

# Deprivation, demography, and the distribution of general practice: challenging the conventional wisdom of inverse care

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## ABSTRACT

It is generally believed that the most deprived populations have the worst access to primary care. Lord Darzi's review of the NHS responds to this conventional wisdom and makes a number of proposals for improving the supply of GP services in deprived communities. This paper argues that these proposals are based on an incomplete understanding of inverse care which underestimates the degree to which, relative to their healthcare needs, older populations experience low availability of primary care. Many deprived practices appear to have a better match between need and supply than practices serving affluent but ageing populations. However, practices serving the oldest and most deprived populations have the worst availability of all.

## INTRODUCTION

Since first proposed by Julian Tudor Hart in 1971, the 'inverse care law', which states that 'the availability of good medical care tends to vary inversely with the need for it in the population served',<sup>1</sup> has become conventional wisdom. Consequently, it is widely held that the availability of primary care is particularly poor in inner-city and declining industrial areas. A range of factors have been implicated here, notably difficulties filling vacancies in the most deprived parts of the country leading to larger list-sizes<sup>2</sup> and a higher proportion of single-handed GPs.<sup>3</sup> Disadvantaged populations are also assumed to receive a poorer quality of service, with evidence suggesting that the uptake of preventive and diagnostic services, such as

cancer screening, health promotion clinics, and immunisations, is lower than expected in highly deprived areas,<sup>4-6</sup> while rates of emergency hospital admissions are higher.<sup>7</sup> Whether the explanation for these differences lies in the difficulties of achieving patient compliance or a failure to deliver high quality care to disadvantaged populations, there appears to be a broad consensus regarding the policy implications of inverse care: 'bad health' areas need more resources.<sup>8</sup>

The need to counter inverse care in general practice was recently highlighted by Lord Darzi who, in his *NHS Next Stage Review – Interim Report*, stated that:

*'... areas where life expectancy is lowest for men – concentrated in London, the Midlands, Yorkshire, North West, and North East – broadly match the areas with fewer GPs per head ... Mid Devon PCT, for example, has over twice as many GPs per head of weighted population as Oldham PCT'.<sup>9</sup>*

Noting that inequality in GP distribution has actually grown over the past two decades, Lord Darzi concluded that equity must be improved in the availability of GP services. To this end, various plans have been proposed, including the Health Secretary Alan Johnson's announcement that more than 100 new GP practices will be established in areas with the poorest provision (that is, those with fewest primary care clinicians, lowest patient satisfaction with access, and poorest health outcomes).

Recent developments in how NHS resources are allocated also reflect this belief that deprived areas have been underfunded relative to need. Thus, although deprived areas already received higher per capita funding allocations, the introduction of the Allocation of Resources to English Areas (AREA) formula in 2003 instigated a further shift in resources towards deprived areas. A 'pace of change' policy slowed the implementation of the new formula, but the 20% most deprived primary care trusts (PCTs) (according to 2004 Index of Deprivation scores) have moved from being 3.2% below their weighted capitation targets in 2003–2004 to only 0.5% below by 2007–2008. Meanwhile, the 20% least deprived

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PCTs moved from 4.0% to just 0.7% above target over the same period. This progressive shift has meant that by 2007–2008 the 20% most deprived PCTs received a mean of £1626 per capita, which compares very favourably with the £1188 per person received by the 20% least deprived PCTs.<sup>10</sup> These allocations are dominated by the Hospital and Community Health Services component of the formula, but the primary care component is equally driven by the ‘additional needs’ associated with deprivation. As such, in 2007–2008 the 20% most deprived PCTs were allocated a mean of £124.10 per capita for PMS compared with £99.90 in the 20% least deprived PCTs.

In spite of this significant, and widening, funding differential, Lord Darzi’s interim report still had cause to emphasise the growing inequality in the distribution of GPs across the country. However, it is important to recognise that the evidence cited refers not to the actual populations served by GPs but to what are known as ‘weighted’ populations. These weighted populations originate with the AREA formula which ‘weights’ actual PCT populations on the basis of various indicators of need for health care across four domains (covering Hospital and Community Health Services, prescribing, Primary Medical Services (PMS), and HIV/AIDS). Resources are then distributed in proportion to a ‘unified’ weighted population which itself is a weighted combination of these four formula components.<sup>11</sup> The greater the level of overall need the higher the unified weighted population relative to the actual population, and vice versa. At one extreme, this results in North Manchester PCT’s actual 2007–2008 population of 151 226 being treated for allocation purposes as if it comprised 212 010 people (an increase of 40.2%) while, at the other end of the spectrum, Wokingham PCT’s population of 145 975 is funded as if it comprised just 112 204 people (a reduction of 23.3%).

