

9 PHYSICAL AND SENSORY DISABILITY

Definition

9.1 Current PoC guidance defines individuals who would be allocated to this PoC as those with:

“A permanent physical impairment resulting in a dependency in areas such as mobility, self-care, communication and social/leisure activities. Examples of services provided might be rehabilitation, care services and family support. The patient/client should be under 65 years old.”

9.2 Hospital activity and related costs are only allocated to the Physical and Sensory Disability PoC on the basis of entire wards, clinics or hospitals which treat only physical and/or sensory disabled patients.

9.3 Expenditure on the Physical & Sensory Disability PoC of £58.2m was 3.51% of the total HSS Board expenditure in 2002/03. (excludes expenditure on capital charges and medical negligence)

Background

9.4 The current formula recommended in the 3rd Report from the CFRG comprises two main elements:

- An age weighting constructed from the 1990 Policy Planning and Research Unit Disability Survey; and
- An interim needs index based on the ‘Under 75’ Standardised Mortality Ratio using latest available 5 years deaths data and updated annually.

The 3rd Report from the CFRG recommended that in the 4th Review:

- Consideration should be given to the feasibility of constructing up-to-date age/gender weightings and research based additional needs weightings; and
- This work should be taken forward as a priority given equality issues raised including the need to incorporate a gender dimension.

Approach

9.5 In October 2002, the Group commissioned MSA Ferndale to work with a subgroup to address the recommendations identified in the previous Review. In view of concerns about the availability of data of sufficient quality and scope a two-phase approach was adopted.

9.6 Phase 1 involved a short scoping study to determine whether data available on the physically and sensory disabled population was sufficient to support the development of an additional needs index.

9.7 Phase 2 involved a detailed analysis and evaluation of the data sources to identify the required information to undertake statistical analysis to devise an index suitable for implementation.

Phase 1 Scoping Study

9.8 The work involved assessing the quality and coverage of activity and finance data across all relevant Trust providers - for hospital, community and personal social services. In addition, the availability and utility of Social Security Disability Living Allowance Benefit information was also examined.

9.9 The following data sources were identified with the potential to provide costed information on the services delivered to PoC 7 clients:

- SOSCARE extracts;
- TROJAN data;
- Community health and domiciliary care activity and finance data from LCID and CLAN;
- Data on deaths due to the Troubles; and
- Hospital incidence data;

9.10 Full details of the Scoping Study are contained in the consultants' report "Development of A Northern Ireland Formula for the Physical and Sensory Disability Programme of Care: Phase 1 Report, (2003)".

Phase 2 Detailed Analysis

9.11 Based on the findings of the Scoping Study, it was agreed by the Group to progress the exercise to Phase 2. This involved a number of stages:

- Detailed analysis and evaluation of the data sources identified in the Scoping Study;
- Collation of the required information from the most suitable data sources for use in statistical modelling; and
- Statistical analysis and the derivation of a needs index;

9.12 Full details of second phase of the research are contained in "Modelling the Distribution of Services for People with Physical and Sensory Disabilities in N Ireland, (2003)".

Detailed Evaluation of Data Sources

- 9.13 For the purposes of small area modelling each data set must include details of the services provided to individual clients as well as the post or ward code of origin of each client. In addition, if combinations of data sources are used there must be no duplication of data.
- 9.14 An in-depth review of each of the identified data sources was carried out from which only one data source emerged which met the necessary criteria, namely, SOSKARE. The other data sources were excluded because of inadequate data coverage, poor data quality or potential duplication in SOSKARE.

SOSKARE – Collation

- 9.15 The activity data provided from SOSKARE consisted of a snapshot of clients on a single date and included 29,105 persons in PoC 7. Of these, approximately 20% were aged over 65 and therefore, according to the PoC 7 definition, had to be excluded from the models leaving a total of 22,587.

