A Fair Share for Cornwall?
A Comparative Review of NHS Funding for Cornwall and Other Rural Areas

John Bastin BSc
Simon Bennett BSc
Alex Watt MSc
Dr Jenny Morris PhD
Dr Leo Salter PhD

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Cornwall Health Research Unit
Penhaligon Building
Trevenson Lane
Pool
Cornwall
TR15 3RG

E-mail: chru@plymouth.ac.uk
Web site: www.plymouth.ac.uk/chru
Phone: 01209 616918
Fax: 01209 616900

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Executive Summary

- The purpose of this study was to examine the systems for allocating NHS funding in the UK in relation to how Cornwall was treated in comparison with other rural areas.

- NHS funding for Primary Care Trusts (PCTs) in England (including Cornwall) is allocated by a 'weighted capitation formula', accounting for population size, age, need, market forces (i.e. the local cost of providing care) and a number of other, minor factors.

- West of Cornwall PCT received greater than the average funding for PCTs in England in 2003/04 (£961.42 per capita), and Central Cornwall (£885.31) and North and East Cornwall (£876.11) somewhat less. The overall average for Cornwall was £905.23. West Cumbria received £945.45 and North Norfolk £910.70. The average for England was £908.56, for Scotland £1056.07 and Wales £864.10.

- Scotland received a greater amount of funding per capita than England or Wales. This was largely due to the operation of the Barnett formula. If England received the same per capita funding as other countries in the UK, NHS budgets in Cornwall would have increased by approximately £5 million per annum.

- Scotland and Wales operate funding formulae distinct from England. Both formulae, in contrast to England, include a specific allowance for rurality. It is recommended that, as in Scotland, Wales and Northern Ireland, a specific measure of rurality be used in the allocation process.

- 'Need' is a major component in the allocation formula. Of the three Cornwall PCTs, only West of Cornwall (1.07) registers a perceived level of 'need' greater than the average for England (1.00).

- As measured by the formula, Cornwall has significantly less health needs than the other Objective One areas in England - Merseyside and South Yorkshire.

- None of the parameters in the formula (apart from a minor adjustment for emergency ambulance cover) include explicit indicators of rurality (e.g. sparse population, quality of public transport, access to services).

- The NHS in Cornwall incurs additional expense over and above that allowed for by the formula, due to its rural nature and geographic position. Such costs include patient transport, the clinical requirements of satellite hospitals and the operation of maintenance contracts. Rurality and sparsity also make delivery of response targets and staff availability difficult and more costly.

- There is particular pressure on the healthcare infrastructure in Cornwall in the summer holiday season due to the substantial temporary increase in population. This is reflected in cashflow deficits and additional cost demands such as staff overtime. The pressure on the infrastructure leads to the stretching of the capacity of the healthcare system, such as hospital elective procedures being postponed in busy periods.

- It is concluded that the there are a number of components within the allocation formula that work against Cornwall because of its rural nature. Factors that have been highlighted for particular attention include the market forces factor, which reduced the Cornwall budget in 2003-04 by £43.6 million, or 9.6% of total allocation, and the Government's definition of 'need'. The latter may be inappropriate, particularly in respect of the omission of specific measures of rurality.

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1. Rationale and Aims of Project

The Trustees of the Cornwall Education and Research Trust (CERT) identified an issue of potential underfunding of public expenditure in Cornwall relating to its rural circumstances. Under the auspices of the Bob Nichol Memorial Scholarship, CERT funded a research project to evaluate the Central Government per capita annual spend in Cornwall in a chosen area of the public sector. An integral part of the project was a comparison of this spend to parallel amounts provided to similar rural areas elsewhere in the UK. The Cornwall Health Research Unit (CHRU) chose the area of health expenditure and submitted a research proposal which set out the following aims:

1. To calculate the per capita annual health spend in Cornwall using available data.
2. To identify comparable rural areas in the United Kingdom and to conduct similar calculations for these areas.
3. To compare the results from 1 and 2 above and investigate the reasons for any significant differences, including an analysis of the formulae by which allocations to Primary Care Trusts (PCTs) are calculated. In this analysis there was particular emphasis on factors that have an impact on rural areas, e.g. social deprivation, age demographic, numbers and distribution of GP surgeries in relation to population and ease of access to healthcare locations.
4. To make recommendations based on the results from 1 to 3 above.
5. To disseminate the project's findings and recommendations to interested parties – PCTs, health professionals, patient groups, policy-makers etc.

1.1 Methodology

In general terms the project involved a quantitative study based on secondary analysis of available data, and a qualitative description of the views of those directly involved with resource allocation budgeting at the local level.

Much of the statistical data was drawn from the resource allocation section of the Department of Health (DoH) website - http://www.doh.gov.uk/allocations/index.htm This site contains detailed explanations of the parameters and formulae used to calculate allocations to English PCTs, and full details of the allocations to each PCT

for the period 2003/04 – 2006/07. Anticipated population trends over the funding period are also described on the web site.

1.2 Methods

1. A literature search to identify similar work undertaken elsewhere in the UK, particularly work which examined the nature of health spending in rural locations. The history of the development of resource allocation techniques in the NHS was also examined to explore whether patterns of health expenditure (particularly in rural areas) had changed over time.

2. Analysis of the statistical information made available by the DoH for a sample of PCTs in England, using Microsoft Excel. The analysis highlighted the ways in which different rural areas were affected by the operation of the formula.

3. Close examination of the formulae used to calculate the allocations to PCTs in England, and of the formulae used for the different allocation systems in Scotland, Wales and Northern Ireland.

4. Identification of comparable rural areas using population and socio-economic data available from the Office of National Statistics, the Campaign to Protect Rural England and other appropriate sources.

5. Semi-structured interviews with the Directors of Finance at the three PCTs in Cornwall and the Head of Finance at the Royal Cornwall Hospitals Trust (RCHT). The Cornwall Partnership Trust were contacted but felt that "…*relevant information on Mental Health funding and allocation issues fell more readily to the Commissioning Trusts"* (Personal communication).

2. Structure of the Report

Section 3 of the report contains a review of allocation procedures in the NHS since its inception in 1948, with particular reference to the way in which unmet need and the requirements of rural areas have been addressed. This is followed in Section 4 by an initial assessment of expenditure by a basic comparison of spend per capita in selected rural areas in the UK.

The resource allocation formula as it is applied to PCTs in England is explained in detail in Section 5, using examples from the rural Trusts selected for comparison. Various factors are introduced to the basic assessment to refine the level of population that determines the final allocation.

Section 6 examines the resource allocation formulae used by the devolved governments of Scotland, Wales and Northern Ireland, and illustrates the ways in which these differ from the version used in England. Section 7 looks at the published criticism made of the English formula by other authors, and looks particularly at the elements which determine 'need' in the calculation of the allocations, and discusses how appropriate these are in rural areas such as Cornwall.

Section 8 tackles a number of issues relating to health expenditure that have been raised in the course of this research. Reference is made to recent debates in Parliament as well as the question of financial liabilities inherited by the Cornwall PCTs from the previous Health Authority structure.

The report ends with some conclusions concerning the funding of healthcare in Cornwall, and carries recommendations for possible action and/or further study.

3. History of Resource Allocation Methods in the National Health Service

Ever since the National Health Service (NHS) was established in the UK in 1948, a fair and equitable method of making funding allocations to local health administrations has been sought. To put the present system into historical context, this report begins with a brief examination of resource allocation in the NHS from

1948 to the present day. Much of the information has been gathered from the relevant sections of the Department of Health (DoH) website (DoH, 2003a).

