General practitioner deprivation payments in Northern Ireland: is the current system equitable?

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SUMMARY

The allocation of General practitioners deprivation payments has been a contentious issue since it was first proposed. This paper examines the method of allocation of such payments in Northern Ireland. A more equitable system would be based on enumeration districts, have a lower Jarman score and a closer relationship between Jarman score and remuneration. Unlike other parts of the UK these changes are now possible in Northern Ireland and should be implemented.

INTRODUCTION

The 1990 Contract for general practitioners makes allowance for a deprivation payment to be made to practices. Under this arrangement practices receive additional funds for patients who live in deprived areas that are thought to generate additional workload. These areas are defined by the Jarman Under Privileged Area score (Jarman score), which is a weighted composite of eight variables derived from the 1991 census. Although the Jarman score is described as a measure of deprivation, it originates from a 1983 survey in which General practitioners identified and weighted the characteristics of those patients they thought might generate additional workload for their practices.

Originally the debate surrounding General practitioners deprivation payments centered on the validity of the Jarman score as an indicator of General practitioners workload. More recently attention has shifted to the process of the application of deprivation payments. A recent British Medical Journal editorial indicated that equity remains a problem in GB and it was suggested that this could be ameliorated if the allocation was made at a smaller geographical level and with finer gradients of payment bands, which started at a lower entry point.

At present there are three General practitioners deprivation payments bands identified in Northern Ireland. Patients who live in an electoral ward with a Jarman score of 27.5 or more can attract an additional payment of £6.20 (in 1997). Those in wards with a Jarman score of 37.5 or more attract £8.05 and those in wards with a Jarman score of 47.5 or more attract £10.20 (Table I). Northern Ireland has slightly lower entry points to each of the three payment bands than in other parts of the UK. These were introduced because it was thought that the minor differences in the wording of ethnic minority question in the Northern Ireland census would have resulted in lower Jarman scores. Patients are allocated to electoral wards according to the postcode of their address, which is held at the Central Services Agency patient registry.

| Table I |
|------------------|------------------|------------------|------------------|
| GP Deprivation Payments: Present allocation system | Electoral Wards (No.) | Population 1991 census | Jarman Score (N.Ireland) | Jarman Score (G.B.) |
|------------------|------------------|------------------|------------------|------------------|
| High             | 10               | 44631            | >47.5            | >50              |
| Medium           | 20               | 74504            | >37.5            | >40              |
| Low              | 38               | 103548           | >27.5            | >30              |
| None             | 498              | 1355153          | <27.5            | <30              |

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This paper will address the question as to whether the allocation of GP deprivation payments in Northern Ireland is equitable. To answer this, three subsidiary questions will be addressed: Is electoral ward the most appropriate level for determination of Jarman score and allocating GP deprivation payments? Is the current system, based on three payment bands, too coarse to relate payment to need? Are the inequities in the present system compounded by list and address inflation?

**METHODOLOGY**

A Jarman score was computed for each of the 566 electoral wards and 3729 enumeration districts in Northern Ireland. (Enumeration district and electoral ward are coterminous, there being on average 6 or 7 enumeration districts within each electoral ward). Each set of electoral wards or enumeration districts was grouped into high, medium or low bands as previously described, with one minor modification for enumeration districts. So as to maintain approximately the same proportion of the population in each band and therefore approximately the same division of deprivation payments allocated to each, slightly different cutoffs had to be used to define the payment bands. These were high (>55.70), middle (>42.92) and low (>32.50). This enabled the visualization of not only the variations in Jarman scores that exist at enumeration district level but also the approximate banding and funding consequences of these variations.

List and address inflation are terms used to indicate the inaccuracies associated with some General Practitioner lists. List inflation occurs when a General practitioners list contains people who have died or left the practice, or perhaps the country. This was calculated by comparing the total patient population registered with the Central Services Agency in 1991 with the population enumerated at the 1991 census. Address inflation occurs when patients change address but there is a delay in updating the information held at the Central Services Agency. This can produce differences between the Census and CSA estimates of population at small geographical areas, as the CSA records patients as living in areas they have moved away from. Usually list and address inflation occur together and the relative effects cannot be separated.