Table 9.1 Numbers of PoC 7 Clients by Age, Sex and Trust, 2002

	Males Aged			Females Aged			All
	0 - 24	25-44	45-64	0-24	25-44	45-64	
S & E Belfast	277	255	607	196	367	841	2543
N & W Belfast	621	574	1065	565	618	1050	4493
Down Lisburn	207	165	399	172	217	432	1592
North Down & Ards	107	127	301	101	238	556	1430
Causeway	113	147	333	82	202	439	1316
Homefirst	205	351	925	131	473	1253	3338
Armagh & Dungannon	170	202	387	98	214	447	1518
Newry & Mourne	129	146	343	120	222	408	1368
Craigavon & Banbridge	164	244	509	124	298	777	2116
Foyle	155	107	305	112	193	328	1200
Sperrin Lakeland	208	181	424	142	213	505	1673
	2356	2499	5598	1843	3255	7036	22587

Source: SOSKARE

- 9.16 A limitation of these data is the lack of information on the ward of origin for clients in residential and nursing care. As a result, 253 clients had to be excluded from the analyses. Those receiving domiciliary care for whom there is no valid ward code were also removed. This amounted to a total of about 4% of overall activity. To compensate for these exclusions, the data set is weighted-up (retaining the age and sex distributions) to a total of 22,587.
- 9.17 It should also be noted that, despite every effort, it was not possible to include hospital inpatients in the modelling. This was because it proved impossible to identify with any certainty the population of physical and sensory disabled inpatients who were being treated in general hospital wards as opposed to specialist units.

Age/Gender Relationship

- 9.18 Using the approach outlined in Annex 2, a needs index was developed based on the SOS CARE activity data. It had been hoped to apply cost weights to the activity data to reflect different levels of resource consumption. However, this did not prove possible given the wide variations in recording financial and activity data across Trusts. The analysis was therefore based on unweighted numbers of PoC 7 clients.
- 9.19 It is necessary to standardise the activity data before analysis in order to remove any potential age/gender effects. This process generates a set of age/gender weights which can then be applied to population data, using the standard weighted capitation approach, before application of the statistically derived 'additional needs' index. The PoC 7 age/gender weights derived from the SOS CARE data are shown in Table 9.2 overleaf

Table 9.2 Age/Gender Weights

Age Bands	0 -24	25 - 44	45 - 64
Male	7.58	10.41	29.61
Female	6.17	13.06	36.25

Needs Variables

- 9.20 The research involved mapping the SOS CARE activity data down to synthetic electoral ward level and then statistically selecting those morbidity, socio-economic or other needs variables which best predict activity levels across N Ireland. Impacts on activity, such as supply of services and other policy effects, are taken account of in the modelling process. It should also be noted that a new needs dataset was constructed using the 2001 Census and up-to-date Social Security benefits data. This replaced the dataset, which had been constructed for the 3rd Report from the CFRG.
- 9.21 Although two very strong models emerged, both of which explained 75% of the difference in activity across wards, a single variable model was recommended by the researchers on the grounds that it was more statistically robust. However, following peer review (see Para 9.23 below), the modelling was revisited using a two-stage least squares modelling approach. This approach was required in order to properly take account of endogeneity (the two-way relationship between supply and utilisation – supply affects utilisation and utilisation affects supply), which had originally gone undetected. On the basis of the further work, a three variable model was recommended which was statistically specified and again explained 75% of the difference in activity across wards.

The variables and their coefficients are shown in Table 9.3 overleaf.

Table 9.3 Recommended model -Variables and Coefficients

Variable	Coefficient
Standardised Limiting Long Term Illness (Aged Under 65)	0.559
16-64 year olds living in Disability Allowance Households	0.376
Noble Income Domain	0.114

9.22 The model is log-log (base 10) in form, which means that the needs index is calculated, as the product of 10 to the power of the value of each needs variable further weighted by the power of its coefficient. The researchers compared the predictive ability of their recommended model with the ‘Under 75’ SMR default needs index currently used in this programme. They concluded that their recommended model is a much better predictor of service activity than using SMRs. They also noted that attempts to develop models using alternative sources of community activity resulted in much the same variables, or very close correlates, emerging as the best predictors.

