, Miller P. 1986. Self-referral to primary care: symptoms and social factors. *Journal of Psychosomatic Research*. 30 (1): 49-56.

Ingham JG, Miller P. 1983. Self-referral: social and demographic determinants of consulting behaviour. *Journal of Psychosomatic Research*. 27 (3): 233-242.

Jarman B. Identification of under-privileged areas. *British Medical Journal* 1983; 286:1705-9.

Jarman B. (1997) Scores should be based on enumeration districts and paymetns should be phased in gradually, *British Medical Journal* 1997; 314: 228-229.

Jarman B. And Bajekal, M. Resource allocation to fundholding practices in *Resource allocation and health needs: from research to policy: proceedings of a conference*.

Jayaratnam R. 1993. The need for cultural awareness. 11-20. Access to health care for people from black and ethnic minorities. eds. Hopkins, A and Bahl, V. Royal College of Physicians Publications. London.

Jeffreys LA, Clark AL, Koperski M. Practice nurse workload and consultation patterns. *British Journal of General Practice* 45;415-8.

Jenkins C, Campbell J. Catchment areas in general practice and their relation to size and quality of practice and deprivation: A descriptive study in one London Borough. *British Medical Journal* 1996 Nov 9;313(7066):1189-92.

Jenkinson D., Davison J., Jones S and Hawtin P. (1988) Comparison of effects of a self-management booklet and audiocassette for patients with asthma, British Medical Journal, 1988, Jul 23; 297 (6643): 267-70

Jones A., Cronin PA., Bowen M. 1993. Comparison of risk factors for coronary heart disease among attenders and non attenders at a screening programme. *British Journal of General Practice*. 43: 375-377.

Jones RH et al. 1990. Dyspepsia in England and Scotland. Gut. 31: 401-405.

Judge K., Benzeval M. 1993. Health inequalities: new concerns about the children of single mothers. *British Medical Journal.* 306:677-680.

Karmi G. 1993. Equity and health of ethnic minorities. *Quality in Health Care*. 2: 100-103.

Kammerling RM and O'Connor S (1993) Unemployment rate as prediction of rate of psychiatric admission, *British Medical Journal*, 307: 1536-1539

Kernick DP. Counting the cost of social disadvantage in primary care: Conclusions arising from economic evaluations in primary care should be treated with caution [letter; comment]. *British Medical Journal* 1997 Apr 26;314(7089):1275

Kessel N, Shepherd M. 1965. The health and attitudes of people who seldom consult a doctor. *Medical Care*. 3: 6-10.

Kind P, Gudex CM. 1994. Measuring health status in the community: a comparison of methods. *Journal of Epidemiology and Community Health.* 48: 86-91.

Kirchgassler KU. 1991. Change and continuity in patient theories of illness: the case of epilepsy. *Social Science and Medicine.* 30 number 12: 1313-1318.

Klein R (1983) The Politics of the National Health Service, London, Longman

Kroenke K, Price RK. 1993. Symptoms in the community: Prevalence, classification and psychiatric morbidity. *Archives of International Medicine.* 153 (21): 2474-2480.

Langham S et al. 1994. Coronary Heart Disease in Stevens A., Raftery J. 1994. *Health Care Needs Asessment.*

Last JM. The iceberg: completing the clinical picture in general practice. *Lancet* 1963; 2 : 28-31.

Leach J., Ridsdale L., Smeeton N. 1993. Is there a relationship between a mother's mental state and consulting the doctor by the family? A study in a military general practice. *Family Practice.* 10 (3): 305-311.

Leavey R and Wood J (1985) Does the underprivileged area index work, *British Medical Journal*, 291: 709-712

Leese B, Bosanquet N. Change in general practice and its effect on service provision in areas with different socio-economic characteristics. *British Medical Journal* 1995 Aug 26;311(7004):546-50.

Lucas J. Practice nurse workload [letter; comment]. *British Journal of General Practice* 1995 Dec;45(401):692

Lydeard S, Jones R. 1989. Factors affecting the decision to consult with dyspepsia: comparison of consulters and non-consulters. *Journal of the Royal College of General Practitioners.* 39: 495-498.