Although a policy of equal access to care was a guiding principle of the NHS at its inception in 1948, no principles of resource allocation were made explicit at that time. For instance, the hospital network inherited by the NHS was characterised by large geographical discrepancies in the distribution of beds. In the early days there were no guiding principles based on need which targeted funding to support their ongoing requirements and future growth.

However, in the 1960s a capital investment programme was planned to address regional inequalities, and interest in resource allocation was given impetus by the then Labour Health Minister (Richard Crossman), who publicly recognised these inequalities (Mays and Bevan, 1987). Thus in 1970 a Government Green Paper on reorganisation in the NHS (DHSS, 1970) led to the development of the 'Crossman Formula', a major step forward in the development of resource allocation.

The Crossman formula was a ten-year plan designed primarily to correct regional inequities in bed availability and was based on population levels duly weighted for age and sex groups. It hence accounted crudely for relative costs of treatment. However the formula itself was somewhat rudimentary and no morbidity levels or socio-economic factors were built in. Recognising the need for further refinement of the allocation procedure, and following major NHS reorganisation, including the introduction of Area Health Authorities, the Resource Allocation Working Party (RAWP) was set up by the Department of Health and Social Security in 1976 to respond to this.

The most immediate difference that distinguished RAWP from previous methods of resource allocation was the emphasis on 'need' as a driver, although it is true to say that the methods most appropriate for defining 'need' were the subject of intense debate. RAWP chose Standardised Mortality Rates (SMRs) as an indicator of regional need, and in recognition of regional variations in the cost of providing equivalent levels of healthcare a Market Forces Factor was also introduced. The revised system was based on the principle of a weighted capitation formula, and this

remains the basis on which allocations are determined. The principle of weighted capitation is one by which components of healthcare are weighted in accordance with their importance, and adjusted further to take account of age, need, and supply factors (DoH, 2003b).

Although the principle of a weighted capitation formula was widely accepted, concern remained as to whether SMRs were the most appropriate proxies for morbidity and/or utilisation of services, and whether the impact of socio-economic deprivation was properly reflected in resource allocation calculations (Mays and Bevan, 1987). In response to these concerns, Ministers announced a review of the fine-tuning of RAWP in 1985 (Mays, 1995). Changes were also made so that determinants of morbidity and deprivation were based more on empirical data and less on informed judgement.

In 1993 a further review was announced by Ministers in the light of data available from the 1991 Census and further concerns about the fairness of the formula (e.g. Mays 1989). A team at the University of York led by Roy Carr-Hill was contracted to analyse the data at small area level (Carr-Hill *et al*., 1994). A model for the measurement of 'additional need' was developed, based on variables which best assessed past utilisation of health services, adjusted for supply factors. Two further developments were the separate consideration of demand for acute and psychiatric services, and (of particular relevance to this report) the first recognition of a distinction between the needs of urban and rural areas, in particular the issue of ease of access to health services. The extent to which rural factors are taken into account in the application of the current formula is discussed later in this report.

At the time of the Carr-Hill review, the revision of the formula applied to financial allocations to Regional Health Authorities. However, a two-stage major restructuring of the NHS has since taken place – a new Health Authority structure in 1996-97 and the establishment by 2002 of Primary Care Trusts (PCTs) to manage local health services. The current resource allocation round covers a period of three years from 2003-04. The three PCTs in Cornwall (West, Central, North & East) are subject to the allocation procedure which governs all 310 PCTs in England. Since devolution, and the establishment of separate administrations in Scotland, Wales and Northern

Ireland, each of these regions now has its own system of expenditure allocation. These systems will be examined later in this report.

The next section examines the current formula for resource allocation in England and considers the guiding principles on which it is based. The workings of the system are illustrated by examples from the formula as it is currently applied and will begin to show how the Cornwall PCTs are treated in relation to other areas.

4. Health Funding Per Capita in the UK

With the original research question in mind, and using the information made available by the DoH and the devolved administrations in Scotland, Wales and Northern Ireland, it is possible to make direct comparisons between PCTs (and their equivalent bodies) in terms of funding allocations per head of population. It should be borne in mind that the populations quoted here are defined as 'crude' populations, unadjusted for any other factors. This exercise provides a simple snapshot of the disparities evident between different areas, and acts as a basis for the following discussion of the various formulae.

Table 1 shows the populations (drawn from Census data and GP registration records) and allocations for the three Cornwall PCTs and six other rural English PCTs. To extend the comparison across the UK, two rural areas from each of Scotland and Wales (subject to separate resource allocation procedures) are included. The selection of the areas is based on analysis of the geographical and socio-economic make-up of different areas of the UK, and suggestions made by Finance Directors from local (Cornwall) PCTs. The list is designed to represent a wide spectrum of rurality, which includes rural areas particularly characterised by isolation as well as those close to urban centres with good communication links. It includes for each area an indication of the proportion of the population living in rural locations.

Table 1: NHS Funding Per Capita for Selected Rural Areas in the UK 2003/04

(Excludes General Medical Services Non-cash Medical Expenditure)

Trust/region	Population	Rural population %[1] (1991 Census)	Funding 2003/04 (£000s)	Per capita (£)
England				
West of Cornwall	150,014		144,227	961.42
Central Cornwall	194,477		172,173	885.31
North and East Cornwall	156,457		137,074	876.11
Cornwall Total	***500,948***	***36.1***	***453,474***	***905.23***
West Cumbria	129,882	29.1	122.798	945.45
North Norfolk	97,892	29.7	89,151	910.70
South Hams and West Devon	100,788	22.1	90,085	893.80
North Lincolnshire	151,863	30.2	135,109	889.96
South Worcestershire	273,223	26.2	216,861	793.71
Somerset Coast	138,438	31.4	116,393	840.75
England Total	***49,558,800***	***9.9***	***45,027,181***	***908.56***
England excl. London	***42,353,737***	***11.4***	***37,479,007***	***884.90***
Scotland				
Dumfries and Galloway	147,780	34.8	159,712	1080.74
Highland	208,920	35.7	225,107	1077.48
Scotland Total	***5,054,800***	***11.1***	***5,338,200***	***1056.07***
Wales				
Ceredigion	74,941	43.1	69,722	930.36
Gwynedd	116,843	41.1	119,468	1022.47
Wales Total	***2,918,700***	***18.9***	***2,522,061***	***864.10***
England, Scotland & Wales Total	***57,532,300***	***10.4***	***52,887,442***	***919.26***

Sources: DoH (2003b) Resource Allocation: Weighted Capitation Formula
Scottish Executive (2003) Annual Expenditure Report of the Scottish Executive
Welsh Assembly (2003) 2003/04 Local Health Board Revenue Allocations – Unified Budget Allocations
Denham C & White I (1998) Differences in urban and rural Britain. Population Trends 91: 23-34

[1] The percentage of population resident in rural areas is only available by county, not PCT area. The figures for English PCTs therefore relate to the county in which the PCT belongs. No equivalent figures are yet available from the 2001 Census.