Although the use of PMS weighted populations would arguably have been a more appropriate denominator, Darzi’s apparent use of ‘unified’ weighted populations represents a logical attempt to relate GP provision to needs rather than simply numbers. It assumes, however, that the current weighted capitation formula provides an unbiased measure of an area’s healthcare needs. Is this really the case? The current formula has been subject to a growing critique,<sup>12–16</sup> leading some to conclude that there is no justification for the claim that it predicts appropriate or expected levels of use.<sup>17</sup> The implication is that, if the weighted capitation formula is not accurately predicting healthcare needs, ‘observed’ inequalities in the distribution of GPs may also be inaccurate.

## How this fits in

Evidence using ‘weighted populations’ supports the conventional representation of inverse care — that deprived populations are the most disadvantaged with respect to GP availability. This paper suggests that weighted populations are inappropriate denominators by which to measure inequalities in healthcare provision. Using alternative denominators, a more pronounced and consistent pattern of inverse care is found with respect to age rather than deprivation.

### AREA-BASED WEIGHTED POPULATION: AN APPROPRIATE INDICATOR OF HEALTHCARE NEED?

On the face of it, the AREA formula is very good at identifying areas commonly understood to have the ‘highest needs’. There is a strong association between weighted capitation allocations and a range of indicators of health status (for example, age-standardised mortality and morbidity rates, life expectancy, and years of potential life lost), and both sets of indicators show that the health status of deprived populations is significantly worse than that of affluent populations.

It does not necessarily follow that the need for health services is greatest in deprived areas. A distinction needs to be made between standardised and crude measures of the health needs of different populations. Standardised measures are calculated to show what the needs of a population with a standard age structure would be in each area. They intentionally design out the effects of age to reveal the effects of other factors on health, such as deprivation. This is an excellent way of highlighting areas that suffer from the worst health inequalities and which should be targeted by public health and other preventive efforts. However, standardised measures are poorly equipped to identify areas that have the highest crude burdens of illness and thus the highest needs for curative care.

It has now become so common to age-standardise measures of disease prevalence that it is easy to overlook the fact that, for most conditions (mental health being a notable exception) age is a far more significant determinant of morbidity and mortality than deprivation.<sup>18</sup> As people get older, they are more likely to develop conditions such as heart disease and cancers which place significant demands on healthcare resources. Older people are also far more likely to die than younger people and, because progressive and fatal illness often requires high intensity care, this has important cost implications.<sup>19</sup>

Unfortunately, there is little similarity between the distribution of illness and death as expressed in standardised and crude terms. This is because the geographical pattern of social deprivation is negatively correlated with that of age; more affluent areas tending to have older demographic profiles (Table 1). To take two extremes, Central Manchester PCT has among the

**Table 1. Distribution of primary care trusts (PCTs) by deprivation and demography quintiles.**

PCTs by deprivation quintile (2006–2007)	PCTs by demography quintile (2006–2007)				
	20% youngest PCTs (n = 60)	2nd demographic quintile (n = 60)	3rd demographic quintile (n = 60)	4th demographic quintile (n = 60)	20% oldest PCTs (n = 61)
Least deprived 20% (n = 60)	10	14	12	13	11
2nd quintile (n = 60)	7	10	11	13	19
3rd quintile (n = 60)	11	7	10	10	22
4th quintile (n = 60)	11	16	12	13	8
Most deprived 20% (n = 61)	21	13	15	11	1

Table describes 301 of the total 303 pre-2006 PCT areas. Two (Redbridge and Waltham Forest) are excluded due to mergers rendering data unavailable.

highest death rates in the country for cancer and circulatory disease in age-standardised terms (157 and 159 per 100 000 respectively), while mortality in North Dorset PCT is much lower than the mean (at 93 and 61 per 100 000s respectively). The common interpretation of these differences is that Central Manchester has the greater health 'needs'. However, in absolute terms, Central Manchester does not have the greatest burden of cancer and circulatory disease. There is a much higher proportion of people aged  $\geq 65$  years in North Dorset (21.9% compared to 9.8%) and this means that disease prevalence is significantly higher in crude terms. Thus according to 2005–2006 Quality and Outcomes Framework (QOF) counts, North Dorset has 135% more cases of cancer than Central Manchester (1037 and 441 cases per 100 000 population respectively), and 58% more cases of coronary heart disease (3925 and 2487 cases per 100 000 respectively). Across all QOF disease prevalence

indicators, except diabetes and mental health, the absolute per capita burden of disease is higher in this affluent but older population.

