

## WORKFORCE SUPPLY IN UNDERSERVED COMMUNITIES IN THE UNITED KINGDOM

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### 1 Introduction

- 1.1 Any discussion of medical workforce planning in the United Kingdom (UK) must be set in the context of the organisation of medical care into primary care, almost exclusively delivered by general practitioners (GPs), and secondary care delivered by medical specialists largely working in hospitals. In addition, the rapidly changing nature of the workforce in terms of gender balance and the increasing tendency to provide flexible and part-time training and working, both in general practice and in hospital medicine,<sup>(1)(2)</sup> will have an increasing impact on the number of medically qualified individuals required to deliver any given quantum of work.
- 1.2 Further, the rapidly changing political agenda in the UK and the commitments given by the Prime Minister in the recently published NHS Plan<sup>(3)</sup>, will rapidly impact on the medical workforce, both in terms of the overall requirement for doctors and the planning process required. However, the NHS Plan is from the English Department of Health and at the time of writing neither the relationship with nor the impact on the Health Departments in Scotland, Wales or Northern Ireland is clear.
- 1.3 Whilst the whole area of workforce planning in the UK is currently under review<sup>(4)</sup>, completely different planning systems applied to general practice and to specialist medicine until 1997 when integration of the process of estimating the requirement for doctors in training was commenced. This paper will therefore in part address the specific issues from separate perspectives.
- 1.4 The UK system is based upon the general practitioner acting as a clinical generalist and as the 'gate keeper' to hospital medicine working through the referral system. GPs manage the overwhelming majority of the first medical contacts with the NHS, the principal exceptions being attendance at accident and emergency departments and self-referrals, in confidence, to genito-urinary medicine clinics. Medical specialists usually only see patients, whether within the NHS or privately, following referral and are encouraged by the General Medical Council to maintain this practice<sup>(5)</sup>.
- 1.5 General practice in the UK is characterised by the personal list of patients, responsibility for the patients on that list for 24-hours a day 365 days a year, albeit with increasing freedom in the way in which that responsibility is discharged, continuity of care and the continuing record.

- 1.6 However over the period of just one medical generation the organisation of general practice has changed beyond all recognition. The typical GP 40 years ago would have been a single-handed male, working from the family home, continually personally on call with very little time off and with his wife acting as practice receptionist, secretary and nurse. By 1999 the average practice in England contained 3.1 whole time equivalent GPs working from purpose-built premises, although variable in standard, employing 2.3 whole time equivalent staff members per doctor<sup>(1)</sup> and working in teams with community nursing staff, social services staff and either organised into large rotas for out of our services or alternatively contracting with a commercial deputising service.
- 1.7 The contractual status of GPs in the UK is also now likely to change rapidly. Whilst the overwhelming majority of the 35,000 UK GPs are still independent contractors (principals), working in contract with health authorities to national terms and conditions and remunerated according to a complex system determined by the Doctors and Dentists Review Body, many younger doctors are currently working as 'non principals', undertaking sessional work for practices and therefore avoiding, at least in the short term, longer-term commitments or investment, whether financial or personal, in any individual practice. Data on the number of doctors working in this way is poor, but estimates vary between 3,500 and 7,500.
- 1.8 Increasingly other alternative contractual arrangements are being introduced and often used as a means of overcoming recruitment difficulties in under served areas. Whilst the GPs in these arrangements will often still be independent contractors, a variety of salaried options are increasingly presented as alternatives to the perceived disincentives of independent contractors status. The NHS Plan signals a major and early extension of contractual change<sup>(3)</sup>.
- 1.9 The situation in respect of specialist medicine is in some respects more straightforward. Hospital doctors, both career grade consultants and junior doctors in training, are employed by NHS hospital trusts to national terms and conditions of service. Compliance with the systems of educational and funding approval, from medical royal colleges and post-graduate deans, is required before the recruitment of junior doctor posts is permitted by NHS trusts. The workforce planning system, through the Specialty Workforce Advisory Group (SWAG), attempts to match the numbers of doctors in training with the ultimate requirement for career grade posts. Hospital trusts are able to take steps to increase their staffing complement when they perceive it as necessary for service delivery but this may involve:
  - recruiting junior doctors to posts which have not been approved for training, and which therefore receive no educational funding;
  - creating and recruiting to non consultant posts; and
  - providing incentives to attract new consultant staff to posts which are difficult to fill or otherwise unattractive for one reason or another.

- 1.10 The medical royal colleges produce targets for the ideal establishment numbers of specialists. These are revised intermittently as practice and aspirations change<sup>(6)(7)</sup>.
- 1.11 Whilst medical school numbers have been calculated in terms of UK requirements, workforce planning in the UK has, until recently, not otherwise been integrated in terms of specialist medicine and general practice. Only in the last three years, through the work of the SWAG, has an attempt been made to estimate the numbers of both career hospital doctors and GPs required in the future and to use this to determine the number of doctors in training in each discipline required to meet that prediction.

## **2 Identification of under served communities**

### *General Practice*

- 2.1 In England and Wales the body with responsibility for the distribution of GPs is the Medical Practices Committee (MPC), a body established at the outset of the National Health Service by parliament under the National Health Service Act. Similar bodies are responsible for the distribution of GPs in Scotland and in Northern Ireland. The MPC is not able, under law, to direct practitioners to under served areas, a concept which is anathema to the profession in the UK. It achieves as even a distribution as possible through negative direction; restrictions determined by average list size are placed on the ability of practices or health authorities to attract additional practitioners.
- 2.2 In discharging its functions the MPC, in addition to overall list size, takes into account more than 60 other factors including consideration of deprivation, rurality, morbidity, age distribution and workload derived from temporary residents<sup>(8)</sup>. Given that it is not able positively to direct labour it is perhaps surprising that the distribution of GPs in the UK, whilst still leaving something to be desired in terms of equity, is as equitable as it is. Nevertheless, recent work with the Department of Health and the profession working in partnership demonstrated that mining, industrial and inner city areas remain underserved, particularly when crude doctor patient ratios are corrected for morbidity and deprivation.
- 2.3 The MPC for England and Wales is located in London and despite the fact that it engages in regular dialogue with local health authorities and with local medical committees, the local representative bodies for GPs, it has been the subject of criticism from government and profession that it is insufficiently sensitive to local needs and circumstances. The NHS Plan<sup>(3)</sup> has indicated that the MPC will be subject to review and probable abolition.
- 2.4 Within the limits defined by the MPC, health authorities are responsible for identifying areas that are significantly under doctored in terms of GPs, and for taking the steps necessary to remedy the deficit. Such steps can include implementing the facility which exists for the establishment of a new practice with guaranteed financial support to the practitioners through the early years, working with existing practices to encourage them to take advantage of the regulations by seeking new partners or salaried employee doctors or working with others to established a personal medical

services pilots under the NHS Act 1997. This will usually involve the employment of salaried doctors in areas of particular difficulty with guarantees of the resources and support which will accompany the post and attract recruits.