Macintyre S. 1986. The patterning of health by social position in contemporary Britain: directions for sociological research. *Social Science and Medicine.* 23 (4): 393-415.

Macintyre S. 1994. Understanding the social patterning of health: the role of the social sciences. *Journal of Public Health Medicine*. 16 (1): 53-59.

Mackay H. 1990. Patients who consult a doctor infrequently. *Update*. 41: 11-12 and 30.

Macran S et al. 1994. Women's socio-economic status and self-assessed health: identifying some disadvantaged groups. *Sociology of Health and Illness*. 16 (2): 182-208.

Majeed, A. (1996). Commentary: The basis for a more rational method of funding primary medical care, *BMJ* 312: 1012-13.

Majeed F., Cook G., Anderson H. Hilton S, Bunn S. and Stones C. (1994) Using patient and general practice characteristics to explain variations in cervical smear uptake rates, *British medical Journal* 308: 1272-6

Majeed FA, Cook DG, Poloniecki J, Griffiths J, Stones C. (1995) Sociodemographic variables for general practice; Use of census data. *British Medical Journal* 310;1373-4

Majeed FA, Cook DG, Poloniecki J, Martin D (1995) Using data from the 1991 census, *British Medical Journal* 310;1511-1514

Majeed FA, Martin D and Crawford T(1996) Deprivation payments to general practitioners: limitations of census data, *British Medical Journal* 313; 669-670

Marsh, GN. Efficient Care in General Practice. 1991 Oxford OUP.

Marsh GN, Dawes M. Establishing a minor illness nurse in a busy general practice [letter]. *British Medical Journal* 1995: 310:778-80

Marsh GN, Channing DM. 1986. Deprivation and health in one general practice. *British Medical Journal.* 292: 1173-1176.

Marsh, GN. and McNay, RA. Factors affecting workload in general practice. *British Journal of General Practice* 1974; **269**: 319-21.

Marteau TM, Johnston M. 1986. Determinants of beliefs about illness: a study of parents of children with diabetes, asthma, epilepsy and no chronic illness. *Journal of Psychosomatic Research.* 30 (6): 673-683.

Martin E., Russell D., Goodwin S., Chapman R., Sheridan P. 1991. Why patients consult and what happens when they do. *British Medical Journal*. 303: 289-292.

Martin-Bates C, Agass M, Tulloch AJ. General practice workload during normal working hours in training and non-training practices. *British Journal of General Practice* 1993 Oct;43(375).

Mays N, Chinn S. Relation between all cause standardised mortality ratios and two indices of deprivation at regional and district level in England. *Journal of Epidemiology and Community Health.* 1989; 43: 191-9.

McAvoy BR, Donaldson LJ. 1990. *Health Care for Asians*. Oxford Medical Publications. Oxford.

McAvoy B, Sayeed A. 1990. Communication. in McAvoy BR., Donaldson LJ (eds) *Health Care for Asians.* Oxford Medical Publications, Oxford.

McBride M, Metcalfe D. General practitioners low morale : reasons and solutions. *British Journal of General Practice* May 1995 45 (394):227-229

McCormick A, Fleming D, Charlton J. Morbidity Statistics from General Practice: Fourth National Study. 1996 London HMSO.

McCormick A and Rosenbaum M. 1990. Morbidity statistics from general practice. Third national study: socio-economic analyses. HMSO.

McKee CM et al. 1990. Accident and emergency attendance rates: variation among patients form different general practices. *British Journal of General Practice.* 40: 150-153.

Mechanic D. 1962. The concept of illness behaviour. *Journal of Chronic Disability*. 15: 189-194.
Morrell DC., Avery AJ., Watkins CJ. 1980. Management of minor illness. *British Medical Journal*. : 769-771.

Morrel D.C. and Roland M.O. How can good general practitioner care be achieved*? British Medical Journal* 1987; **294**: 161-2.

Morris JK, Cook DG, Gerald Shaper A. Loss of employment and mortality. *British Medical Journal*. 308: 1994, 1135-1139

Morris JK, Cook DG. 1991. A critical review of the effect of factory closures on health. *British Journal of Industrial Medicine.* 48: 1-8.