Given this greater burden of ill health, it might be expected that North Dorset would receive the greater per capita allocation of NHS funding, but the opposite is true. In 2006–2007 the weighted capitation formula allocation for Central Manchester was £1515.23 per capita, some 23% more than the £1227.53 allocated to North Dorset. As discussed elsewhere,<sup>15</sup> this reflects the fact that the AREA formula gives greater effective weight to costs associated with 'additional needs' (that is, those associated with deprivation) than to costs associated with 'age-related needs'. Thus, as shown in Table 2, the weighted populations of young, deprived PCTs tend to be higher than their actual populations, while those of older, affluent populations tend to be lower. There are 21 PCTs that are in both the most deprived 20% and youngest 20% of PCTs, and their overall 2006–2007 unified weighted population is 19.4% higher than their actual population. In contrast, there are 11 PCTs that are in both the least deprived 20% and the oldest 20% of PCTs and their weighted population is 10.4% lower than their actual population. As a result, the latter receive lower per capita funding settlements even though, as measured by QOF disease registers, they have to deal with a higher burden of healthcare needs (Table 2).

Of course, the QOF is a relatively recent innovation and there is no doubt that it has yet to become an entirely reliable source of data on disease prevalence. In particular, it could be argued that because QOF data are sensitive to how effective GPs are at picking up and recording the burden of disease among their patients they overestimate the healthcare needs of affluent populations.<sup>20</sup> However, alternative methods are available that generate estimates of disease prevalence. For example, using survey data and a process of synthetic estimation, the role of demographic, socioeconomic, and other characteristics can be considered simultaneously when assessing disease prevalence, yielding epidemiological estimates that appropriately reflect the relative influence of age and deprivation for different conditions.

**Table 2. Resource allocation and QOF prevalence rates for 'older but affluent' and 'younger but deprived' PCTs.**

	Older but affluent PCTs (n = 11)	Younger but deprived PCTs (n = 21)
2006–2007 actual population, n	1 676 482	4 345 918
2006–2007 unified 'weighted' population, n (% relative to actual population)	1 501 422 (89.6)	5 187 377 (119.4)
2006–2007 per capita allocation, £	1159	1536
2005–2006 QOF prevalence rates per 100 000		
Coronary heart disease	3858	2541
Mental health illness	515	741
Cancer	949	480
Left ventricular disease	473	325
Stroke and transient ischaemic attack	1886	1052
Hypertension	13 404	9337
Diabetes	3314	3615
COPD	1270	1150
Epilepsy	587	503
Hypothyroidism	2747	1440
Asthma	5988	5043

Each component of the Allocation of Resources to English Areas (AREA) formula uses a slightly different population base. The Hospital and Community Health Services population base was used to define the 'actual' population. PCTs are placed into quintiles by deprivation and age (percent of population aged  $\geq 65$  years). The 11 'older but affluent' PCTs fall in both the 20% oldest and 20% least deprived quintiles, while the 21 'younger but deprived' PCTs are in both the 20% youngest and 20% most deprived quintiles. COPD = chronic obstructive pulmonary disease. PCT = primary care trust. QOF = Quality and Outcomes Framework.

Using this approach, a recent Department of Health funded project (S Asthana and A Gibson, unpublished data, 2007) found that, while the pattern of premature morbidity (in males aged 45–64 years) from cardiovascular disease (CVD) is strongly associated with the geography of deprivation, correlation between overall prevalence and the Index of Multiple Deprivation (IMD 2004) is weak and negative. Areas of retirement migration, such as East Lindsey (Lincolnshire), Arun (West Sussex), and the New Forest (Hampshire), emerge with the highest rates of CVD morbidity, while the major urban conurbations exhibit low rates of overall prevalence because these populations tend to be relatively young.