Notes:

i. *The amounts allocated to PCTs do not represent the totality of NHS funding in England. The Department of Health holds a budget described as 'centrally funded initiatives and services and special allocations (CFISSA). In 2003-04 this portion of the budget was set at £8645 million, representing 16.1% of the total NHS budget for England (DoH, 2002). Examples of the way in which CFISSA was utilised in 2002-03 include the costs involved in running NHS Direct, a fund for litigation claims and the costs of one-off events such as the Shipman public inquiry. Funds are also set aside for immediate health needs such as a flu epidemic, or for dealing with specific waiting lists (DoH 2003e).*

ii. *The annual allocations to English PCTs for 2003-04 are not solely based on the application of the formula described later in this report. The amount determined by the formula (described as a 'target') is compared to a 'baseline' figure (the previous year's allocation). An adjustment is then made to bring the individual PCT incrementally closer to its target. Although some PCTs (e.g. Easington in County Durham) remain well short of their 'target' level of funding, the rural PCTs selected in this report, including those in Cornwall, are not significantly affected.*

iii. *Because the four countries of the UK employ different methods of resource allocation for health budgets, different elements may be included in or excluded from the calculations which determine them. It is therefore difficult to make a direct like-for-like comparison in each case. In Northern Ireland, for example, Health and Social Services are governed under one budget, and therefore no meaningful comparisons can be made with budgets concerned only with healthcare. The methods used for resource allocation in Northern Ireland are discussed later in this report.*

From Table 1 it is apparent that the per capita figure for Scotland is significantly larger than elsewhere in the UK. This is a consequence of the Barnett formula (House of Commons, 1998), created by Labour minister Joel (now Lord) Barnett in the late 1970s to allocate increases in public expenditure to the home nations on the basis of their population. It applies to all areas of Government expenditure, not only health. A modern consequence of the Barnett formula has been higher per capita funding for Scotland, and this has been the subject of much political debate. It is interesting that Lord Barnett himself was recently reported as being embarrassed over his creation, calling for it to be scrapped (Daily Telegraph, 12 January 2004). It has also been argued that the Barnett formula favours Wales (Adams, 2002), although this is not apparent from the information in Table 1.

The information presented in Table 1 may, on first viewing, misrepresent the degree to which the Barnett Formula penalises PCTs in England. This can be illustrated by a simple example. Assume that the Government decides to adjust the formula so that the overall per capita spend in England, Scotland and Wales is evened out, but the separate allocation formulae remain in place. As shown in the bottom line of Table 1, the combined population for England, Scotland and Wales is 57,532,300, with combined NHS funding of £52,887,442 million. The overall per capita for the three

nations combined is therefore £919.26. An average English PCT would therefore receive £10.70 per capita additional funding (£919.26 – £908.56) than it did prior to the hypothetical adjustment. If Cornwall as a whole continued to receive 99.6% of the new per capita rate (£905.23/£908.56) the combined funding for the 3 PCTs would increase to £458,659 (£919.26 x 99.6% x 500,948), an increase of 1.1%, or £5.2 million on the current budget. If this increase is broken down into the three Cornwall PCTs, each benefits in this example by approximately £1.7 million.

Considering the effect of the English formula alone, cursory examination of Table 1 shows that if Cornwall as a whole received the same allowance per capita as West Cumbria, the combined health budget for its three PCTs would increase by a figure exceeding £20 million, or 4.4%, in the financial year 2003-04. For the reasons outlined above, comparison with Scotland is even more stark. Cornwall's health budget would increase by over £75 million per annum if it received the same allowance per capita as Scotland.

5. Current Resource Allocation Procedures in England

The following is a summary of the current allocation procedures as set out in the booklet 'Resource Allocation: Weighted Capitation Formula' (DoH, 2003b) which is made available by the DoH to clarify the allocation calculations for PCTs for the three financial years from 2003/04.

In order to cater for all the many factors that govern the provision of a fair and equitable health service in a population of some 49 million people, the formula devised to allocate resources to PCTs in England is inevitably complex and involves a myriad of different factors that refine the final amount allocated in each case. For the purpose of explanation, therefore, it is necessary to simplify the formula in order to establish the most important factors that are applied to each area. For example, the number of people sleeping rough (and thereby not included in conventional population estimates) or the additional resources required for non-English speaking clients of the NHS, whilst intrinsically important, have only a minor impact on the overall allocations.

The overall allocations to PCTs (known as the unified allocation), reflect four separate components of health care which are shown in Table 2 below. Listed alongside each component is a weighting which reflects the proportion of expenditure for each component, based on accounting information from 2000/01.

Table 2: Unified Weights Allocated to NHS Expenditure in England

Component	Weighting (%)
Hospital and community health services (HCHS)	82.76
Prescribing (the drugs bill)	14.07
General Practice Infrastructure (GMSCL)	2.50
HIV/AIDS	0.67
Total	**100.00**

Source: DoH (2003b) Resource Allocation: Weighted Capitation Formula

A fifth component, a separate funding stream of general medical services non-cash limited expenditure (GMSNCL) is not subject to weighting, but is added to the final allocations to PCTs. It is not linked directly to the allocation formula, but has a percentage equivalence of around 7-8%.

For each of the four components shown in Table 2, the basic or 'crude' population, a headcount established from census data and GP registration records, is adjusted by factors relating to age, need, and market forces (which reflect regional variations in the cost of services). These factors are considered separately. For the sake of brevity and simplicity, the explanations and examples given below relate to the HCHS component of the formula, which, because it represents 82.76% of the overall spend, dominates the final allocation. As well as the factors such as age, need, etc. mentioned above, the HCHS component also makes a small adjustment for any variations in the cost of providing emergency ambulance call-outs (EACA). Although this adjustment does not alter the HCHS component by a significant degree, it is discussed below because of its relevance to rural communities.

5.1 Age

In the HCHS component an age weighting is assigned, based on the demand on health services appropriate to each age group. The weightings in Table 3 are the averages for the years 1998-2001 and were used without change for the current (2003/04) allocations. Not unexpectedly, it is seen that demand is highest in the oldest age bands, where the estimated cost of healthcare for those aged 85 or older (2357.64) is almost 4 times greater than the average per capita spend (600.07).

Table 3: HCHS Component - Average 1998/2001 Age/Cost weights

Age band	0-4	5-15	16-44	45-64	65-74	75-84	85+	Spend per capita
Weighting (£)	591.43	225.02	444.87	531.76	966.18	1583.87	2357.64	600.07
Proportion to average per capita spend	0.99	0.37	0.74	0.89	1.61	2.64	3.93	1.00

Source: DoH (2003b) Resource Allocation: Weighted Capitation Formula

Clearly this weighting has particular relevance for Cornwall, where the percentage of the population in the higher age groups is significantly higher than the average. Twenty-three per cent (22.7%) of the population of Cornwall was recorded as being of pensionable age in the 2001 Census, compared to 18.4% in the UK as a whole (ONS, 2003). Using these weightings the crude population figure in an area is increased or decreased by a factor described as an 'age index'. The population figure is artificially increased where there is a greater proportion in the more costly age bands, and vice versa. The data in Table 4 illustrate the overall age factor for the three Cornish PCTs based on the cost weightings in Table 3. For the purposes of comparison, age factors are quoted for other selected rural Trusts:

Table 4: HCHS Age Index 2003/04 for Selected Primary Care Trusts

Trust	Age index
West of Cornwall	1.07
Central Cornwall	1.08
North and East Cornwall	1.07
West Cumbria	1.01
North Norfolk	1.17
South Hams and West Devon	1.10
North Lincolnshire	1.01
South Worcestershire	1.03
Somerset Coast	1.09

Source: DoH (2003c) NHS Revenue Resource Allocation 2003-04 to 2005-06 Exposition Books

Because of the higher average age of its population, therefore, West of Cornwall PCT would receive 7% more funding than a PCT with exactly the same population, but with age groupings which were equal to those of the national average. Probably due to the popularity of rural areas as retirement destinations, most rural PCTs have an age weighting factor above the average. The lowest age indices are to be found in inner-city areas, examples being Bradford City (0.88) and the London Borough of Tower Hamlets (0.88) (DoH, 2003c).