### *Specialist Medicine*

- 2.5 The medical royal colleges in the UK define the numbers of career grade specialists required to provide acceptable levels of service to the population. For example, the Senate of Surgery of Great Britain and Ireland has estimated the number of surgeons within each surgical discipline required to serve given populations<sup>(6)</sup> and given consideration to the problem of isolated communities. As medical practice changes these numbers are subject to revision. The UK health authorities are required to produce medical workforce plans, taking into account the particular needs of the populations they serve and involving a complex series of workforce planning groups which have performed to a variable standard. The Department of Health published a workforce planning review<sup>(4)</sup>, currently subject to consultation, which is aimed in part at introducing greater clarity and transparency into the workforce planning process, both for medicine and for the associated professions.
- 2.6 The progressive implementation of policies aimed at reducing inequity of resource distribution among the regions of the UK have played a part in reducing very large discrepancies in hospital senior medical staffing levels.
- 2.7 A consultation document published by the British Medical Association (BMA) and the English Royal Colleges of Physicians and Surgeons<sup>(9)</sup> recommended that the ideal size for fully comprehensive medicine and surgery is a hospital or integrated group of hospitals serving a population of 450,000–500,000; the minimum effective population size being 250,000–300,000. Further, this group believed that standards of care risked being compromised in such smaller units unless certain minimum staffing requirements, together with the presence of key specialties and support services, were available on site.
- 2.8 They further recognised a place, albeit limited, for community hospitals, staffed by primary care physicians, managing a limited range of conditions with clear and close links with a main district general hospital, and facility for onward transfer to such a larger unit when indicated.
- 2.9 The viability of most clinical departments is dependent on the credibility afforded by approval for training purposes, a status determined by a visiting process carried out by the medical royal colleges. Among other factors, such approval is dependent on an assessment that workload is sufficient to provide educational opportunity but not too heavy to prevent the trainee from taking advantage of such opportunity and the ability and willingness of consultant staff to deliver education through protected teaching time. The possibility of withdrawal of educational approval, and the threat this poses to the ability of an NHS trust to recruit junior staff, maintains pressure on NHS trusts to work to maintain sufficient staffing levels.

2.10 The SWAG mechanism, in allocating a maximum number of trainees in each discipline, allocated by nominated lead deans across the regions, provides a partial early warning mechanism of likely workforce difficulties, both in terms of any surplus of fully trained doctors not likely to achieve a consultant post and in terms of any shortfall of trainees so that posts will in time be vacant. If it becomes evident that significant numbers of training vacancies are not being filled, as has been the case with paediatrics, psychiatry, radiology and histo-pathology, the threat to service delivery posed by the shortfall of trained doctors which will inevitably follow in due course provides a stimulus to a close examination of the individual difficulties faced in such disciplines and the barriers to recruitment.

### 3 Quantification of the problem

3.1 Before turning to the individual circumstances of specialist medicine and general practice it is important to take a wider view of the medical workforce in the UK. Without denying the particular problems of some UK communities, there is an argument that the UK as a whole is an underserved community. In terms of international comparisons the UK is under doctored in terms of GPs and trained specialists.

3.2 The UK has the lowest number of doctors per head of population overall in the European countries and among the lowest number per head of GPs (Table 1) and, in terms of under service, this has been related to excess hospital mortality (see below).

**Table 1: Doctors in European Countries – 1996**

Country	Practising Physicians (per 1000 pop)	General practitioners (per 1000 pop)
Austria	2.8	1.3
Denmark	2.9	0.6
Finland	2.8	1.5
France	2.9	1.5
Germany	3.4	1.1
Greece	4.0	
Iceland	3.1	0.6
Ireland	2.1	0.5
Italy	5.5	0.9
Luxembourg	2.3	0.8
Netherlands		0.4
Norway	2.8	0.8
Portugal	3.0	0.6
Spain	4.2	
Sweden	3.1	0.6
United Kingdom	1.7	0.6

Source: OECD Health Data – 1999

#### *General Practice*

3.3 The adequacy of general practitioner numbers, as defined by the MPC, is a relative figure. The aspiration of the profession has long been to work for an average list size of 1750. The MPC defines adequacy as relative to the actual average list size,

- currently 1966 patients per whole time equivalent GP<sup>(10)</sup> and for all purposes virtually static since 1990. Deviation of more than 10% from an average weighted list size figure is the starting point at which the MPC begins to consider an area inadequately, or relatively over, doctored.
- 3.4 Precise quantification of the UK deficit in GPs is made more difficult by the changing nature of the workforce. Over recent years there has been a persistent vacancy rate approaching 3% for GP principals in partnership<sup>(11)</sup>. The variation among health authorities in 1998 ranged from 0% (Hereford, North East Devon, both attractive, rural affluent areas) to over 6% (Barnsley 6.13%, Bexley and Greenwich 6.07%, Solihull 6.18%, Sunderland 6.33%, with the exception of Solihull all inner city areas suffering significant deprivation).
  - 3.5 However, against this shortfall of approaching 1000 GP principals there are something between 3500 and 7500 fully qualified GPs choosing not, at least in the short term, to join traditional partnerships. These doctors are usually looking for less than traditional full-time employment, for more flexible working, to avoid or defer at least in the early stage of their careers the lifelong commitment to one practice and the investment in property which is often a part of that commitment and to experience working in a range of environments before establishing such a commitment.
  - 3.6 It is difficult to equate the contribution of these doctors with the contribution of traditional full-time partners. The evidence just does not exist, but it is clear already that such doctors are making a significant contribution to the delivery of NHS general practice in the UK. In addition, they are often providing the support required by practices as the more established partners become involved in other aspects of the health care system apart from direct face-to-face patient care - be that management or education.
  - 3.7 What is also clear is that changing working patterns, largely but not wholly dictated by the feminisation of the GP workforce and the aspiration to flexible and part-time working, are leading to a requirement for an increasing number of doctors. In 1999 34% of GPs were female with 17% of all GPs holding a less than full time contract<sup>(1)</sup>. The Royal College of General Practitioners now estimates that for every 100 GPs retiring 150 GPs in training are required to deliver the same quantum of clinical care<sup>(12)</sup>. The trend towards early retirement in the UK may, within a very short timescale, add to this requirement.
  - 3.8 The retirement of doctors is shortly to have a major impact in many inner-city areas, where it is particularly difficult to attract recruits. Such areas are often serviced by doctors who were immigrants to the UK from the Asian subcontinent in the late 1950s and early 1960s. They are often working under difficult circumstances, with poor support and often single-handed. Taylor and Esmail have demonstrated<sup>(13)</sup> that roughly 2/3 of the 16.5% of UK GPs who qualified in South Asian medical schools in practise in 1992 will have retired by 2007. The impact of this problem is not evenly

distributed among health authorities but ranges from a projected loss of 27.12% of GPs in Barking and Havering to no projected loss at all in Oxford, Somerset and the Isle of Wight. Urgent measures are required if NHS general practice is to survive in some of these areas.