Mortimer MJ. 1990. Migraine in general practice. *Migraine Monitor.* 1: 5-8.

Morton-Jones and Pringle M. (1993) Explaining variations in prescribing costs across England, British Medical Journal, 306, 1731-4

Moser K et al. 1984. Unemployment and mortality in the OPCS Longitudinal Study. Lancet. 8 december 1984: 1324-1329.

Murray J, Corney R. 1990. Not a medical problem: An intensive study of the attitudes and illness behaviour of low attenders with psychosocial problems. *Social Psychiatry and Psychiatric Epidemiology*. 25: 159-164.

Murray J, Corney R. 1988. General practice attendance in women with psychosocial problems. *Social Psychiatry and Psychiatric Epidemiology.* 23: 175-183.

Murray J. The use of health diaries in the field of psychiatric illness in general practice. *Psychological Medicine* 1985; 15: 827-40

Murray J, Williams P. 1986. Self-reported illness and general practice consultations in Asian born and British born residents of West London. *Social Psychiatry and Psychiatric Epidemiology*. 21: 139-145.

Myerson S. Workload in General practice under the new contract [letter; comment]. *British Medical Journal* 1992 Apr 25;304(6834):1118

Neal RD, Heywood PL, Morley S, Clayden AD, Dowell AC. Frequency of patients= consulting in general practice and workload generated by frequent attenders; comparisons between practices. *British Journal of General Practice* Jan 1998 48(426):895-898

Netten A, Dennett J. (1997) Unit Costs of Community Care. Canterbury Personal Social Services Unit

Nguyen-Van-Tam JS., Baker DM. 1992. General practice and accident and emergency department care: does the patient know best. *British Medical Journal.* 305: 157-158.

Nicolaas G (1997) Documentation for the Cohort Study, National Primary Care Research and Development Centre

Norman P., Fitter M., Wall T.1991. General practitioners' subjective experience of surgery workload. *Social Science and Medicine*. 33 (2): 161-166.

Oakley A., Rigby AS., Hickey D. 1993. Women and children last? Class, health and the role of the maternal and child health services. *European Journal of Public Health.* 3: 220-226.

O'Reilly D and Steele K (1998) More equitable systems for allocating general practice deprivation payments: financial consequences, *Br J Gen Practice*, 48: 1405-7

Parkin D. Distance as an influence on demand in general practice. *Epidemiology and Community Health* 1979; 33: 96-9.

Paxton F. Evaluating the workload of practice nurses; a study. *Nursing Standard* Feb 14 1996 10(21):33-38

Pereira J. 1990. The economics of inequality in health: a bibliography. *Social Science and Medicine.* 31 (3): 413-420.

Petchey R. Exploratory study of general practitioners orientations to general practice and responses to change. *British Journal of General Practice* 1994 Dec;44(389):551-5

Peter A. Practice nursing in Glasgow after the new general practitioner contract. *British Journal of General Practice* 1993 Mar;43(368):97-100

Phillimore P., Beattie A., Townsend P. 1994. Widening inequality of health in northern England, 1981-1991. British Medical Journal. 308 (6937): 1125-1128.

Pilowsky I., Smith QP., Katsikitis M. 1987. Illness behaviour and general practice utilisation: a prospective study. *Journal of Psychosomatic Research*. 31 (2): 177-183.

Pill R and Stott N.C.H. (1982) Concepts of illness causation and responsibility, Social Science and Medicine, 16, pp 42-51

Pitts J, Vincent S. General Practitioners' reasons for not attending a higher professional education course. *British Journal of General Practice* 1991 Jun;44(383):271-3

Pollock JI., Golding J. 1993. Social epiemiology of chickenpox in two British national cohorts. *Journal of Epidemiology and Community Health*. 47 (4): 274-281.

Popay J., Bartley M., Owen C. 1993. Gender inequalities in Health: social position, affective disorders and minor physical morbidity. *Social Science and Medicine.* 36 (1): 21-32.