5.2 Need

The 'need index' operates in a similar way to the 'age index'. The 'need index' adjusts the allocation by varying the nominal population figure based on a variety of determinants of relative need. The need index is divided into two parts:

a) Acute and Maternity
b) Mental Health

Although the complete workings of the weighting process are complex and will not be described in full, listed below are the variables used to calculate the need index for a) (Table 5a) and b) (Table 5b)

Table 5a: HCHS Acute and Maternity Need Variables

Standard need variables	Additional morbidity variables
ID2000[2] education domain scores	Nervous system morbidity index
Proportion of low birthweight babies born	Circulatory morbidity index
Standardised mortality ratio (SMR) under 75 years	Musculoskeletal morbidity index
Proportion of aged 75+ living alone	
Standardised birth ratio	
ID2000 income domain scores	

Table 5b: HCHS Mental Health Need Variables

Standard need variables	Additional morbidity variables
Comparative mortality factor (CMF) under 65 years	Psycho-social morbidity index
Proportion of aged 60+ claiming income support (IS)	
ID2000 housing domain scores	

Based on information from the last round of allocations, the weighting for the need index is allocated in proportion to demand in relation to Acute and Maternity, and Mental Health - approximately 85% to acute and maternity services and 15% to mental health.

The composition of Tables 5a and 5b are crucial to arguments about the inherent fairness of the English formula, particularly as it applies to Cornwall. Critics of the formula can make incorrect assumptions about what is or is not included (e.g. Hansard, 11 November 2003). For example, car ownership and unemployment, two elements which have been known to distort the measurement of deprivation in the past, are no longer part of the formula.

It is relevant that the element of the Indices of Multiple Deprivation that reflects the needs of rural areas, the Access domain, has been omitted from the calculation of the need index.

[2] ID2000 is the short name given to the latest Indices of Local and Multiple Deprivation published by the Department of Environment, Transport and the Regions (DETR, 2000). Each local authority ward is given a deprivation score based on a number of domains (education, housing, etc.) and the resulting scores are ranked nationally and regionally.

The Access domain is based on geographical access to the following local services:

- Post Office
- Food shops
- GP
- Primary school (ages 5-8) (DETR, 2000)

The inclusion of the Access domain in the Indices of Deprivation demonstrates that there is recognition at Government level of the unique nature of rural areas. However, at present it is not felt by the DoH that this domain should be one of the variables in the 'need index' calculation, although it should be added that within the models that inform the need index, allowances are made for the effect that travel distances have on the utilisation of services (Sutton *et al.*, 2002).

For the rural PCTs selected in this project for comparison purposes with Cornwall, Table 6 gives the need indices currently being used for allocation purposes.

Table 6a: HCHS Need Index 2003/04 for Selected Primary Care Trusts

Trust	Acute & Maternity (85% weighting)	Mental Health (15% weighting)	Overall need index
West of Cornwall	1.08	1.07	1.07
Central Cornwall	0.97	0.92	0.96
North and East Cornwall	0.95	0.90	0.93
West Cumbria	1.07	1.01	1.06
North Norfolk	0.91	0.80	0.88
South Hams and West Devon	0.89	0.76	0.86
North Lincolnshire	1.01	1.01	1.00
South Worcestershire	0.89	0.85	0.88
Somerset Coast	0.96	0.86	0.94

Source: DoH (2003c) NHS Revenue Resource Allocation 2003-04 to 2005-06 Exposition Books
Because the revised populations are 'normalised' to match the individual PCT populations with the total for England, the overall need index cannot always be logically arrived at from the separate weightings (e.g. North Lincolnshire)

Across England as a whole, the highest levels of need as defined by the DoH are to be found in inner-city locations such as Liverpool, as shown in Table 6b below. The areas scoring lowest are in the Home Counties and on the South Coast (e.g. Royston,

Buntingford and Bishop's Stortford 0.76, Uttlesford, Essex 0.74, South Cambridgeshire 0.74) (DoH, 2003c).

It is necessary to examine the 'need' index in greater detail, given the background of deprivation in Cornwall. 'Need' in the region has been deemed sufficiently acute to attract considerable national and European funding not available in many other regions of the UK (Cemlyn *et al.*, 2002). Recent support has included the Single Regeneration Budget programme, Neighbourhood Renewal Funding and Objective One, the highest level of support available through the European Structural Fund Programmes. A recent Government document suggested that, following the expansion of the European Union, Cornwall may be the only area of the UK to qualify for Objective One funding when the next round is announced in 2005 (HM Treasury, 2003). It might therefore be expected that Cornish areas would register a level of need greater than the average for England as a whole.

A frequently held argument made in support of additional health funding for Cornwall is that the area does not receive the same recognition of need as other Objective One Areas. However, the other two such areas in England – Merseyside and South Yorkshire – cannot reasonably be classified as 'rural' and therefore the relevant data are of limited comparison value for the purposes of this report. However, bearing this in mind, the need indices assigned by the formula to a small sample of PCTs in English Objective One Areas are shown in Table 6b:

Table 6b: HCHS Need Index 2003/04 for Selected Primary Care Trusts in Objective One Areas in England

Trust	Acute & Maternity (85% weighting)	Mental Health (15% weighting)	Overall need index
Cornwall			
West of Cornwall	1.08	1.07	1.07
Central Cornwall	0.97	0.92	0.96
North and East Cornwall	0.95	0.90	0.93
Merseyside			
North Liverpool	1.48	1.60	1.49
Birkenhead and Wallasey	1.26	1.33	1.26
South Yorkshire			
Barnsley	1.24	1.16	1.22
Doncaster East	1.15	1.07	1.13

Source: DoH (2003c) NHS Revenue Resource Allocation 2003-04 to 2005-06 Exposition Books

To examine further the rationale behind the value given to need indices, Tables 7a and 7b list the variables from Tables 5a and 5b, showing for each Cornish PCT whether the calculated variable is higher than the national average (signifying relatively lower need) or lower than the national average (greater need):

Table 7a: Acute and Maternity Need

Variable	West	Central	North & East
Education domain	L	H	H
Low birthweight	H	H	H
SMR < 75	H	H	H
Aged 75+ living alone	H	H	H
Standardised birth ratio	L	H	H
Income domain	L	L	H
Nervous system morbidity index	L	L	L
Circulatory morbidity index	L	H	H
Musculoskeletal morbidity index	L	L	L

Table 7b: Mental Health Need

Variable	West	Central	North & East
Comparative Mortality Factor < 65	H	H	H
Income support > 60	L	H	H
Housing domain	L	L	H
Psycho-social morbidity index	L	H	H

Key: H – higher than national average, qualifies for lower NHS funding. L – lower than national average, qualifies for higher NHS funding
Source: DoH (2003c) NHS Revenue Resource Allocation 2003-04 to 2005-06 Exposition Books

The greater incidence of 'Ls' show why West of Cornwall PCT registers a need index above 1.00 (higher than average need), while the other two PCTs do not.