- 3.9 There are also significant vacancies among hospital consultants and clear difficulties with recruitment. The English Department of Health's 1999 Recruitment, Retention and Vacancies Survey<sup>(14)</sup> showed that in March 1999 NHS Trusts were actively trying to fill 992 consultant vacancies of which approaching ½ half had been vacant for more than 3 months (Table 2). In addition 48% of trusts reported difficulties in recruiting medical and dental consultants although retention difficulties did not seem to be a major cause for concern. These figures give no indication of an inequitable geographical split.

**Table 2: Medical and dental consultant vacancies, United Kingdom, at 31 January 1999**

Specialty	Vacancies	Staff in post	Vacancy rate	Number of employing trusts	Trusts reporting recruitment difficulties	Trusts reporting retention difficulties
Total	992	19778	4.8	353	48	6
General Med	150	4323	3.4	296	10	1
Paediatrics	64	1187	5.1	253	4	0
Acc. & Em.	36	408	8.1	184	11	1
Surgical	145	3962	3.5	212	15	0
Obs. & Gyn.	18	964	1.8	202	2	0
Anaesthetics	119	2814	4.1	213	11	1
Radiology	78	1415	5.2	215	17	0
Radiotherapy	8	275	3.0	62	8	2
Pathology	72	1661	4.1	205	8	0
Psychiatry	242	2311	9.5	214	36	5
Dental	59	457	11.5	164	12	2

- 3.10 Recent years have shown a steady expansion in the numbers of hospital consultants. In the 10 years 1989 to 1999 the average rate of growth was 4.0% per annum (and for junior medical staff 2.9% per annum over the same period)<sup>(2)</sup>.

- 3.11 However, the profession argues that consultant expansion has not proceeded at the rate necessary, or envisaged, at the start of that period. Dependency on local NHS Trusts and health authorities for the creation of posts, a failure to finance those posts by affording due priority against competing demands and a lack of central policy direction are a key factor in this failure. The feminisation of the consultant workforce (in 1999 21% of hospital medical consultants were female<sup>(2)</sup>), the increasing demand for part-time working and increasing responsibilities for academic, teaching and management roles add to this demand. Virtually all the specialist medical colleges currently argue in favour of a radical expansion in numbers of career grade hospital posts. For example the Royal College of Physicians believes that 4500 extra whole time equivalent physicians are needed, 2900 of them in acute specialties<sup>(7)</sup>.

3.12 The under doctoring of the UK is now recognised by government and the NHS Plan has as one of its aims the introduction of 7,500 extra hospital consultants (career grade posts) and 2,000 extra GPs by 2004. To this end, and following a 1997 report from the Medical Workforce Standing Advisory Committee<sup>(15)</sup>, medical school intake will already have increased by 1,000 over 1997 levels (20%) by September 2000 and it is intended that there will be a further increase of 1000 places in due course.

#### **4 Differences in health status between underserved and well-resourced communities**

4.1 If, in international terms the UK as a whole can be considered an under served community, the evidence relating numbers of physicians to health outcomes is less clear. Indeed the reports that mortality in Israel improved during the, admittedly short period when doctors withdrew their labour<sup>(16)</sup>, might cause some questioning among doctors of their very *raison d'être*!

4.2 However, Jarman et al<sup>(17)</sup> examined differences in English hospital death rates and found wide variation in standardised hospital mortality ratios. The percentage of total admissions classified as emergencies was, they found, the most powerful predictor of variation in mortality but the ratios of hospital doctors to hospital beds and the number of GPs per 100,000 population seem to be critical determinants of standardised hospital death rates; the higher these ratios, the lower the death rates in both cases. Over the four years of the study the mean annual mortality and standardised mortality ratios fell, 9.2% to 7.6% and 104.9 to 97.0 respectively.

4.3 Jarman goes on to postulate, against a background of wide variation among hospitals, that when GPs are relatively overworked the patients whom they send may be relatively sicker. In these areas patients are more likely to be admitted as emergencies: a high percentage of emergency admissions were significantly correlated with low numbers of GPs per 100,000 population.

4.4 In international terms the UK does not score highly on a range of indicators. Whilst cause specific mortality rates have been reducing in the UK, the reduction has not been as large as in many other developed countries. International data shows that the UK still has higher than average mortality rates than most OECD countries for diseases of the circulatory system, cancers and respiratory diseases. For both sexes, for example, the death rate due to circulatory diseases in the UK is approximately twice that in Japan and death rates from coronary heart disease and breast cancer are higher than in most other European Union (EU) countries.

4.5 More detailed breakdowns show that heart disease is largely responsible for the UK's overall higher mortality rates. However, breast cancer mortality for England and Wales, Scotland and Northern Ireland are all towards the higher end of the range for OECD countries as is lung cancer mortality for Scotland, but not for England, Wales and Northern Ireland. Cerebro-vascular disease mortality rates are similarly higher in Scotland than in England and Wales and in Northern Ireland. Coronary heart disease

mortality rates are similarly well towards the top of the OECD range for Scotland and Northern Ireland and higher and above the average for international comparators for England and Wales. Life expectancy, infant mortality and age specific death rates have fallen progressively and continue to fall in the UK (Source: Office of Health Economics).

- 4.6 Despite recent increases, the UK remains one of the lowest spenders on health care among the major industrialised countries. Total expenditure on health of as a percentage of gross domestic product varies widely with relevant examples of Australia 8.4%, Canada 9.1%, New Zealand 7.6%, UK 6.9%, and US 13.9% (OECD health data 1999). Total health care expenditure rose to £61 billion in 1999 representing 6.8 per cent of GDP, much lower than the EU weighted average of 8.7 per cent (1997 figure). It is estimated that the government's planned increase in NHS expenditure will bring the total health care spend to 7.1 and 7.2 per cent of GDP in the years 2000 and 2001 respectively (Source: Office of Health Economics).
- 4.7 Within the UK the association of deprivation, in all its forms, with higher than expected rates of malignant disease, cardiovascular and respiratory disease and poor take-up of preventive medicine procedures, remain a major challenge for the delivery of health services. Separation of the demographic factors affecting health authority areas is complex; for example some of the apparently more affluent areas of the UK have high morbidity and mortality indices related to the older age profile of retirement areas. Further, whilst it is not easy to directly relate these parameters and outcomes with the numbers of doctors, both in general practice and hospital medicine, the association of deprivation with relatively poor medical staffing and with poor health outcomes makes for a compelling inference.
- 4.8 The evidence for the association of deprivation with poor health, which has long been clear, was brought into focus through the work of Sir Douglas Black<sup>(18)</sup> and reinforced by the subsequent inquiry headed by Sir Donald Acheson<sup>(19)</sup>.
- 4.9 Recent data from the English Department of Health<sup>(20)</sup> across a range of parameters demonstrates poorer uptake of preventive health measures, poorer uptake of health services, poorer health status and poorer health outcomes in what would be identified as the more deprived parts of the UK. The examples which follow are typical of the evidence linking deprivation to poor health; the locations are individual health authority areas:
- conception rates (/1000) girls aged 15-17 varying from 22.5 in affluent East Surrey to 82.7 in the deprived inner city London borough of Lambeth, Southwark and Lewisham (mean for England 44.4);
  - average number of decayed, missing or filled teeth in five year olds varying from 0.59 in affluent Surrey to 2.93 in deprived St Helens and Knowsley (mean for England 1.47);
  - the emergency admission rate (/1000) of older people aged 75 and over varying from 159 in the London borough of Kensington Chelsea and Westminster, an area

with a heterogeneous population containing areas of considerable wealth, to 404 in the more deprived outer London borough of Redbridge and Waltham Forest (mean for England 268);