Porteus S. *Modelling the effects of rural sparsity issues on Island HCHS expenditure*. [Unpublished] 1996; Scottish Office Department of Health: Edinburgh.

Porteus, S. *A weighted capitation formula for GMS (Total) Expenditure*. Scottish Office Department of Health [Unpublished]; 1996.

Pretlove V.1991. A natural setting for personal advice. Setting up a GP practice family planning clinic. *Professional Nursing*. 6 (11): 687-689.

Pringle M (1989) The quality divide in primary care *British Medical Journal*, 299: 470-471

Rashid A, Watts A, Lenehan C, Haslam D. Skill-mix in primary care: sharing clinical workload and understanding professional roles [editorial] [see comments]. *British Journal of General Practice* 1996 Nov;46(412):639-40

Rashid A, Jagger C. 1992. Attitudes to and perceived use of health care services among Asian and non-Asian patients in Leicester. *British Journal of General Practice*. 42: 197-201.

Record MC, Spencer JA, Jones RH, Jones KP. General practitioners' views about the statutory annual practice report. *British Medical Journal* 1994 Oct 1;309(6958):849-52

Rees M, Kinnersley P. Nurse-led management of minor illness in a GP surgery *Nursing Times* 1996 Feb 7-14;92(6):32-3

Reijneveld SA. Predicting the workload in urban general practice in The Netherlands from Jarman's indicators of deprivation at patient level. *Journal of Epidemiology & Community Health* 1996 Oct;50(5):541-4

Richardson J (1991) Jarman index (letter*), British Medical Journal*, 302: 359-360

Richmond C. (1996) Triviality and frequency of night calls irk British GPs. *Canadian Medical Journal* 1996 Jan 1;154(1):82-3

Robbins MA et al. 1994. Varicose Vein Treatments in Stevens A., Raftery J. 1994. *Health Care Needs Assessment.*

Robinson J, Granfield AJ. 1986. The frequent consulter in primary medical care. *Journal of Psychosomatic Research*. 30 (5): 589-600.

Rogers A, Entwhistle V, Pencheon D. A patient led NHS: managing demand at the interface between lay and primary care. *British Medical Journal* 1998 316:1816-9

Roland M., Coulter A. (eds) 1992. Hospital Referrals. Oxford General Practice Series 22.

Royal College of General Practitioners, Birmingham Research Unit. Workload Review. *Journal of Royal College of General Practitioners* 1982; **32**: 292-7.

Royal College of General Practitioners, Office of Population Censuses and Surveys, Department of Health. Morbidity statistics from general practice. Fourth national study 1991-1992. London: HMSO, 1995. (Series MB5 No.3).

Rutten G., van-Eijk J., Beek M., and van der Velden H (1991) Patient education about cough: effect on the consulting behaviour of general practice patients, British J. of GeneralPractice 1991 Jul; 41(348): 289-92

Ryan, J. Sutton, J. Toregerson D and Urwin M. *The effects of non-monetary costs on demand for general practice*. Paper presented at HESG meeting, Sheffield, 1998. [Draft not for quotation].

Salisbury CJ. 1989. How do people choose their doctor? *British Medical Journal.* 299 (6699): 608-610.

Salmon P., Sharma N., Valori R., Bellenger N. 1994. Patients' intentions in primary care: relationship to physical and psychological symptoms, and their perception by general practitioners. *Social Science and Medicine.* 38 (4): 585-592.

Scambler A., Scambler G., Craig D. 1981. Kinship and friendship networks and women's demand for primary care. *Journal of the Royal College of General Practitioners.* 31: 746-750

Schellevis FG., Van de Lisdonk EH., Van der Veldon J., Hoogbergen SHJL., Van Eijk J Th M., Van Weel C. Consultation rates and incidence of intercurrent morbidity among patients with chronic disease in general practice. *British Journal of General Practice*. 44: 259-262.

Schrire S. 1986. Frequent attenders - a review. *Family Practice*. 3 (4): 272-275.