The same study also found demography to play a dominant role in the distribution of metabolic/endocrine disease, with particularly high rates being found in retirement areas along the south and east coasts of England — a pattern broadly replicated by the distribution of diabetes predicted by the PBS Phase 3 Diabetes Population Prevalence Model which applies age/sex/ethnic group-specific estimates of diabetes prevalence rates, derived from epidemiological population studies, to local population estimates.<sup>21</sup> Of course, not all major conditions are primarily diseases of ageing. For example, the geographical distribution of mental health needs is strongly shaped by deprivation, the highest prevalence rates being found in the major urban areas of the Midlands and the North. However, it is more often the case that demography is the major driver of the overall burden of morbidity and mortality.

This would suggest that demographically ageing areas should have higher weighted populations than

their actual populations (and thus receive higher funding per head than their younger counterparts). Yet, as noted above, the formula tends to work in the opposite direction. Therefore, as a measure of health service ‘needs’, weighted populations are likely to be too high in younger deprived areas and too low in ageing affluent areas. As such, it is very likely that they provide inappropriate denominators by which to measure inequalities in healthcare provision.

### IS GP DISTRIBUTION SUBJECT TO INVERSE CARE? EVIDENCE USING ALTERNATIVE DENOMINATORS

The systematic bias incorporated into the unified weighted-population approach suggests that Lord Darzi’s assertion that access to primary care is worse in areas of greater need, and that ‘we therefore need to open up the supplying of GP services in deprived communities to a wider range of providers’,<sup>9</sup> must be treated with some caution. What, then, does analysis using alternative indicators tell us?

#### *GP provision and socioeconomic deprivation*

As illustrated by Table 3, although GPs in the most deprived 20% of PCTs ( $n = 60$ ) actually serve, on average, marginally fewer patients than their colleagues in the 20% least deprived PCTs, their apparent burden — in terms of weighted populations — is some 37% greater. While this use of weighted rather than actual populations is meant to capture how needs vary between different populations, it actually represents a rather crude, and arguably misleading, perspective on the provision of GPs in deprived and less deprived areas.

**Table 3. PCT-level GP list sizes and ‘QOF cases per GP’ by deprivation quintile.**

	PCTs by Index of Multiple Deprivation 2004 quintile					Most deprived as % of least deprived
	20% most deprived PCTs ( $n = 60$ )	2nd deprivation quintile ( $n = 60$ )	3rd deprivation quintile ( $n = 61$ )	4th deprivation quintile ( $n = 60$ )	20% least deprived PCTs ( $n = 60$ )	
Mean GP list size						
2006–2007 actual population, $n$	1715	1751	1745	1721	1730	99%
2006–2007 unified ‘weighted’ population, $n$ (% relative to actual population)	2021 (117.8)	1843 (105.3)	1702 (97.5)	1593 (92.6)	1471 (85.0)	137%
2005–2006 prevalence rates per GP						
Coronary heart disease	66.9	70.2	68.7	62.9	56.3	118.8%
Left ventricular disease	8.4	8.5	8.6	7.7	6.6	126.8%
Stroke and TIA	27.1	29.0	30.6	29.2	27.0	100.3%
Hypertension	207.2	223.8	225.4	220.8	211.1	98.1%
Diabetes	69.0	70.3	65.6	61.6	54.8	126.0%
COPD	31.1	27.8	25.2	22.0	18.9	164.5%
Epilepsy	11.9	11.7	11.3	10.6	9.8	120.7%
Hypothyroidism	38.2	43.5	45.3	45.3	44.4	85.9%
Cancer	11.4	12.6	13.7	14.0	14.2	80.2%
Mental health illness	12.5	12.0	10.4	10.0	9.0	138.7%
Asthma	104.3	108.9	107.3	105.1	104.8	99.5%

COPD = chronic obstructive pulmonary disease. PCT = primary care trust. QOF = Quality and Outcomes Framework. TIA = transient ischaemic attack.

In terms of the burden of ill health that has to be managed by GPs, evidence that deprived areas are significantly under-doctored is mixed. As shown in Table 3, for some conditions (such as chronic obstructive pulmonary disease [COPD], left ventricular disease, mental health, epilepsy, and diabetes) QOF data suggest that GPs in deprived areas face much higher workloads than in affluent areas. For other conditions, including strokes and transient ischaemic attacks, hypertension, and asthma, there is no significant difference, while with respect to hypothyroidism and, in particular, cancer the pattern appears to be reversed.