- the stillbirth (/1000 total births) and infant death rate (/1000 live births in infants under 1 year) varying from 67 in affluent Kingston and Richmond to 145 in the very deprived East London and the City, both parts of the London conurbation (mean for England 100);
- the all cause death rate (SMR aged 15-64) varying from 70 in affluent West Surrey to 154 in Manchester (mean for England 89). This difference also illustrates the difference in health status often seen between the relatively more affluent south of England and the relatively more deprived north of the country;
- the all cause death rate (SMR aged 65-74) varying from 68 in West Sussex to 122 in Liverpool, another northern city experiencing the problems of significant deprivation (mean for England 87);
- the age-standardised mortality rate from all malignant neoplasms in people under 75 varying from 116 in Barnet, a further relatively affluent borough in the northern part of the greater London conurbation to 190 in Manchester (mean for England 137);
- the age-standardised mortality rate from all circulatory disease in people age 35-74 varying from 97 in West Surrey to 202 in Manchester (mean for England 134);
- the age-standardised mortality rate from suicide varying from 6 in London borough Barking and Havering to 15 in Manchester (mean for England 9);
- the age-standardised rate for hospital admission for serious accidental injury requiring a hospital stay exceeding 3 days varying from 218 in Kingston and Richmond to 431 in Liverpool (mean for England 314);
- the composite childhood immunisation rate (1998/99) for diphtheria and mumps, measles and rubella varying from 105 in North Derbyshire to 84 in Croydon (mean for England 100), perhaps a further example of the English 'north/south divide' which, however, runs counter to the evidence of deprivation as evidenced by the under privileged area score (see Appendix 3);
- the emergency admission rates (age and sex standardised) for ear nose and throat infection, kidney/urinary tract Infection and heart failure varying from 65 in East Surrey to 158 in less affluent North Staffordshire (mean for England 100);
- the emergency admission rates for asthma and diabetes varying from 64 in Kingston and Richmond to 175 in Sandwell, a part of the West Midlands conurbation with significant deprivation (mean for England 100);
- the age standardised prescription rates for benzodiazepine prescribing varying from 9.3 in Herefordshire, a very rural county in south west England, to 31.6 in Manchester (mean for England 16.6);
- the inpatient waiting list (number waiting /1000) varying from 9 in Walsall, a further part of the West Midlands conurbation with significant deprivation, to 29 in West Surrey (mean for England 21);
- the composite rate uptake of breast and cervical cancer screening varying from 110 in North Nottinghamshire, part of the industrial midlands of England, to 71 in

Camden and Islington a newly affluent and upwardly mobile London borough (mean for England 100);

- the percentage of patients with cancer being seen within the two-week standard varying from 100% in many health authorities to 58% in Croydon (mean for England 96%). It is not easy to explain this performance of Croydon, a south London borough, on any obvious demographic grounds;
- the number of GPs (whole time equivalents /1000 weighted population) varying from 71.2 in Kingston and Richmond to 43.1 in Sunderland, a north eastern industrial city well known for its problems in recruiting GPs (mean for England 57.4);
- the number of people (%) putting off a visit to their GP in the previous 12 months because of inconvenient opening hours varying from 10% in South Staffordshire to 24% in Enfield and Haringey (mean for England 15%), a further illustration of the rural and affluent versus inner city and deprived, although on this occasion this figure confounds the common north/south divide; and
- similarly 5-year cancer survival rates show significant variation (see Table 3).

**Table 3: Five year cancer survival rates, United Kingdom (%)**

Cancer type	Maximum	Minimum	Mean
Colon	Hereford	Tees	40.99
Lung	E&N	Rotherham	4.99
	Hertfordshire		
Cervix	E Riding	Kingston & Richmond	64.91
Breast	E Surrey	N Staffordshire	73.92

4.10 Relating such indicators directly to the number of doctors is not easy, but appendices 1–3 contain data on the number of GPs per head of population and on the underprivileged area (UPA score or Jarman Index), a widely used UK measure of deprivation. With some notable exceptions, for example the 5-year cervical cancer survival rate in Kingston and Richmond, the adverse parameters are commonly associated with low numbers of GPs and a high UPA score, representing high levels of deprivation.

4.11 Whilst inner city deprivation, and the problems of providing an adequate workforce for those areas, is now well documented there remain problems specific to rural deprivation including rural poverty, accidents and the problems posed by isolation and transport difficulties both for rural doctors and for those they serve<sup>(21)</sup>.

4.12 There are limitations in data aggregated at health authority level because most will be a heterogeneous mix of affluence and deprivation, however at sub-authority level the impact of deprivation is further unmasked. The Bedfordshire Health Authority Annual Report 1999<sup>(22)</sup>, for example shows an all cause age-standardised mortality rate for

Mid-Bedfordshire (UPA score 17.71) of 665.35 and for Luton (UPA score 18.79) of 769.13.

## **5 The critical population mass and service infrastructure required to support different types of clinical practice in urban and rural areas**

### *General Practice*

- 5.1 UK GPs vary in the organisational setting in which they wish to work and the result is wide variety in the size and type of practice arrangements. However, recent events (the Shipman case) and recognition of the need for increasing mutual support and educational activity in the workplace have resulted in policy shifts which are perceived as threatening single-handed practice. Nevertheless in 1999 2600 UK GPs were in single-handed practice<sup>(1)</sup> and many doctors wish to continue in this way of working, a view that is supported by patients who value the individual, personal care with continuity that many large group practices find difficulty in delivering.
- 5.2 The payment system in the UK is in large part determined by list size, and practices with lists significantly smaller than average find difficulty in achieving a level of income sufficient to sustain the material aspirations of doctors and their families and to support the infrastructure costs of modern practice. There are special schemes to support, with guaranteed incomes, very rural practitioners per example in the islands of Scotland with very small lists and those establishing new practices in areas of new population development<sup>(23)</sup>. The NHS Plan<sup>(3)</sup> has indicated a reversal of UK government policy on GP payments which has tended, over the last decade, to encourage the maintenance of larger list sizes.
- 5.3 Crucial to the recruitment of GPs is that the area in which they work is sufficiently resourced to provide adequate premises, adequate support from nursing and social work teams and adequate hospital support, including access to the full range of laboratory and radiological investigations. Without such infrastructure, the doctor will be unable to meet the aspiration to practise in a professionally satisfying and modern manner. With GP recruitment currently difficult even in many attractive and affluent parts of the UK, it is inevitable that the deprived and less attractive parts will continue to be disadvantaged unless such pre-requisites of job satisfaction are met<sup>(24)</sup>.
- 5.4 Increasingly the provision of out of hours care is a major factor in the recruitment of GPs. With a few exceptions, UK GPs who enter partnerships accept a contract which includes responsibility for the delivery of care 24 hours per day 365 days per year. Recent contractual negotiations have enhanced the freedom of the individual doctor to discharge that responsibility in a variety of ways, including the use of commercial deputising services and, increasingly, out of hours cooperative arrangements with a varying degree of formality involving multiple practices. There are, however, many parts of the UK where there is still no practical alternative to the personal delivery of out of hours care as part of a small rota. This is particularly the case in rural areas and is proving to be one of the factors acting as a disincentive to recruitment in what would otherwise appear to be very attractive areas in which to practise<sup>(21)</sup>. The issue of