Of the variables used to calculate the need index, the morbidity indices are given the highest weighting in the calculation, and as a consequence, for every PCT, a cursory glance at the full calculations reveals a clear correlation between the morbidity indices and the need indices. Self-evidently morbidity indices significantly influence the final need index value.

The relationship between health 'need' and deprivation has been raised in the House of Commons. In a recent debate on Health Services in Cornwall, Matthew Taylor (MP for Truro and St Austell) said:

> *'…Cornwall has not been defined in the rural health budget as such a priority social need area. That relates to the old-fashioned assessments of rural deprivation…If Cornwall received the same treatment as other objective 1 areas, it would get an extra £18 million.'* (Hansard, 12 March 2003)

The following reply was made by the Under-Secretary of State for Health, Hazel Blears:

> *'We have tried to make it (the formula) more sensitive to various measures of deprivation in this year's allocations. We are now using the indices of multiple deprivation of the Office of the Deputy Prime Minister, updated in*

our formula, which is a more sensitive measure… we are trying to ensure that rural issues are considered.' (Hansard, 12 March 2003)

This exchange illustrates the difficulties in tackling the detail of the allocation formula in public debate. The complexities of the formula (e.g. Sutton *et al.*, 2002) can be confusing to all but the most highly qualified statistician, and informed discussion can be problematical, given the detailed analysis required to establish the relative importance of the factors that make up the formula. In Section 7 of this report the importance of morbidity statistics as a proxy for the relative 'need' of individual PCTs is tackled in greater depth.

5.3 Market Forces

The crude population figure used to estimate the PCTs' allocations is revised further by a factor representing market forces (MFF). Clearly the costs of providing health services are going to vary in different parts of the country, an obvious example being the effect of allowances to NHS staff in the London area. In England, the cost of staffing is calculated at 67.87% of NHS costs (reflected in the weighting), and as a result every London-based PCT has a MFF well above 1.00. For the rural areas selected for comparison in this study, details of the MFF index are given in Table 8:

Table 8

Market Forces Factors for Selected Rural PCTs

Trust	MFF
West of Cornwall	0.89
Central Cornwall	0.89
North and East Cornwall	0.91
West Cumbria	0.93
North Norfolk	0.94
South Hams and West Devon	0.92
North Lincolnshire	0.94
South Worcestershire	0.97
Somerset Coast	0.95

Source: DoH (2003c) NHS Revenue Resource Allocation 2003-04 to 2005-06 Exposition Books

The three Cornwall PCTs in fact have the largest negative adjustments in respect of MFF of any PCTs in England. In financial terms, the total NHS budget for Cornwall

is reduced by approximately £43.6 million, or 9.6% of total allocation, as a result of the MFF.

An argument used against the MFF is that it fails to take account of the fact that the NHS has a national pay structure (with additional allowances for workers in London), and therefore it is unfair to Cornwall to argue that the region automatically has lower costs. This is justified in the allocation guidelines as follows:

> *'The aim of the staff MFF is to reflect the geographical variation in staff costs that NHS employers incur. This is necessary in spite of national pay arrangements because the geographical variation in the labour market results in some NHS Trusts facing higher "hidden" staff costs due to recruitment and retention difficulties, grade drift, the use of agency staff etc.'* (DoH, 2003b)

Despite the position of the DoH, it has been argued that MFF still fails to reflect accurately the costs in any given PCT. In a recent article, the Chief Economist at the King's Fund analysed the PCTs receiving the highest and lowest adjustments in MFF. Whilst acknowledging that there is no easy way to arrive at a fair result, he concluded that:

> *'While the principle of adjusting purchasers' allocations and providers' prices to take account of unavoidable differences in costs is clearly sound, there is a question of how to do it …MFF is not the perfect solution to the issue of unavoidable cost variations …'* (Appleby, 2004)

The independent report on the financial accounts of the NHS in England for 2002-03 (National Audit Office, 2004) identified staff costs as one of the causes of financial deficits incurred by PCTs in Cornwall:

> *'There is low staff turnover, with many staff at the top of the payscale'* (p15)

5.4 EACA

As indicated earlier, a final small adjustment in the HCHS component is made in respect of the requirements in each PCT for emergency ambulance cover, or EACA. This is of interest not because there is a significant adjustment to the overall crude population, but because each PCT is rated with a 'rurality factor'. The particular requirements peculiar to rural areas were first considered in a paper titled *Study of Costs of Providing Health Services in Rural Areas* produced for the DoH by a team of researchers from MHA (a management consultancy) and Operational Research in Health Ltd. A model was developed which related costs per journey to the rural nature of the location. The result is a slight funding benefit to most rural PCTs, as illustrated by Table 9:

Table 9: Emergency Ambulance Cost Adjustment Factor for Selected Rural PCTs

Trust	EACA factor
West of Cornwall	1.005
Central Cornwall	1.005
North and East Cornwall	1.005
West Cumbria	1.001
North Norfolk	1.001
South Hams and West Devon	0.998
North Lincolnshire	1.001
South Worcestershire	1.001
Somerset Coast	1.004

Source: DoH (2003c) NHS Revenue Resource Allocation 2003-04 to 2005-06 Exposition Books

All three Cornish PCTs receive exactly the same allowance, suggesting that the data used relate to ambulance callouts for Cornwall as a whole, and has not been broken down into smaller geographical units. The figures for Devon show a similar pattern.

As is evident from the data, the adjustments for this factor are very small. However, mention should also be made of the Cornwall Air Ambulance, brought into service in 1987 to cater for the problems associated with remote populations, narrow roads and inaccessible coastal areas. The cost, approximately £780,000 per annum, is met entirely by charitable donations (Cornwall OnLine website, accessed 19 April 2004). By way of comparison, the equivalent service in London, the Helicopter Emergency

Ambulance Service (HEMS), is partly funded by the NHS and partly by the Virgin Group (HEMS London website, accessed 19 April 2004), at a similar annual cost.

5.5 Summary

Table 10 provides a summary of the population adjustment factors by geographical region. The data show the extent to which the crude (headcount) population data are adjusted by the various factors in order to arrive at a revised population figure for resource allocation purposes. The exact formula is:-
Crude Population x Age factor x Need factor x Market Forces factor x EACA factor = Revised Population

Table 10: HCHS Component Population Adjustment for Selected Rural PCTs

Trust	Crude population	Age factor	Need factor	Market forces factor	EACA factor	Revised population*	% (+/-) adjustment in population
West of Cornwall	150,014	1.07	1.07	0.89	1.00	153,682	+ 2.4
Central Cornwall	194,477	1.08	0.96	0.89	1.00	180,127	- 7.4
North and East Cornwall	156,457	1.07	0.93	0.91	1.00	142,473	- 8.9
West Cumbria	129,882	1.01	1.06	0.93	1.00	129,380	- 0.4
North Norfolk	97,892	1.17	0.88	0.94	1.00	95,660	- 2.3
South Hams and West Devon	100,788	1.10	0.86	0.92	1.00	87,328	- 13.4
North Lincolnshire	151,863	1.01	1.00	0.94	1.00	143,729	- 5.4
South Worcestershire	273,223	1.03	0.88	0.97	1.00	239,406	- 12.4
Somerset Coast	138,438	1.09	0.94	0.95	1.00	135,402	- 2.2

** The calculation will not come out exactly from this table because of the rounding of the factors to two decimal places. The revised population figure is then re-adjusted slightly to match the sum of the PCT populations to the population overall.*

A similar process to that described above takes place for each of the components of the allocation process (prescribing, GMSCL, HIV/AIDS) in order to arrive at a final population figure which is then used to determine the final financial allocations. Table 11 gives, for the nine selected areas, the crude population followed by the final adjusted population, after calculations have been performed for all of the components.