Viewed in these terms, the provision of GPs in deprived areas does not appear to be characterised by the degree of profound inequality implied when unified weighted-population data are used. This is supported by data on primary care utilisation which suggest that socially disadvantaged people make as good if not better use of general practice as other population cohorts.<sup>22-25</sup> This is not to deny that deprived populations may face particular disadvantages in gaining access to high quality primary care. Several studies suggest that general practices located in areas of socioeconomic deprivation provide a lower quality of care as judged by QOF scores<sup>26-30</sup> (although it should be acknowledged that other studies find little evidence of socioeconomic inequality<sup>31,32</sup>). There may also be plausible reasons why, relative to underlying morbidity, deprived groups need greater access to primary care. For example, there appears to be a greater readiness on the part of disadvantaged people to consult GPs, perhaps due to a lack of confidence in self-management.<sup>31-35</sup> This, together

with higher levels of psychological distress would be expected to place higher demands on primary care practitioners working in deprived areas.<sup>36,37</sup>

The point, then, is not to dismiss the legitimate healthcare needs that arise from deprivation but to recognise that evidence on inequalities in the provision of GPs is more complex and equivocal than implied by the Darzi interim report. The figures based on weighted populations may satisfy what sometimes appears to be a quest to fulfill the accepted narrative of inverse care.<sup>26</sup> They do not necessarily serve the truth, less interesting as that may be.

### GP provision and demography

A more fundamental reason for questioning the conventional representation of inverse care lies not so much with the fact that it is overstated, but with the fact that it is based on a very specific and one-dimensional conception of inequality. There has been an ongoing concern to demonstrate that socioeconomically disadvantaged people are disadvantaged in their access to health care.<sup>26</sup> By contrast, the possibility that older people may experience particularly poor availability of health care has attracted relatively little attention. This is despite the fact that the government itself has acknowledged that the NHS has failed to meet older people's needs, sometimes by discriminating against them.<sup>38</sup>

Table 4 demonstrates how the distribution of GPs in England varies according to the demographic composition of practice populations. Here, PCTs have been divided into five 20% 'demographic quintiles' on the basis of the proportion of people aged  $\geq 65$  years in each PCT. This time, although GPs in the 20% 'oldest'

**Table 4. PCT-level GP list sizes and 'QOF cases per GP' by demographic quintile.**

	PCTs by percent population aged $\geq 65$ years					Oldest as % of youngest
	20% oldest PCTs (n = 60)	2nd demographic quintile (n = 60)	3rd demographic quintile (n = 61)	4th demographic quintile (n = 60)	20% youngest PCTs (n = 60)	
Mean GP list size						
2006–2007 actual population, n	1639	1725	1748	1782	1728	94.8%
2006–2007 unified 'weighted' population, n (% relative to actual population)	1616 (98.6)	1696 (98.4)	1721 (98.5)	1780 (99.9)	1789 (103.5)	90.3%
2005–2006 prevalence rates per GP						
Coronary heart disease	73.3	71.7	70.6	66.2	48.1	152.4%
Left ventricular disease	8.9	9.0	8.7	8.0	5.8	153.4%
Stroke and TIA	34.1	31.8	30.7	28.2	20.3	168.0%
Hypertension	233.9	233.1	225.3	216.8	187.0	125.1%
Diabetes	62.6	64.3	64.1	65.7	65.1	96.2%
COPD	25.6	27.3	28.3	26.8	19.3	132.6%
Epilepsy	11.2	11.9	11.8	11.7	9.3	120.4%
Hypothyroidism	48.0	47.0	46.7	44.1	33.2	144.6%
Cancer	15.5	14.1	13.6	12.9	10.3	150.5%
Mental health illness	9.6	10.1	10.4	10.8	12.8	75.0%
Asthma	105.1	108.0	108.9	113.2	97.2	108.1%

COPD = chronic obstructive pulmonary disease. PCT = primary care trust. QOF = Quality and Outcomes Framework. TIA = transient ischaemic attack.