personal security particularly out of hours, for both male and female doctors and across the UK, is a related issue impacting on the ability of some practices to recruit.

### *Hospital Medicine*

5.5 Para 2.7 (above) has already addressed the issue of the critical population mass and service infrastructure required to support hospital practice in the UK.

## **6 How can under served communities be served adequately?**

6.1 Serving communities adequately with doctors, whether in general practice or specialist medicine, will only ever be achieved by ensuring a supply of sufficient numbers of doctors, appropriately trained and properly supported and having experienced training that is appropriate to the context in which they find themselves working.

6.2 Measures to achieve this will include:

- training adequate numbers of medical graduates from which the GP and specialist workforce can be recruited;
- facilitating the immigration of appropriately trained doctors to help address any shortfall;
- ensuring that the local health economy is sufficiently well resourced to provide good associated services, both health and social care related;
- the provision of adequate premises in which the GP can practise;
- good local hospitals to provide first-class secondary care support;
- contractual flexibility to meet the needs and aspirations of the changing generation of doctors;
- a payment system which adequately rewards doctors practising in the more deprived areas;
- measures to encourage the retention of trained doctors within the practising workforce;
- out of hours arrangements which are not dependent on the personal contribution of every individual doctor; and
- arrangements to ensure the personal security of health care professionals, particularly out of hours.

## **7 Initiatives to date that have been used to address maldistribution and under servicing (including assessment of the initiative's value or success)**

### *General Practice*

7.1 A number of schemes<sup>(25)</sup> have attempted to attract younger GPs into practices in areas of the UK where difficulties in recruitment were being experienced:

- The London Academic Training Scheme (LATS) enabled GPs to spend an additional year, following the completion of the usual training programme, in part time clinical practice and developing research skills and interest.
- GP Career Start in Durham provided a gradual introduction to practise with support from a dedicated mentor and protected time for continuing personal and professional development.

- A GP associate scheme in South London similarly provided a gradual introduction to the stressful nature of practice in that part of the city.
  - The 'Parachute doctor' scheme in Liverpool was initially intended to use newly trained and energetic GPs to assist practices which were struggling. The benefits were found to extend beyond the practices to the doctors themselves.
  - A mid career break scheme assisted GPs, again in South London, though supported time out to spend time reflecting on their careers and intentions.
- 7.2 All the above schemes have reported successful outcomes both in terms of the initial aims, particularly attracting recruits to the areas, but also in terms of supporting practice developments in the practices which benefited from, for example, the attachment of associate GPs. However, all the schemes were dependent on adequate funding.
- 7.3 A change in 1997 to the financial arrangements for GPs (welcomed in principle by the profession), facilitating the employment of salaried GPs to work alongside traditional contractors<sup>(26)</sup> has experienced very low uptake indeed. This failure was almost certainly through the lack of specifically identified funding, the scheme being dependent on a redistribution of the money made available for the employment of other practice staff.
- 7.4 Primary Care Act Pilots. As outlined earlier, the 1997 NHS (Primary Care) Act introduced an alternative contractual option for GPs on a pilot basis. The scheme involved practices relinquishing their national contract and terms of service (but retaining the ability to return to original arrangements) in favour of a locally negotiated and priced contract for the delivery of a range of agreed services. The scheme however also permits alternative providers, for example hospital trusts or nurse led pilots, to establish such a contract and to employ GPs. These latter arrangements were perceived as being of particular relevance in addressing maldistribution, particularly in the context of difficult recruitment to unattractive inner-city areas. Although there are unpublished reports that this change has helped with recruitment to some areas where traditional models were not succeeding in delivering, the early uptake of pilots has been slow and no evaluation has yet been published. The UK government clearly intends that this contractual option will rapidly become the arrangement of preference.

### *Hospital Medicine*

- 7.5 Although there is no published evidence, a number of trusts experiencing difficulty in recruitment have provided incentives over and above the national terms and conditions to senior hospital doctors. Anecdote suggest that such incentives have taken the form of both direct salary supplements and additional help with, for example, removal and relocation expenses. It is suggested that such steps have often been effective.

## **8 What else should be done to improve recruitment of doctors to, and retention of doctors in, under served communities, and what, if any, are the barriers to uptake of further policy approaches**

- 8.1 If the premise that, in international terms, the UK as a whole is under doctored is correct, it must logically follow that a priority must be to increase the number of doctors available to work in the NHS. The UK government has accepted a recommendation of the Medical Workforce Standing Advisory Committee to increase the number of medical school places by 20%<sup>(15)</sup> and implementation is well underway. The establishment of two new medical schools will also in time contribute to the delivery of an enlarged medical workforce.
- 8.2 The recently published NHS plan promises the delivery of 7500 new hospital consultants and an additional 2000 GPs by 2004<sup>(3)</sup>. Whilst the source of these doctors, certainly within the promised timescale, is not clear and the adequacy of even these numbers is a matter of some debate, such increases would help the situation in the UK.
- 8.3 The presence of a vibrant local GP training scheme has long been recognised as helping the recruitment of GPs, and following the establishment of personal and professional relationships many trainees choose to remain in the areas in which they trained. It would seem logical that the same lesson would apply to specialist medicine. Recent and forthcoming changes to the funding arrangements for both GP and specialist trainees may help attract recruits to underserved areas, in the expectation that some will stay to continue their careers.
- 8.4 The ability to train and work flexibly and part time, with the provision of good quality child care, is essential if the new generation of doctors is to be attracted into practice and be retained within the workforce.
- 8.5 Acceptable terms and conditions, including attractive levels of payment, remain vital to recruitment and retention. The potential for financial incentives to work and stay in difficult areas has almost certainly not been sufficiently explored in the UK, where the tradition of national terms and conditions is deeply embedded in the profession's culture.
- 8.6 The alternative route is to move towards direction of the medical workforce to contribute for defined periods in areas of difficulty. The UK profession would not find this acceptable and it is almost inevitable that any attempt to introduce such a system would lead to major confrontation between government and profession.
- 8.7 The UK government has recently proposed a contractual change compelling newly appointed NHS consultants to commit the whole of their time to the NHS for the first 7 years of their appointment, prohibiting part time private practice<sup>(3)</sup>. Whilst this is likely to be resisted by the profession's representatives, further measures to enhance the productivity of doctors under varied contractual arrangements seem likely.