Table 11: 2003/04 Unified Weighted Populations (All Components)

Trust	Crude population	Revised population	% (+/-) adjustment in population
West of Cornwall	150,014	156,802	+ 4.5
Central Cornwall	194,477	185,380	- 4.7
North and East Cornwall	156,457	146,275	- 6.5
Cornwall Total	***500,948***	***488,457***	***- 2.5***
West Cumbria	129,882	131,401	+ 1.2
North Norfolk	97,892	98,385	+ 0.5
South Hams and West Devon	100,788	90,292	- 10.4
North Lincolnshire	151,863	145,590	- 4.1
South Worcestershire	273,223	243,594	- 10.8
Somerset Coast	138,438	137,566	- 0.6

As illustrated in Table 1 (p13), the HCHS component accounts for 82.76% of NHS expenditure in England. It follows that further adjustments arising from the other components would not be expected to alter the revised population figures by as significant a degree. All the percentage adjustments listed in Table 11 are within 2-3 percentage points of those in Table 10. In fact, most areas that receive a positive adjustment from the prescribing component do so because of the higher relative cost of and demand for drugs amongst older people. As discussed earlier in this section, most of the chosen areas contain a higher proportion of the population in the older age bands.

6. Health Resource Allocation Formulae Elsewhere in the UK

Variations on the weighted capitation formula are used in the other regions of the UK, as well as in many other developed countries. Most formulae typically contain the following:

- Population estimates
- Age-gender weights (reflecting the resource costs of (or numbers) utilising health services)
- Additional health needs over and above those related to age and gender

- Unavoidable extra costs of healthcare provision, particularly those due to:
  - providing services to sparse and/or remote populations
  - market forces factors (that is, variations in staff, land, building and equipment costs)
  - other unavoidable costs (e.g. in the English formula, due to ethnic minorities with English language difficulties and to the extra costs of treating rough sleepers)
- Special allocations for specific services (e.g. for drug misuse; HIV prevention) (Gordon *et al.*, 2001)

The following sections examine the allocation procedures that currently operate in Scotland, Wales and Northern Ireland.

6.1 Scotland

The Arbuthnott Review (SEHD, 1999) was the first major revision of health resource allocation in Scotland for 20 years. The revised allocation formula resembles the English formula in many respects, particularly its use of HCHS, prescribing and general medical services indices.

However, 'need' is measured somewhat differently, by the 'Arbuthnott Index'. The Arbuthnott 'need index' is based on the following four key indicators of morbidity and deprivation:

- mortality rates among people under 65 years of age
- unemployment rates
- the proportion of elderly people claiming income support
- households with two or more indicators of deprivation (SEHD, 1999)

In the Scottish system these deprivation indicators are used as proxies for morbidity, whereas the English method now places heavy emphasis on actual morbidity statistics as an indicator of need. Reference to Table 1 (p13) suggests that this issue of morbidity statistics is particularly important for rural and deprived areas, and hence it will be discussed in more detail later in this report.

Another issue in which the Scottish allocation system differs from England is the way in which special adjustments are made for factors peculiar to rural areas. In the Scottish model these needs of rural areas are made explicit:

- A substantial adjustment is built into the formula for the Island Health Boards because they face very high costs in providing health services to their populations.
- Several mainland Health Boards (Highland, Borders, and Dumfries and Galloway) also receive a significant adjustment because they are providing services to communities who live in remote and rural areas.
- The adjustment takes into account the position of Health Boards that are a mixture of urban and rural areas (for example, Argyll and Clyde). (SEHD, 1999)

The report lists the adjustments as applied to different Health Boards (the equivalent of English PCTs), which are typically 6-7% in favour of the rural areas. In calculating the increased requirements for rural areas, road kilometres per thousand population was a key factor in estimating the extra costs of hospital services, district nursing and health visiting in travel-intensive communities (SEHD, 2000).

In Scotland, remote/rural cost adjustments are made both for HCHS and General Medical Services (where adjustments of up to 23% (SEHD, 1999) were deemed necessary) within the overall formula.

6.2 Wales

When the Welsh system for resource allocation was reviewed by the Steering Group chaired by Professor Peter Townsend in 2001 (Gordon *et al*., 2001), the authors of the final report felt that the formula as it had been applied in 2000/01 was inferior in many respects to the formulae being applied elsewhere in the UK. In particular, SMRs for under-75s were being used as the sole proxy for additional need, whereas other systems were considering a greater range of morbidity and deprivation factors. The authors recommended that Welsh data should be gathered to establish the costs inherent in rurality and remoteness, using the experience of Scottish mainland rural Health Boards as a model.

The recommendations made in the Gordon report were adopted and now form the basis for health resource allocations to Local Health Boards in Wales. The effects of rurality factors used in the Welsh formula are apparent from Table 1 (p.13) where it can be seen how much more money per capita is available to rural areas of Wales when compared to the region as a whole. In Wales, as in Scotland, weighting for additional service costs in sparsely populated areas apply to community and ambulance services and cash limited General Medical Services (Asthana *et al.,* 2002).

6.3 Northern Ireland

The distribution of health funding in Northern Ireland differs from that elsewhere in the UK in a number of fundamental respects. Firstly, in Northern Ireland there is no separation of Health and Social Services, so aspects of the resource allocation procedure (e.g. for the elderly care programme) may vary because of the combined demands of health need and social welfare. Secondly, the allocation process is tiered. Rather than funding allocations being determined in their entirety by the Northern Ireland Executive, funds are distributed to four HSS Boards who in turn use guidelines to determine allocations to the HSS Trusts under their control. There are 19 HSS Trusts in all, each encompassing a population of approximately 100,000.

The Northern Ireland formula makes adjustments for rurality based on the efficiency of road routes between supply and need locations, and uses sophisticated digital road network analysis to do this. Other data provide additional indicators of demand, an example being use of the mother's history (no previous births/multiple births) for the funding of maternity services.

7. Critique of the Rurality Aspects of the Resource Allocation Method used by the DoH in England

Since the most recent revision of the English formula a number of studies have been published which question aspects of the English formula and offer alternatives based on research findings or rationalisations used to develop allocation processes in other countries.

Asthana and co-workers at the University of Plymouth have researched the issues relating to rurality and deprivation in relation to the English formula. In *Allocating resources for health and social care: the significance of rurality* (Asthana *et al.*, 2003) a number of arguments are made to support the case for a rural premium in the English formula. These are summarised below:

- Allowance for rurality is made in allocations to social service departments (as well as education and other services provided by local authorities), but not health
- The determinants of 'need' are fundamentally biased towards urban and away from rural areas
- Additional costs associated with rural service provision are not accounted for by the formula
- Lower levels of service cannot be tolerated in rural areas because of the need to match national quality standards
- There are precedents for rural premiums elsewhere in the UK and in other developed countries (Asthana *et al.*, 2003)

A key point is that figures relating to utilisation of health services may be negatively impacted by the distance necessary to travel for treatment, particularly in the case of elderly people, women and low social classes (Gibson *et al.*, 2002). Therefore, using utilisation rates as a measure of need inherently incorporates bias into allocation calculations. It follows that morbidity data, showing actual incidence of illness, rather than data relating purely to the utilisation of services, may give a more accurate picture of demand for health services in a given area. Asthana *et al.* use the link between poverty and poor health in their examination of the special needs of rural locations:

> *'Standard deprivation indices are far better at predicting variations in morbidity and mortality in urban areas than they are in rural areas. Indeed, indices such as Breadline Britain suggest, improbably, that standardised illness and mortality ratios fall slightly as the level of poverty increases in 'rural areas'. Until care is taken to ensure that the measures which make up*

> *the additional needs indices provide consistent representations of disadvantage across the urban-rural continuum, the possibility will remain that additional needs are not being adequately detected in rural areas.'* (Asthana *et al.*, 2003, p. 487)

This conclusion is consistent with the morbidity data used in the English allocation formula. Given that many of the rural areas record morbidity/need factors of less than 1.00 (see Table 6a, p20), this indicates that a lower level of need exists in these PCT areas than in England as a whole. It is necessary, therefore, to examine more closely the methods employed to create the morbidity data used in the English formula, and subsequently to establish the impact that such methods have on rural areas.