PCTs serve fewer patients, and have a lower burden in terms of weighted populations than GPs serving demographically younger populations. QOF data shows that they manage far more cases in every clinical category other than diabetes and mental health. This is a far more pronounced and consistent pattern than observed in terms of deprivation. Yet, there is very little in the literature on inverse care to suggest that inequality may be structured around age. Such a perspective is simply not part of the story that has developed over the past three or four decades.

### Deprivation or demography?

#### The defining characteristic of inverse care

Data presented so far have been at the PCT level to enable comparisons between QOF-based caseloads and weighted populations (the latter are only made available at PCT level). However, it is worth using a more fine-grained analysis to explore how the provision of GPs relative to caseload varies by deprivation and demography. To this end, practice-level QOF data for 2006–2007 were used and patient-weighted deprivation scored attached to those practice populations. With respect to the socioeconomic dimensions of inverse care, the picture is similar to that obtained on the basis of the PCT-level analysis. Provision of GPs for deprived and less deprived communities relative to case load again varies considerably, with the COPD and mental health burden on GPs being particularly high for practices serving deprived communities, and the cancer, chronic kidney disease, and dementia burden being relatively low (not tabulated). With respect to demography, a more consistent pattern is found: GPs serve demographically older populations having higher caseloads in all categories except diabetes and mental health.

What, however, is the defining characteristic of inverse care? In his final report, Lord Darzi again highlights the need to establish new GP practices in the areas of the country with the fewest primary healthcare clinicians and the greatest health needs and suggests that 'more often than not, these are our most deprived communities'.<sup>39</sup> Yet, Table 5 suggests that the real story of inverse care is not one of deprivation as such, but of an interaction between deprivation and demography.

When deprived populations are relatively young (which is more often the case than not; see Table 1), they appear to offer relatively good access with respect to GP caseloads. This reflects that fact that, with the exception of key conditions such as mental health and diabetes, such populations have comparatively low rates of the chronic and degenerative diseases associated with ageing. Thus, across a number of conditions, GPs working in practices that fall into both the youngest and most deprived quintiles have similarly low caseloads to those that serve the youngest and least deprived populations.

GPs serving demographically older populations — both affluent and disadvantaged — have higher caseloads of CVD, COPD, cancer, hypothyroidism, dementia, and chronic kidney disease than GPs working with young deprived populations. It is nevertheless the case that the worst problems arise where deprivation and demography reinforce one another. Of the 8301 practices for which there are data, 173 fall into both the most deprived and oldest quintiles. While these tend to cluster in the northern cities (only six are located in the London Strategic Health Authority), a number are to be found outside the metropolitan core in rural areas. Across all clinical domains except asthma, the disease burden which

**Table 5. GP list sizes and 'QOF cases per GP': interaction of demography and deprivation.**

	Practices by deprivation (IMD 2004) and demography (% patients ≥65 years)				Oldest most deprived as % of youngest least deprived
	Oldest and most deprived (n=173)	Oldest and least deprived (n=422)	Youngest and most deprived (n=558)	Youngest and least deprived (n=169)	
Patients per GP	1783	1684	2003	1935	92%
2006–07 practice-level QOF prevalence rates per GP					
Coronary heart disease	91.0	70.2	39.1	37.7	241%
Stroke and transient ischaemic attack	39.3	35.4	16.2	17.3	227%
Hypertension	283.6	250.9	163.2	164.5	172%
Diabetes	76.2	61.6	68.7	49.7	153%
COPD	37.2	22.6	18.5	15.7	237%
Hypothyroidism	57.9	52.7	25.6	38.3	151%
Cancer	20.8	21.3	9.6	12.4	167%
Mental health illness	12.3	10.1	18.8	10.2	121%
Asthma	105.5	99.8	95.3	107.2	98%
Dementia	8.9	9.0	3.9	4.3	209%
Chronic kidney disease	55.0	52.7	24.0	28.5	193%
Obesity	149.5	109.9	133.5	124.5	120%

COPD = chronic obstructive pulmonary disease. IMD = Index of Multiple Deprivation. PCT = primary care trust. QOF = Quality and Outcomes Framework.

falls upon on each GP is far higher than in those 169 practices which serve the least deprived and youngest populations. With respect to CVD, COPD, and dementia, the caseload per GP is more than 200% higher. There can be no doubt at all that these practices will struggle to meet the healthcare needs of the populations they serve and that additional resources should be directed at these areas. However, it should not be assumed that the 100 new GP practices proposed by the Darzi *NHS Next Stage Review* should be located in deprived areas alone.<sup>39</sup>