**9 Do incentives to practise in under served communities work, do disincentives work, or is substitution a better alternative to them both (consider substitution with non-medical practitioners and substitution using information technology solutions)**

- 9.1 UK experience would suggest that incentives to practise in under served communities can work. The limited system of 'inducement payments'<sup>(23)</sup>, guaranteeing an income for the doctor for a defined period during the establishment of new practices in new cities, or rapidly enlarging areas, has done just that.
- 9.2 Schemes such as those described above, aimed at attracting young recently trained doctors to difficult areas, have also had some success. In addition, the MPC system of ensuring distribution in the UK has also achieved considerable success, although not as much through the use of incentives as through the use of disincentives, restricting access to practise in areas judged as already adequately doctored.
- 9.3 The use of other incentives to under doctored areas in the UK is at the present time limited, although the experience of the Primary Care Act Pilots described above may in time provide some flexibility and the evidence for its effectiveness. However, the incentives provided here are, at least currently, in terms of contractual flexibility rather than financial inducements.
- 9.4 The last 15 years has seen a radical expansion in the number of nurses employed in general practice. Their roles embrace traditional nursing tasks carried out in the general practice premises, tasks devolved from doctors (for example blood taking and chronic disease management to protocol) and an increasing interest in triage and the first line management of minor illness. The experience of skill mix (physician substitution) is growing and many practices are actively engaged in exploring and implementing further extensions to the role of the nurse.
- 9.5 However, the nursing profession in the UK faces workforce problems every bit as severe, if not more so, than medicine itself. The NHS plan describes a major expansion of the nursing workforce and a major extension of the role of the nurse. If the increased number of nurses can be delivered, and a constructive debate on the respective roles of doctors and nurses in primary care follows, skill mix should have a major role to play in the delivery of healthcare, provided other inhibitory factors (such as the ability of practice nurses to prescribe), can be successfully addressed.
- 9.6 The UK is also experiencing the introduction of alternatives to face-to-face contact between patient and healthcare professional in the form of 'NHS Direct', a nurse led telephone answering and advice service provided by nurses working to computerised protocols. NHS Direct will be rolled out across the UK by the end of 2000. In addition to the telephone answering service NHS direct has a website enabling those with Web access<sup>(27)</sup> to seek guidance through this route for a range of conditions. Evaluation of the success and effectiveness of this website is also has not yet available.

9.7 Whilst early experience suggests that the service is at best containing demand<sup>(28)</sup>, the stress and workload faced by inadequate numbers of doctors and nurses, particularly in under served areas, could be relieved if NHS Direct could be developed into a service which really did reduce demand for face-to-face contact.

**10 What scope is there for more innovative models, such as developing rural area medical schools, contracting with medical schools or with service providers for the provision of services to under served populations**

10.1 It is hard to see in the UK that rural area medical schools could ever be a realistic prospect. However the radical extension of community based education might attract medical students to the appeal of under served populations, providing they could see that practice in such areas is well supported, adequately rewarded and profession is satisfying. Unfortunately, anecdotally it seems that the placement of medical students in the community tends to be restricted to areas within reasonable distance of the medical schools and so while many inner-city areas will be within such a catchment area, many of the most rural areas in the UK certainly will not, and will therefore not benefit from such placements.

10.2 The current round of organisational change within the NHS may however give opportunities, through a commissioning process, for the provision of improved services to under served populations. The introduction of Primary Care Trusts (PCTs)<sup>(29)</sup> and their rapid role out<sup>(3)</sup> will give increasing scope to incentivise through facilities, support and alternative contractual and financial arrangements. However the ability to use such arrangements will remain dependent on adequate and equitable resourcing of PCTs covering the most deprived areas. Otherwise the equitable distribution of medical workforce may lead to a more even distribution of the problems rather than a resolution of them.

**11 What efforts or programmes have been introduced in undergraduate medical education and continuous medication medical education in cultural sensitivity/diversity awareness, and what has been the uptake?**

11.1 The General Medical Council (GMC) in the UK is the regulatory body charged under law with 'promoting high standards of medical education', defining in broad outline the curriculum content of undergraduate medical courses and ensuring that standards of medical education are met. The GMC, in its publication 'Tomorrow's Doctors'<sup>(30)</sup>, encourages adoption of educational initiatives aimed at eliminating discrimination in the treatment of patients and medical colleagues. One of the key attitudinal educational objectives in 'Tomorrow's Doctors' is that:

*40.3 At the end of the course of undergraduate medical education the student will have acquired and will demonstrate attitudes essential to the practice of medicine, including*

*(a) diversity of background and opportunity, language, culture and way of life;*