7.1 Comparison of Utilisation and Morbidity Data

A key debate in the assessment of 'need' for the purposes of resource allocation is whether utilisation (actual use of health services) or morbidity (reported incidence of illness/disease) statistics provide a more appropriate basis for resource allocation. Asthana and co-workers (2004[3]) conducted a study of incidence of coronary heart disease (CHD), using utilisation data from 34 PCTs and morbidity statistics from the Health Survey for England. The study was conducted against the background of the English formula governing allocations in 2000-01, which relied on utilisation rather than morbidity in the calculation of allocations. The allocations allotted by each method were compared. The findings indicated that:

> *'…a morbidity-based model would result in a significant shift in hospital resources away from deprived areas, towards areas with older demographic profiles and towards rural areas'* (Asthana *et al.*, 2004, p539)

Subsequent to 2000-01, the DoH commissioned further work on the allocation formula for England (Sutton *et al.*, 2002), commonly referred to as the AREA report. The AREA report attaches more importance to morbidity data than had previously been the case, and draws extensively on the annual Health Survey for England (HSE)

[3] In the interests of clarity, it should be noted that by the time this report had been published, in 2004, the allocation formula had been subject to a further revision, as described in the text.

as well as the Census and the Indices of Multiple Deprivation. The HSE offers high quality data determining health status, but is based on a sample of individuals (12,413 in 2000). Whilst the sample is valid for determining wider population trends, it is inappropriate for specific small areas, or wards, as there may be wards where no individuals have been interviewed (Sutton *et al*, 2002). Individual health is therefore estimated based on the overall findings and morbidity indices are calculated for each ward. The complex model set out in the AREA report claims to account for differences in utilisation vs. morbidity, which is often more marked in rural areas and areas of deprivation. Thus the model can:

> *'…test whether ward level variables such as ethnicity and deprivation influence health care utilisation only through their impact on morbidity or whether they have a direct and negative effect, which would suggest the existence of unmet needs.'* (Sutton *et al.,* 2002, p66)

Unmet need is tested by comparing utilisation statistics with a number of variables relating to supply, self-reported morbidity, ethnicity, income, social class, employment and education status. The results in respect of supply variables (i.e. distance to general practice or hospital) produce some effects in the context of rural areas which are of relevance to this project:

- *'Average distance to general practice is not important in terms of whether or not an individual visits their GP, but it is a significant factor explaining the number of visits, conditional on this number being greater than zero.*
- *The further that people live from the hospitals they use the greater the number of visits to their GP'* (p81)

The authors conclude:

> *After controlling for morbidity in a number of dimensions, more deprived individuals (in terms of income, education and employment – those looking for work) have lower than expected use of health services. However, such individuals are also found to have lower health status. This implies there may*

be unmet need for health care in terms of income, employment and education deprivation. (p89)

8. Other Issues Relating to Rural Trusts

8.1 Debt Liabilities of Cornish Trusts

Recent discussions on the funding of the NHS in Cornwall have revolved around the debt inherited by the new Trusts from the old Health Authority structure. In the financial year 2003-04 an accumulated debt of £31 million was allocated amongst the three Cornish PCTs, the Royal Cornwall Hospitals Trust and the Cornwall Partnership Trust, with repayment to be found from efficiencies in existing expenditure. In 2003 much energy was expounded on the possibility of the health community and Cornwall County Council entering a financial arrangement of £8 million over two years to ease the repayment burden on the PCTs. Although the idea of this financial arrangement found widespread support amongst MPs, councillors, the Audit Commission and health professionals alike, it was eventually ruled out on legal grounds. This was due to the belief that, if challenged in the courts, any reasonable person might consider the arrangement as a loan and PCTs by statute cannot lawfully borrow money.

The potential seriousness of the debt was highlighted in discussions with the Council in 2003. Peter Davies, Chair of Central Cornwall PCT, warned that without financial assistance *'… it was very likely that it would be necessary for cuts to be imposed in preventative and diagnostic treatment and community-based services'* (CCC, 2003). Thus it may appear that health services in Cornwall are being 'squeezed', despite the fact that the underlying reasons are not directly related to the allocation formula as it is currently being applied, or the additional costs of rurality.

Establishing how many other PCTs in England are confronted with similar difficulties is not a simple process. When the MP Andrew George asked a specific question to the DoH, he was told:

> *'Information on primary care trusts' inherited debt legacy is not collected centrally'* (Hansard, 11 November 2003)

Anecdotal evidence suggests that other PCTs in similar difficulties may have been treated more generously than Cornwall, though there is no hard evidence to support this theory.

8.2 Funding of Out-of-area Treatment

Cornwall's population increases by approximately 60% in the peak summer months due to its popularity as a holiday destination. There is an inevitable increase in demand on health services, particularly in the accident and emergency sector. This is illustrated in a report prepared for the Cornwall County Council (CCC) Tourism Single Issue Panel, a sub-committee of the Health and Social Care Overview and Scrutiny Committee (CCC, 2004). The report confirms peak activity in the summer season in all health services, particularly accident and emergency admissions and GP consultations. For example, GP claims for Short Stay Visitor Appointments (in area for up to 15 days) rose from around 1000 (Cornwall total) in the winter months to almost 7000 in August 2003. NHS procedures (Out of Area Treatments, or OATs) are in place for the claiming of such costs from the appropriate authorities, but the biggest complaint about the system as it currently operates is that there is a lag of some eighteen months between the use of the service and the recovery of the appropriate costs. However there is little evidence indicating whether or not all the appropriate claims procedures are being applied and full recompense is being achieved. Discussions with the Finance Directors indicated that more research is necessary before this can be established conclusively.

What is evident from the Hospital Episode Statistics for 2002-03 published by the Department of Health (DoH 2003d) is that the number of people resident in Cornwall who seek treatment elsewhere (usually at Derriford Hospital in Plymouth or facilities in North Devon) at least balances out the numbers of non-Cornish residents treated in the holiday period. However, the methods by which reimbursement takes place differ fundamentally from OATs. It is possible from previous experience to estimate with a reasonable degree of accuracy the numbers of patients (primarily in North and East Cornwall) that will utilise Derriford or other Devon hospitals. Thus the PCTs will enter into a Service Level Agreement with the relevant hospital, setting out the

financial terms at the outset. As a significant proportion of OATs are accident and emergency cases involving patients from a wide variety of locations in the UK, it is virtually impossible to predict the level of use of this service and therefore enter into an appropriate agreement. Thus for the Trusts there is an issue both of financial cashflow and additional staffing costs to cater for the increase in demand for services in the summer months.