The census and registered population counts were aggregated according to the deprivation band to which they were ascribed and the effect of General practitioners deprivation payments allocations determined.

**RESULTS**

**Geographical unit**

Electoral wards are not homogeneous with regard to deprivation. There is nearly as much variation within electoral wards as there is between wards. Fig 1 shows the range of Jarman scores for each enumeration district within the most deprived electoral wards in each of the four payment bands. St. Anne’s electoral ward in Belfast is the most deprived in Northern Ireland (according to the Jarman score) and comprises 10 enumeration districts, most of which are also deprived. One enumeration district however (enumeration district 074001), with a Jarman score of –39.33 is very affluent. Thus under the present ward based system GPs will receive an additional £10.75 for every patient within this ward even those in the very affluent enumeration district. It should also be noted that even amongst the majority of deprived enumeration districts within this ward there is still a variation in Jarman scores in excess of 21 points.

Again all these areas and patients will be treated equally despite a significant variation in general practitioner workload. Examination of other wards at the top of the medium and low bands shows a similar picture. The enumeration districts which comprise the Mount ward in Belfast, which attracts ‘medium’ deprivation payments, span the entire range of deprivation bands with a range of Jarman scores of 47 points. The Woodvale ward in Belfast, which is the highest scoring ward within the present low payment band exhibits a range of Jarman scores of 55. Under the current three band system six enumeration districts within this ward attract too much payment whilst three do not receive sufficient. Ballylee ward in Ballymena District council, with an overall Jarman score of

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27.49 just fails to be included within the present payment bands. Under an enumeration-based deprivation system two of the five enumeration districts would attract payment at the 'low' banding level.

Width of Payment Bands

Electoral wards in Northern Ireland have a range of Jarman score from −35.61 to +61.68. The lowest payment band commences at a Jarman score of 27.5 and there are only three bands between this and the highest scoring ward. Figure 2 shows this graphically and highlights those electoral wards at the cusp of the payment bands. A significant range of Jarman scores is evident within each of the three payment bands. The overall average span for the three bands is 10 points, though the greatest range (12.12 points) is between St. Anne’s and Duncairn wards in Belfast within the high band. Thus patients within St. Anne’s ward with a Jarman score of 61.68 will attract the same per capita payment as those in Duncairn which has a Jarman score which is considerably less, though still in the high payment band. Under the present system, electoral wards with a Jarman score under 27.50 fail to attract any deprivation payments. Therefore patients in Ballee ward in Ballymena (Jarman score 27.49) are treated the same as those in Ballyloughan ward which is also in Ballymena (Jarman score −35.61). This would appear to be inherently unfair.

Table II shows the six wards that fall either side of the three cutoff points on the Jarman scale which define entry to the high, medium and low payment bands. The mean difference in Jarman score that separates those wards which just fail to get into the next highest payment band is 1.3 points. This is a very small difference, but because it separates wards into different payment bands, has a disproportionate impact on the money each ward attracts. This is compounded by the rather large increments in money between bands. For example, there is a difference of £2.55 per patient between the high and middle payment bands. Only 2.71 points separate The Mount and Duncairn electoral wards but every patient in latter attracts £2.55 more than those in the former. If The Mount attracted the same per capita funding as Duncairn it would receive an additional £14,305. However the sharp division between similarly scoring wards is best illustrated by those wards which straddle the division between low and No Payment groups. The difference between the Jarman score of Court electoral ward in Craigavon and Ballee in Ballymena is only 0.23, and yet every patient in Court attracts an additional £6.20, whilst those in Ballee attract none.

| Deprivation Payment Group | Population count (1991) | Inflation (in 1991) |
|---------------------------|-------------------------|---------------------|
| HIGH                      | 44631                   | 12066               |
| MEDIUM                    | 74504                   | 14835               |
| LOW                       | 103548                  | 19676               |
| NONE                      | 1355153                 | 53130               |