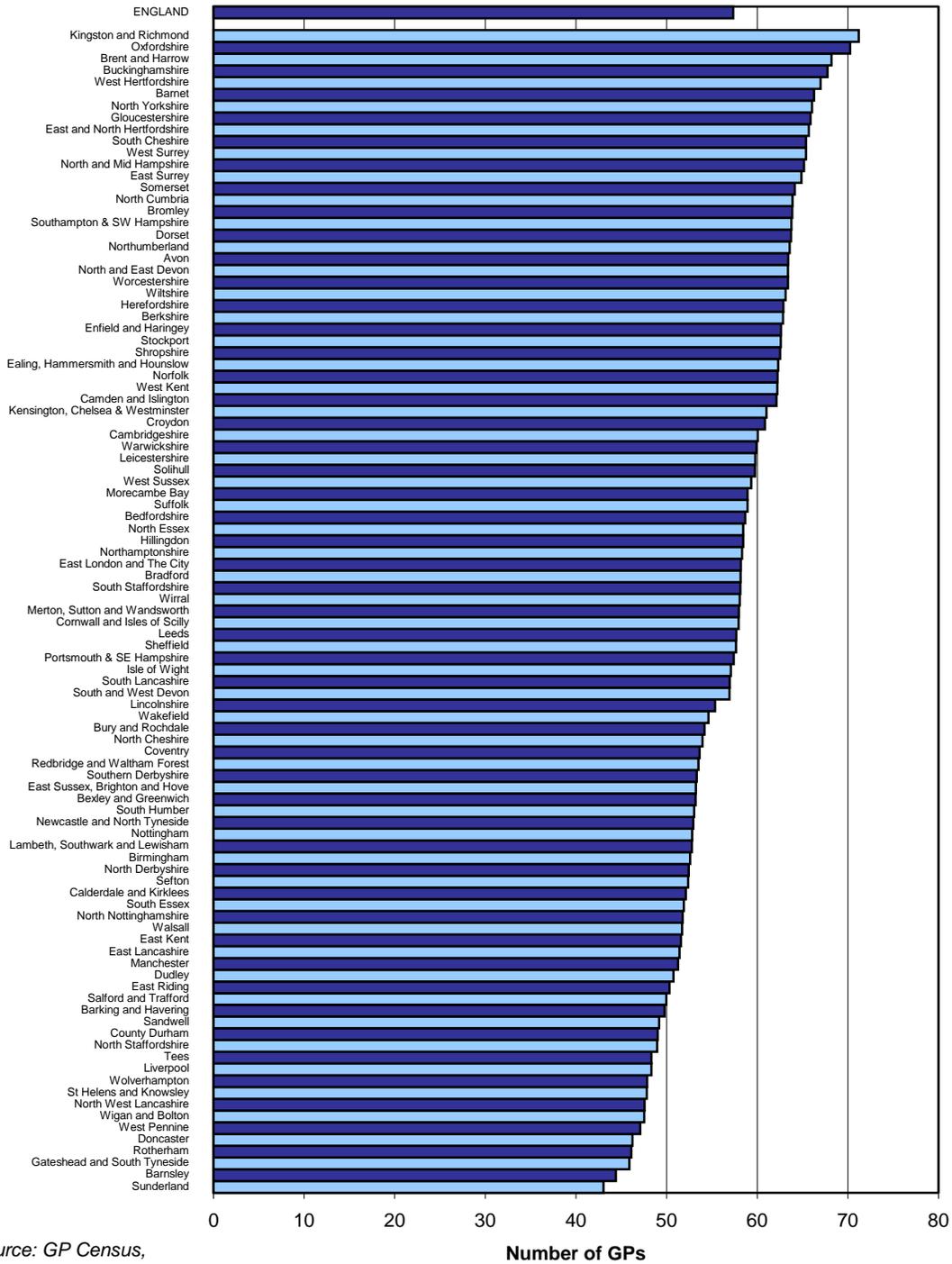
- 11.2 It is not clear that there is yet any published work on the extent to which initiatives relating to this objective have been adopted, or their outcome.
- 11.3 The GMC has not to date played any part in initiatives looking at the distribution of doctors with a view to addressing inequity of distribution and a resolution of the problem of underserved communities in the UK context.

## GLOSSARY

Consultant:	Career grade senior hospital doctor
(Post-graduate) Dean:	The person, a senior clinician with a university contract, holding the budget and responsible for the delivery of post-graduate medical education
Deprivation:	Areas scoring highly on the factors contributing to the UPA (under-privileged area) score (see below)
Independent contractor:	The self-employed status of the majority of UK GPs, contracting with the NHS to provide services
Health Authority:	The body legally responsible for assessing the health needs of the population in its area, securing the services necessary to meet those needs and improving the health of its local population
Inner city:	Urban areas associated with poverty, often with depopulation, poor housing stock, poor health investment and infrastructure
NHS Trust:	The quasi-autonomous self-governing status of health care providers such as hospitals, community services and ambulance services
Primary Act Pilot: (also PCAP or pilot)	Alternative contractual model for the delivery of GP services. Established under NHS (Primary Care) Act 1997
Rural:	No agreed precise UK definition, but usually understood as (Rurality) relating to the countryside, agriculture, low population density and poor public transport
Skill mix:	The balance between trained and untrained, qualified and unqualified, and support and operative staff within a service area as well as among staff groups
UPA Score (Under-privileged area)	A measure of deprivation derived from GPs' perceptions of factors influencing workload, reduced to a numerical value for each health authority area (see appendix 3) and used as part of the payments system for UK GPs in inducement to and compensation for the difficulties of working in deprived areas. (Also commonly known as the Jarman index)
Urban:	No agreed precise UK definition, but usually understood as relating to built up, densely populated areas with presence of industrial development

**Appendix 1**

**Number of GPs  
Whole Time Equivalents per 100,000 weighted population**



Source: GP Census,  
Oct 1999

## Appendix 2: Number of general practitioners, whole time equivalents per 100,000 weighted population, United Kingdom, 1999

Region	GP WTEs per 100,000 weighted population	GP WTEs – October 1999 census	Weighted Population
Kingston and Richmond	71.2	209	293253
Oxfordshire	70.2	387	550560
Brent and Harrow	68.2	291	426762
Buckinghamshire	67.7	396	584883
West Hertfordshire	67.0	318	475229
Barnet	66.3	197	297663
North Yorkshire	66.0	482	729145
Gloucestershire	65.9	355	538937
East and North Hertfordshire	65.7	288	438929
South Cheshire	65.4	412	630877
West Surrey	65.4	358	548222
North and Mid Hampshire	65.1	307	471848
East Surrey	64.9	235	362066
Somerset	64.1	311	484775
North Cumbria	63.9	212	331473
Bromley	63.9	171	267139
Southampton and South West Hampshire	63.8	334	523903
Dorset	63.7	456	715083
Northumberland	63.6	207	325354
Avon	63.4	602	948371
North and East Devon	63.4	319	502723
Worcestershire	63.4	307	484225
Wiltshire	63.1	348	550784
Herefordshire	62.9	103	164519
Berkshire	62.8	430	684568
Enfield and Haringey	62.6	289	461666
Stockport	62.6	171	273638
Shropshire	62.5	256	409592
Ealing, Hammersmith and Hounslow	62.3	411	659109
Norfolk	62.2	467	749842
West Kent	62.2	553	887877
Camden and Islington	62.1	248	398659
Kensington & Chelsea and Westminster	61.0	230	377566
Croydon	60.9	183	300327
Cambridgeshire	60.1	398	663273
Warwickshire	59.9	279	465470
Leicestershire	59.8	523	875589
Solihull	59.7	113	188707
West Sussex	59.4	437	736064
Morecambe Bay	58.9	192	325818
Suffolk	58.9	395	671149
Bedfordshire	58.7	297	505881
North Essex	58.5	481	823148
Hillingdon	58.4	129	221489
Northamptonshire	58.3	321	550901
East London and The City	58.2	417	715624