It is apparent from discussions with the Trusts that the pressure on the capacity of the health service infrastructure resulting from the volume of summer visitors has a knock-on effect in terms of serving the needs of the local population. It has been necessary for many hospital elective procedures to be temporarily postponed as a direct result of summer pressures.

8.3 Cost Issues for Rural Areas

Discussions with finance directors from the 3 PCTs and the RCHT have raised a number of issues that have an impact on costs both for rural areas in general and Cornwall in particular. The allocation formula does not address these issues directly.

8.3.1 Patient Transport

Hospital authorities are obliged to provide transport for patients if there is clinical need. Clearly the availability and efficiency of public transport has a bearing on this, and the problems of public transport availability can be accentuated in rural communities. For example, in the Isles of Scilly, part of the West of Cornwall PCT, costs are increased by the necessity for helicopter transport to transfer patients to and from the mainland. For Cornwall overall there is, therefore, an additional burden on hospital costs not only in terms of distances travelled, but in the relative numbers of journeys undertaken.

8.3.2 Split Sites and Satellite/Community Hospitals

Rural areas such as Cornwall demand that consultants, midwives etc. be available for clinics in a variety of locations, because of the difficulties for patients making travel arrangements to the main acute hospital for consultation or treatment. As a result a significant proportion of the time of these professionals is allocated to travelling, and as a consequence there is a detrimental effect both on the number of patients that can be seen and the costs incurred by way of travel expenses. The degree to which this will affect individual PCTs will depend on the location of the main acute hospitals relative to the population in each case.

In its report on the financial accounts for the NHS in England for 2002-03 (National Audit Office, 2004), a dispersed rural population was attributed as one of the causes of financial deficits amongst PCTs in Cornwall:

> *'Factors include: a rural and isolated population, served by a large number of Community Hospitals; concerted political and public opposition to closure of Community Hospitals makes it harder to rationalise services'* (p15)

8.3.3 Maintenance Contracts for Specialist Equipment

Many of the maintenance contracts entered into by the hospital authorities are with companies outside of Cornwall because of the specialist nature of much of the equipment being used. In the interests of efficiency prompt service is frequently required and in many cases such service (typically from locations such as Bristol or Birmingham) requires payment of a premium to ensure a quick turnaround. This is a matter that reflects on Cornwall not as an average rural location but as a virtual geographical outpost, and would not necessarily be such a problem in the other rural areas selected for comparison, which may be less remote from the facilities which they require.

The report on the accounts for the NHS in England for 2002-03 (National Audit Office, 2004) identified the geography of Cornwall as one of the causes of financial deficits amongst PCTs:

> *'The rural population and geography makes it comparatively expensive to provide ambulance services. Cornwall has a single county bordering it, limiting the scope for pooling resources with neighbouring services'* (p15)

A further cause identified by the report related to above-average activity:

> *'Above-average activity in certain areas, including primary care and accident and emergency services, resulting in higher than average costs. The population has relatively high access rates to surgery, including cardiac interventions and joint replacements, compared to national averages'* (p15)

9. Conclusions and Recommendations

What is apparent from the study of the expenditure methods explained in this report is the complexity and detail applied to the allocation process. The allocation procedure has evolved, particularly since the Carr-Hill review in 1994, to the point where weighted capitation is now generally accepted as the most fair and equitable method of making allocations to regional healthcare bodies in developed countries. This report concludes that the concept of weighted capitation is a sound one, and also that a number of the adjustments within the allocations are the fairest that can be applied using the most recently available data.

However, there are elements of the formula that may not extend the principle of fair and equitable allocation when it is applied to rural and/or geographically remote areas. It is concluded that, in particular, two areas should be reviewed – the definition of 'need', and the degree to which rural factors, including remoteness, influence the final allocations.

As is discussed in Section 5.2, it is morbidity statistics, rather than traditional indicators of deprivation, that principally drive the calculation of the 'need' parameter. It is recognised that accurate morbidity (as opposed to utilisation) data will best predict the health needs of a rural area because it takes account of instances where health services, though required, are underused because of issues with travel

distances, public transport etc. However, as Asthana *et al.* (2003, 2004) have noted, current morbidity data, largely based on the Health Survey for England, appear to throw up some unexpected trends in the face of an established body of literature (e.g. Shaw *et al.,* 1999) correlating the incidence of poor health with areas of deprivation. It is recommended that the statistical base for morbidity data be extended such that the evidence of the Health Survey for England can be tested against other indicators, and that the methods of the Survey (an annual questionnaire using a sample of individuals throughout England) be reviewed to ensure that it serves the required purpose, to accurately report the incidence and frequency of illness and disease in the population. The paucity of morbidity data as a tool for monitoring health has been highlighted in the recent Wanless report on public health policy in the UK (Wanless, 2004):

> *'While there is universal comprehensive data on mortality, there is only very partial data on morbidity, varying by disease (with cancer data better than CHD) and type of treatment (with hospitals having better data than primary care)' (p108)*

As is highlighted in the body of the report, there appear to be a variety of circumstances under which rural areas incur higher costs as a direct result of the sparse nature of the population. Principally these relate to travel distances and times (e.g. to the nearest acute hospital), and the adequacy of public transport, which assumes greater significance in both rural and deprived areas such as Cornwall, where there have been recent examples of bus companies cutting back on uneconomic routes (e.g. Cornish Guardian, 15 April 2004). Rurality also has a significant effect on the delivery of targets for emergency responses and the availability of staff, which are part of the performance ratings on which every NHS Trust is measured. The Government has chosen not to include the Access domain from the Indices of Multiple Deprivation in the definition of need, preferring to rely on other measures such as income, education and housing. It is recommended that, like Scotland and Wales, the English system should include a specific measure of rurality in the assessment of 'need' as part of the allocation process.

Appendix I

Cornwall Education and Research Trust

The Cornwall Education & Research Trust (CERT) was established in 1985 with the objective to:

" . . . advance education by aiding students who are undertaking studies for higher degrees or original advanced studies and/or projects by way of research and/or development work related to matters of concern to industrial, commercial and public sector organisations within Cornwall."

In practice this has taken the form of providing small grants to postgraduate students where the project has been deemed to meet the Trust's criteria, to enable them to meet those ancillary costs which occur in the pursuit of research which are not otherwise covered by maintenance grants etc., but which are crucial to the achievement of the degree. For example, travel costs for data collection, attendance at conferences and learned meetings, consumables, and so on. Over the years, the Trust has supported postgraduate students who are working towards degrees in biology, ecology, social sciences, mining engineering, geotechnics, geology, economics, archaeology and many others. CERT feels that it has made a significant contribution to the education of the people of Cornwall, of all ages.

In recent years, it was decided to make a fewer number of larger awards, to make more of an impact on Cornwall and its students, and major Travelling Scholarships were awarded in 2000 and 2002 (for a comparative study on educational inclusion between Australia and Cornwall, and work towards investigating issues surrounding skin cancer respectively).

The final award which the Trust makes is the present scholarship in 2004 – not a Travelling Scholarship this time. The Trust has long felt that there was a need to make a comprehensive study of the amount of the per capita Government funding received by the various public sectors in Cornwall as opposed to similar areas within the UK, and the writers of this report were the successful team who responded to the

competitive bid. The Trustees feel that their last contribution to Cornwall has been a useful and much-needed enquiry, and hope that it stimulates debate in critical areas.

Trustees are:

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