Scrivener G. and Lloyd D. (1995) Allocating Census Data to general practice populations: implications for study of prescribing variation at practice level, *British Medical Journal* 311: 163-5

Scrivener G, Lloyd D. Effect of deprivation on general practitioners referral rates. Jarman score measures workload not deprivation [letter; comment]. *British Medical Journal* 1997 Oct 4;315(7112):883:discussion 884

Segall A, Goldstein J. Exploring the correlates of self-provided health care behaviour. *Social Science and Medicine*. 29 (2): 153-162.

Senior M (1991) Deprivation payments to GPs: not what the doctor ordered, *Environment and Planning C: Government Policy*, 9: 79-94

Singh S. 1988. Self referral to accident and emergency department: patients' perceptions. *British Medical Journal*. 297: 1179-1180

Smith GD (1991) Second thoughts on the Jarman index, *British Medical Journal*, 302: 359-60

Smith SJ. 1990. Health status and the housing system. *Social Science and Medicine.* 31 (7): 753-762.

Spence SJA. 1992. Problems that patients feel are appropriate to discuss with their GPs. *Journal of the Royal Society of Medicine*. 85: 669-673.

Spence DPS et al. 1993. Tuberculosis and poverty. *British Medical Journal.* 307 (6907): 759-760.

Stevens A., Raftery J (eds). 1994. Health Care Needs Assessment. The epidemiologically based needs assessment reviews. Volumes 1 and 2.

Stott N. 1994. Screening for cadiovascular risk in general practice. *British Medical Journal.* 308 (6294): 285-286.

Sturdy P, Pereira F, Hull S, Carter Y, Naish J and Harvey C. [letter] Effect of deprivation on general practitioners referral rates. Analyses should take age and sex into account, *British Medical Journal*, 1997, October: 315 (7112): 883

Suls J, Fletcher B. 1985. Self attention, life stress and illness: a prospective study. *Psychosomatic Medicine.* 47: 469-81.

Sutton, M., Carr-Hill, R., Gravelle, H and Rice, N. Potential biases in estimating the determinants of medical care utilisation using self-report health measures: an investigation of limiting long-standing illness and GP consultations [Paper presented at the Health Economists Study Group, York, July 1997]. York: Centre for Health Economics.

Takeuchi DT et al. 1988. Ethnic differences in the perception of barriers to help-seeking. *Social Psychiatry and Psychiatric Epidemiology*. 23: 273-280.

Talbot RJ (1991) Underprivililedged areas and health care planning: implications of the use of Jarman indicators of urban deprivation, *British Medical Journal*, 1991, 302: 383-386

The Samaritans.1994. *The Samaritans in 1993*.

Thornicroft G, Leff J, Jones D. and Margalis O (1990) Long stay patients and social deprivation (letter) *British Journal of Psychiatry*, 156: 592

Thompson NF. 1990. Inviting frequent attenders to attend for a health check: costs and benefits. *British Journal of General Practice*. 40: 16-18.

Thompson K. Nurses could halve GP workload [letter; comment][see comments] *British Medical Journal* 1995 Sep 23;311(7008):808

Thorogood M et al. Factors affecting response to an invitation to attend for a health check. *Journal of Epidemiology and Community Health.* 1993, 47: 224-228.

Torgerson DJ and Donaldson C. An economic view of high compliance as a screeening objective, British Medical Journal, 1994; 308: 117-9

Townsend P, Davidson N, Whitehead M. Inequalities in Health. 1988. London. Penguin.

Usherwood T.P. Development and randomised controlled trial of a booklet of advice for parents, Brit. J of General Practice, 1991 Feb; 41 (343): 58-62

Usherwood T, Jones N. 1993. Self-perceived health status of hostel residents: use of the SF-36D health survey questionnaire. *Journal of Public Health Medicine.* 15 (4): 311-314

Van den Brink-Muinen A., Bakker D., Bensing JM. 1994. Consultations for women's health problems: factors influencing women's choice of sex of general practitioner. *British Journal of General Practice*. 44: 205-210.

Van de Kar A., Knottnerus A., Meertens R., Dubois V., Kok G. 1992. Why do patients consult the general practitioner? Determinants of their decision. *British Journal of General Practice.* 42: 313-316.