## CONCLUSION

The Darzi review on the future of the NHS has potentially far-reaching consequences for the provision and organisation of care in this country. While most commentaries have focused on Lord Darzi's proposals for a 'personalised NHS' (epitomised by the idea of the polyclinic) and, to a lesser extent, on the centralisation agenda (an 'effective NHS'), Darzi's proposals to promote greater equity (a 'fair NHS') have passed virtually without comment. Yet, they are based on an incomplete account of inequalities in access.

The conventional account of inverse care, whereby deprived populations have the poorest access to health services, may grab headlines. However, it does not serve in the interests of promoting greater healthcare equity. In terms of the burden of ill health that has to be managed by GPs, many deprived practices offer better access to care than practices serving affluent but ageing populations. This is hardly surprising. Deprived areas tend to have younger demographic profiles and, as such, lower rates of diseases associated with ageing.

Compared to the focus on socioeconomic deprivation, the possibility that inequality in access to primary care may be structured around age has received little attention. Yet, this paper suggests that demographically older populations — both affluent and disadvantaged — have relatively poor provision of GPs. This reflects the fact that the weighted-population approach gives greater effective weighting to the additional needs relating to deprivation than the needs associated with age, despite evidence from epidemiological estimates and QOF indicators that, for most conditions, demography is the major driver of the overall burden of morbidity and mortality.

It could be argued that the aim of the NHS is to not only ensure equal opportunity of access to health care for equal needs, but also to contribute to the reduction of avoidable inequalities in health. Indeed, the fact that the distribution of healthcare funding increasingly reflects the standardised rather than the crude health needs of populations suggests that the reduction of health inequalities has displaced healthcare equity as the core principle of the NHS. Whether or not this is

appropriate should be subject to open policy debate.

It is important to acknowledge that the unequal distribution of health reflects the unequal distribution of the social and economic factors that influence health.<sup>40</sup> As the UK continues to be characterised by historically high levels of inequality with respect to income and wealth, we need to be honest about what GPs can realistically do to narrow social differences in health outcomes. In the absence of social policies that narrow or better mitigate the effects of socioeconomic polarisation, it is possible that the targeting of additional primary care services to urban deprived populations over and above levels of underlying morbidity is an ineffective (and, insofar as it draws attention away from such structural realities, co-opting) response to health inequalities. Moreover, it is one that exacerbates healthcare inequity by underestimating the needs of older but less deprived populations.

## Competing interests

The authors have stated that there are none.

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## COMMENTARY

*What is the NHS for?*

Asthana and Gibson challenge 'the conventional wisdom of inverse care'.<sup>1</sup> Analysing primary care data from England, they show that the mismatch between need and resource, resulting in inequitable access to health care, applies as much to the health needs of older populations as deprived populations, and is especially the case in populations that are both older and deprived. This is an important and, in places, a contentious paper, raising issues that may help to clarify what is meant by inverse care and how it should be addressed.

Readers with long memories may be reminded of the Jarman deprivation score, which was pragmatically constructed to reflect what makes GPs busy, and thus included a measure of the numbers of older patients served. Concern about workload is also familiar to the GP negotiators of the British Medical Association whose traditional position has been that GPs should be similarly resourced and rewarded for being busy. However, there is more to the NHS than paying doctors, and keeping doctors busy is no guarantee of social justice.

Asthana and Gibson observe that while almost everyone seems familiar with the 'inverse care law', there is little precise understanding of what it is and how it should be addressed. Tudor Hart's original paper contained few data and was principally concerned with the effects of market forces.<sup>2</sup> More recent discussion has begun to tease out different definitions of access, according to structure, process, and outcome<sup>3</sup> and taking into account the increasing ability of health care to increase longevity.<sup>4</sup> By distinguishing 'public health and other preventive efforts' from 'curative care', Asthana and Gibson appear to undervalue what can be achieved by the NHS, reversing risks and preventing complications in large numbers of people, as first demonstrated by Julian Tudor Hart.<sup>5</sup>

The desk-based analyses presented in the paper are similar to many in the last decade, trying to rationalise the distribution of NHS resources according to need. However, a clear picture remains elusive. Not only are general practice populations not geographical, but their social heterogeneity, both within practices, and between practices within geographical areas, makes it difficult to focus on areas of the NHS where needs are greatest. Studies based on 100% of practices are also hampered by the limited availability of quality data. For example, although the Quality and Outcomes Framework (QOF) provides prevalence and activity data for almost every practice in the country, the prevalence data are not broken down by age and the clinical activity data cover only the most measurable aspects of primary care.