Bradford	58.2	301	517646
South Staffordshire	58.1	303	521270
Wirral	58.1	204	351250
Merton, Sutton and Wandsworth	58.0	350	603359
Cornwall and Isles of Scilly	57.9	310	534439
Leeds	57.7	432	749403
Sheffield	57.7	335	580608
Portsmouth and South East Hampshire	57.4	303	528463
ENGLAND	62.1	17363	27979120
Isle of Wight	57.1	80	139775
South Lancashire	57.0	166	291214
South and West Devon	56.9	359	631086
Lincolnshire	55.4	352	635092
Wakefield	54.6	189	346345
Bury and Rochdale	54.2	217	400645
North Cheshire	53.9	166	308012
Coventry	53.6	171	318750
Redbridge and Waltham Forest	53.5	232	433773
Southern Derbyshire	53.3	297	556881
East Sussex, Brighton and Hove	53.2	420	788782
Bexley and Greenwich	53.2	225	422661
South Humber	53.0	174	328033
Newcastle and North Tyneside	52.9	276	522069
Nottingham	52.8	339	641602
Lambeth, Southwark and Lewisham	52.8	451	854737
Birmingham	52.6	598	1137660
North Derbyshire	52.4	202	384543
Sefton	52.4	155	295070
Calderdale and Kirklees	52.1	308	590894
South Essex	51.9	341	656420
North Nottinghamshire	51.8	202	390943
Walsall	51.7	134	259993
East Kent	51.6	325	629806
East Lancashire	51.4	282	547945
Manchester	51.3	278	543186
Dudley	50.8	155	304390
East Riding	50.3	304	604674
Salford and Trafford	50.0	240	481291
Barking and Havering	49.8	197	396061
Sandwell	49.2	159	323013
County Durham	49.0	329	671151
North Staffordshire	49.0	237	484588
Tees	48.3	292	604256
Liverpool	48.3	264	545420
Wolverhampton	47.8	126	264301
St Helens and Knowsley	47.8	182	381232
North West Lancashire	47.6	244	512408
Wigan and Bolton	47.5	289	607752
West Pennine	47.1	227	482565
Doncaster	46.2	150	324648
Rotherham	46.1	121	261836

Gateshead and South Tyneside	45.9	188	408617
Barnsley	44.4	117	264070
Sunderland	43.1	140	325875

Source: GP Census, October 1999

### Appendix 3: Underprivileged area scores (The Jarman Index)

#### 1991 UPA score and census proportions for 1996

##### Health Authorities

	Score UPA	Population Resident
Mean England & Wales HA Value	0.00	475,145
EAST SURREY	-27.95	402,879
SOLIHULL	-26.72	199,859
NORTH & MID HAMPSHIRE	-25.26	520,356
SOUTH STAFFORDSHIRE	-25.20	571,957
WEST SURREY	-23.54	615,124
SOUTH LANCASHIRE	-22.48	306,483
BUCKINGHAMSHIRE	-22.25	632,487
WARWICKSHIRE	-20.75	484,247
WORCESTERSHIRE	-20.17	516,564
E & N HERTFORDSHIRE	-20.09	476,774
BROMLEY	-20.08	290,609
SOUTH CHESHIRE	-20.06	650,215
W HERTFORDSHIRE	-19.13	499,055
CAMBRIDGE & HUNTINGDON	-18.99	403,789
STOCKPORT	-16.31	284,395
NORTH ESSEX	-15.53	848,565
BERKSHIRE	-14.95	734,246
DUDLEY	-14.93	304,615
NORTH YORKSHIRE	-14.12	702,161
HEREFORDSHIRE	-13.99	160,183
NORTH DERBYSHIRE	-13.92	364,916
SHROPSHIRE	-13.71	406,387
LINCOLNSHIRE	-13.14	584,536
SOUTH ESSEX	-12.87	680,012
WEST KENT	-12.50	949,941
EAST NORFOLK	-12.39	589,990
WILTSHIRE	-12.16	564,471
OXFORDSHIRE	-11.12	547,584
DYFED POWYS	-10.64	461,991
KINGSTON & RICHMOND	-10.62	293,728
SOMERSET	-10.35	460,368
NORTH NOTTINGHAMSHIRE	-10.27	386,353
NORTHAMPTONSHIRE	-10.08	578,807
GLOUCESTERSHIRE	-9.52	528,370
DORSET	-8.20	645,166
BEDFORDSHIRE	-7.68	524,105
N & E DEVON	-7.66	445,870

AVON	-7.20	932,674
LEICESTERSHIRE	-7.02	867,521
WEST SUSSEX	-7.01	702,290
NORTHUMBERLAND	-6.86	304,694
SUFFOLK	-6.54	636,266
NORTH CUMBRIA	-6.48	313,141
NORTH WEST ANGLIA	-6.08	396,959
CORNWALL & ISLES OF SCILLY	-5.38	468,425
SOUTHAMPTON & SW HAMPSHIRE	-5.34	503,111
SOUTH DERBYSHIRE	-5.24	533,079
NORTH CHESHIRE	-5.14	306,401
NORTH STAFFORDSHIRE	-4.14	459,178
SEFTON	-4.11	289,542
MORCOMBE BAY	-2.90	293,878
NORTH WALES	-2.61	642,561
PORTSMOUTH & SE HAMPSHIRE	-2.36	518,080
CROYDON	-2.18	313,510
BARNET	-2.07	293,564
MORGANNWG	-1.46	487,990
HILLINGDON	-0.41	231,602
BARKING & HAVERING	0.05	373,173
WALSALL	0.70	259,488
WAKEFIELD	0.84	310,915
ISLE OF WIGHT	1.14	124,577
SW DEVON	2.02	564,080
COUNTY DURHAM	2.08	593,430
ROTHERHAM	2.53	251,637
GWENT	2.70	545,612
NOTTINGHAM	2.92	607,519
WIGAN & BOLTON	3.01	565,105
BARNSLEY	3.18	220,937
DONCASTER	4.14	288,854
EAST KENT	4.33	558,932
SOUTH HUMBER	4.68	311,946
WIRRAL	4.70	330,795
BRO TAF	5.79	696,919
NW LANCASHIRE	6.61	444,968
BRENT & HARROW	6.72	443,125
EAST RIDING	7.15	546,094
ST HELENS & KIRKLEES	7.27	330,855
BURY & ROCHDALE	8.07	378,924
EAST SUSSEX	8.41	690,447
MERTON SUTTON & WANDSWORTH	8.80	589,775
SUNDERLAND	10.68	289,040
LEEDS	11.10	680,722
SALFORD & TRAFFORD	11.18	433,194
REDBRIDGE & WALTHAM FOREST	11.21	438,251
CALDERDALE & KIRKLEES	11.89	564,712
EAST LANCASHIRE	12.84	508,691
BEXLEY & GREENWICH	12.91	423,265
TEES	13.03	550,293

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GATESHEAD & SOUTH TYNESIDE	14.75	354,285
WEST PENNINE	14.97	463,603
SHEFFIELD	15.54	501,202
COVENTRY	16.72	294,387
WOLVERHAMPTON	17.14	242,190
ENFIELD & HARINGEY	17.70	459,621
SANDWELL	18.05	290,091
EALING HAMERSMITH & HOUNSLOW	20.31	628,156
NEWCASTLE & NORTH TYNESIDE	21.42	451,827
BRADFORD	27.42	457,344
BIRMINGHAM	30.26	961,041
KENSINGTON, CHELSEA & WESTMINSTER	30.77	313,208
LIVERPOOL	34.69	452,450
CAMDEN & ISLINGTON	43.43	335,130
LAMBETH SOUTHWARK & LEWISHAM	44.72	694,358
MANCHESTER	57.18	404,861
EAST LONDON & CITY	62.15	558,624

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Source: Imperial College School of Medicine  
Department of Primary Care and General Practice  
(<http://www.med.ic.ac.uk/df/dfgm/upa/download.htm>)

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