Venning P, Roland M. New opportunities in practice nursing. *British Medical Journal* 1998, July 31;311

Verbrugge LM, Ascione FJ. 1987. Exploring the iceberg and how people care for them. *Medical Care.* 25: 539-563.

Verbrugge LM. Health Diaries. *Medical Care* 1980; 18: 73-95.

Verhaak P.F. Bewerkelijheid van huisartsconsulten met verschillende klachten of patienten, uitgedrukt intijd Tijdschrift voor Sociale Gezondheidszorg 1986; **64**: 558-562

Victor CR. 1992. Health status of the temporarily homeless population and residents of North West Thames region. *British Medical Journal.* 305: 387-391.

Virji A. 1990. A study of patients attending without an appointment in an urban general practice. *British Medical Journal.* 301: 22-26.

Wade DT.1994. Stroke (acute cerebro-vascular disease) in Stevens A., Raftery J.1994. *Health Care Needs Assessment.*

Walsh M. 1990. *Nursing Standard*. 5 (10): 28-31.

Ward P., Morton-Jones A., Pringle, M. and Chilvers C. (1994) Generating social class data in

primary care *Public Health* 108: 279-287

Watkins C.J., Papacosta A.O., Chinn S. and Martin J. (1987) A randomised controlled trial of an information booklet for hypertensive patients in general practice, *J Royal College of General Practice* 1987 Dc; 37 (305): 548-50

Watt IS., Franks AJ., Sheldon TA. 1993. Health and health care of rural populations in the UK: is it better or worse? *Journal of Epidemiology and Community Health.* 48: 16-21.

Westcott R. The lengths of consultations in general practice *J Roy College of General Practitioners* 1977; **27**: 552-5

Westhead JN. 1985. Frequent attenders in general practice: medical, psychological and social characteristics. *Journal of the Royal College of General Practitioners.* 35: 337-340.

Whelan CT. 1993. The role of social support in mediating psychological consequences of economic stress. *Sociology of Health and Illness.* 15 (1): 86-101.

Whitehouse C. 1985. Effect of distance from surgery on consultation rates in an urban general practice. *British Medical Journal*. 359-362.

Whynes DK Baines DL. Explaining variations in the frequency of night visits in genearl practice. *Family Practice* 1996; 13:174-78.

Whynes D, Baines D. Predicting activity and workload in general practice from the demographic structure of the practice population. *Journal of Health Service Research & Policy* July 1996 1(3):128-34

Wilkin, D. Hodgkin, P. and Metcalfe, DH. *Factors affecting workload: is received wisdom true?* in The Medical Annual 1986 The Yearbook of General Practice (ed Pereira Gray D.J.) Wright, Bristol.

Williams P, Skuse D. 1988. Depressive thoughts in general practice attenders. *Psychological Medicine.* 18: 469-475.

Wilson SH, Walker GM. 1993. Unemployment and Health: a review. *Public Health.* 107: 153-162.

Wilson M, MacCarthy B. 1994. GP consultation as a factor in the low rate of mental health service use by Asians. *Psychological Medicine.* 24: 113-119.

Worral A, Rea JN, Ben-Shlomo Y. Counting the cost of social disadvantage in primary care: retrospective analysis of patient data. *British Medical Journal* 1997, 314:38-42

Wright AF. 1988. Psychological distress: outcome and consultation rates in one general practice. *Journal of the Royal College of General Practitioners.* 38: 542-545.

Wright CM. 1983. Language and communication problems in an Asian community. *Journal of the Royal College of General Practitioners.* 33: 101-104.

Wyke S., Hewison J., Russell I. 1990. Respiratory illness in children: what makes parents decide to consult? *British Journal of General Practice.* 40: 226-229.

Wyke S, Campbell G, McIver S. Provision of, and patient satisfaction with, primary care

services in a relatively affluent area and a relatively deprived area of Glasgow.
British Journal of General Practice 1992; 271-275.

Yuen P, Balarajan R. 1989. Unemployment and patterns of consultation with their general practitioner. *British Medical Journal.* 298: 1212-1214.