NOTE:
Enumerated = 1991 Census Counts
Registered = 1991 Central Services Registered Patient Population

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List and Address Inflation

The comparison of the two population estimates showed that there were 105,883 more persons registered on General practitioners lists in Northern Ireland in 1991 than enumerated in the census, an overall list inflation of 6.7%. The two main cities of Belfast and Derry show the greatest address inflation. When address inflation is calculated at electoral ward level and aggregated up according to present deprivation band (Table III), a marked gradient is evident. On average, inflation is least for those wards which do not attract any deprivation payments (3.9%) and greatest for wards in the high payment band (27.3%).

DISCUSSION

This paper has clearly demonstrated that the crudity of the current arrangements for allocating General practitioners deprivation payments within Northern Ireland. The geographical level at which the allocation is determined is too coarse. Electoral wards are not homogeneous entities with regard to deprivation (as defined by the Jarman score). There are affluent areas within even the most deprived wards that currently attract deprivation payments and deprived areas within non-deprived electoral wards that do not. Using enumeration districts as the basis for allocating GP deprivation payments would be more equitable as they are more sensitive to local variations in need.

This was supported by a series of letters early last year, in the BMJ, including one from Jarman himself.7 Majeed8 agreed that the validity of the current system could be improved if enumeration districts were used rather than an electoral ward as the unit of allocation, but noted the limitations of census data at this level. Jarman suggested that the calculation and applying of deprivation scores at enumeration district level could cause problems in England as only 10% of occupations there had been coded in the 1991 census.7 This would not be an obstacle in Northern Ireland where 100% of the information captured in the 1991 census was coded and entered.9

There are also additional reasons for wishing to use enumeration districts as the basis of allocation. If enumeration districts rather than electoral wards had been used to calculate Jarman scores the changes in deprivation payments to practices, which occur every 10 years with the new census values, would not be as precipitous or unpredictable.10 It has been reported that one practice had suffered a 15% shift in income after changes in electoral ward boundaries.11 This would have been obviated if enumeration districts rather than wards had been used. However, this may not be immediately possible in England due to incomplete coding of census forms. It has also been suggested that while an enumeration district based system would be more equitable, caution would be required when interpreting census data at this level. Other authors have indicated that problems might include under- enumeration and the undercounting of homeless patients and have suggested that it may therefore be necessary to retain some local discretion.12

The current process recognises three payment bands, with cut-off at about 10 Jarman points apart. It can be shown that this is too crude a relationship between need, defined by Jarman score, and remuneration. The difference in the amount of funding received by areas that straddle the various cut-offs between bands is too severe and disproportionate to the small differences in Jarman score between these wards. Again, the width of the current banding system does not recognise the differences that exist within payment bands. A more equitable system would reduce the difference between those just in and those just outside the payment bands, and would produce a finer grading within the relationship between Jarman score and remuneration. A lower entry point on the Jarman scale and more payment bands would meet these objectives.

If it were assumed that the changes advocated above would produce a more equitable distribution, then such a system, if implemented, would result in a redistribution of General practitioners deprivation payments away from those areas that currently attract the largest allocation towards those that currently attract little or none. Thus those areas which do well under the current system are on average receiving more than their equitable allocation of the General practitioners deprivation payments. The positive correlation between Jarman score and list and address inflation means that the effects of the latter are to significantly compound the inequities in the present General practitioners deprivation payment system.

This paper highlights the inequities in the present allocation of General practitioners deprivation payments in Northern Ireland and makes suggestions as to how it could be improved.

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Whether the Jarman score is the best method of rewarding General practitioners for the additional work associated with deprivation has not be considered here, though it remains a concern in the medical literature. In one recent study deprivation payments met only half the extra workload cost for patients living in wards qualifying for deprivation payments. Given the debate surrounding the suitability of the Jarman score as a measure of primary care workload, there is clearly a need for definitive research into the association between General practitioners workload and the demographic and social characteristics of practice.

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