As Asthana and Gibson report, QOF data do allow some estimation of the multiple morbidity associated with ageing, in which individual patients tend to have several clinical diagnoses. Much less information is available to desk epidemiologists on the multiple morbidity typically associated with deprivation, which is made up of the number, severity, and complexity of health and social problems within families.

In the absence of epidemiological measures of need, NHS resource distribution formulae have sometimes used measures of activity as a proxy for need, which works well for reactive aspects of care (for example, routine consultations, out-of-hours care, and emergency hospital admissions) where needs are largely expressed as demands, but much less well for non-acute aspects of care (such as preventive care and access to specialist services) where unmet need simply results in a data void. Unfortunately, these are the aspects of care whereby the NHS is most effective in improving health.

Unmet need is a real phenomenon in frontline primary care. In a recent study of over 3000 general practice consultations,<sup>6</sup> Mercer showed that consultations are shorter in deprived areas than in affluent areas, that patients with comorbidity, including a mental health problems, are less likely to have a long consultation, and that they are less likely to report being satisfied or enabled as a result of the consultation. GPs in deprived areas also report being under greater stress.<sup>6</sup> For frontline staff, it is not a question of conforming to a 'widely held' view that practices in deprived areas are under-resourced relative to need. The time constraints, and their cultural sequelae are all too real.<sup>7</sup>

Asthana and Gibson observe that the social gradients associated with deprivation are steeper using data collected externally from general practice, such as mortality and hospital admissions, than they are using clinical data collected from within general practice. Part of the explanation may be the inability of practices in deprived areas, as a result of the historical distribution of GPs and their staff, to generate evidence of need, via activity.

Another explanation, which is the crux of Asthana and Gibson's paper, is the extent to which these relationships are obscured by the more widespread and dominant effect on morbidity and workload of age.<sup>1</sup> For example, although premature cardiovascular disease (CVD) is steeply socially patterned, the effects of recent trends in incidence and survival, for which the NHS can claim some credit,<sup>8,9</sup> have been to increase the prevalence of older people with angina and heart failure. Although CVD keeps all primary care teams busy, age profiles and case-mixes are socially patterned.

The evidence and arguments that the NHS can improve population health via the delivery of effective interventions, and widen health inequalities via the inequitable delivery of these interventions, is based chiefly on measures that reduce the severity and slow the progression of established conditions and risks.<sup>10</sup> As a strategy it must be targeted at older populations. Asthana and Gibson show that as the population profiles in many deprived areas are relatively young, strategies that target deprivation per se may take a very long time to improve health and narrow inequalities.

Whether general practices serving older people in deprived areas can rise to the challenge depends on much more than a simple injection of resources. Just as hyperalimantation is not a treatment for chronic under-nutrition, the re-invigoration of general practice in deprived areas cannot happen overnight. Nevertheless, insofar as this approach to health improvement depends on contact, continuity, coordination, flexibility and, above all, productive relationships,<sup>11</sup> general practice is surely the only policy option.

If the NHS determines to narrow differences in life expectancy, as it is now able to do via the more equitable delivery of effective interventions,<sup>12</sup> it is axiomatic that this will involve discrimination between those with and without longevity. In the same way that it is more expensive and difficult for epidemiologists to obtain high response rates for studies in deprived areas, population



approaches to clinical care are likely to be more expensive in deprived areas.<sup>3</sup> Whether society is prepared to pay for this will depend, among other things, on its tolerance of large differences in life expectancy.

The main value of Asthana and Gibson's paper is that it highlights the contrast and potential conflict between two overlapping but different interpretations of the inverse care law, in which 'good medical care' is defined either as access based on need, favouring older people, or the equitable and successful delivery of effective interventions that improve health and longevity. Ultimately, this is a political rather than a statistical issue, but statistics can help politicians address the question 'What is the NHS for?'

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