Unmet Need

9.23 The standard unmet needs tests as described in Chapter 13 were applied in the course of finalising models. The researchers could not find any strong evidence of unmet need related to deprivation or of any obvious need to correct for non-linearity in the model.

Quality Assurance

9.24 The research was peer reviewed by Mr Mike Stevenson (Queen’s University of Belfast). The reviewer took receipt of original datasets and systematically evaluated all aspects of the modelling exercise.

- 9.25 The most serious issue highlighted by the review related to how the endogeneity test was applied. The point was made that as the data had been transformed in order to help achieve model specification, it was necessary to apply the test to the transformed data (rather than the untransformed data as had originally been done). This point was entirely accepted by the researchers. The revised test subsequently revealed that the supply variables were in fact endogenous with the implication being that the modelling should be re-done using the two-stage least squares regression technique. The new modelling indicated that the original one variable model needed to be supplemented by two additional variables in order to properly take account of supply effects and achieve model specification.
- 9.26 The reviewer also raised a number of additional technical points related to weighting of synthetic electoral wards and treatment of outliers. However, these had been dealt with appropriately in the modelling and clarification of this was provided to the reviewer.
- 9.27 A concern was also raised over building the model on client numbers rather than on costed activity, particularly as this has the potential to introduce an element of bias into the results. However, whilst this is accepted, data quality and availability issues prevented the development of a robust costing methodology. The Group has noted the reviewer's suggestions for further work in this area and also with regard to obtaining more timely data on the impact of "The Troubles".

Limitations

- 9.28 Due to wide variations in recording of financial and activity data, it was not possible to weight activity by cost or severity.
- 9.29 Data in respect of high cost care (such as people who are technology-dependent) could not be included in the analysis due to the difficulty of identifying cases outside of specialist units.

9.30 Activity in residential/nursing homes could not be accurately identified to ward of residence and had to be apportioned based on the age/gender and severity profile of community and hospital activity.

Recommendations

9.31 The CFRG recommends that:

- the funding for this programme be based on population aged 0-64 weighted separately for males and females based on the age/gender weights set out in Table 9.2;
- the additional needs formula set out in Table 9.3 should be adopted as the new needs index;
- future research in this programme attempts to develop a robust set of cost weights in order to differentially weight clients in different care settings and with different degrees of disability;
- a mechanism be developed to identify hospital patients with a disability who are being treated in non-specialist wards/units thus allowing the hospital sector to be included in any future modelling exercise; and
- consideration is given to whether the current model based approach is the best way to fund HSS Boards in respect of small numbers of very high cost patients, such as people who are technology-dependent.

10 HEALTH PROMOTION AND DISEASE PREVENTION

Introduction

10.1 The approach taken to allocating resources for this PoC was developed as part of the work undertaken for the 3rd Report of the CFRG, and the needs index detailed below is still applied as described (see Chapter 9 in 3rd Report from the CFRG).

Source of Formula

10.2 This PoC consists of all hospital, community and GP practice based activity relating to health promotion and disease prevention. This includes all screening services, well women/men clinics, child health surveillance, school health clinics, family planning clinics, health education and promotion clinics, vaccinations and immunisations and community dental screening and prevention work.

10.3 Most work allocated to this PoC will form part of recognised programmes where people receive advice or support specifically for health promotion or disease prevention.

10.4 Expenditure on the Health Promotion & Disease Prevention PoC, £28.6m was 1.72% of total HSS Board expenditure in 2002/03 (excludes expenditure on capital charges and medical negligence).

Description

Age/Gender Cost Relationship

10.5 The Group agreed to adopt the principle that the PoC size (in terms of money spent on the Programme) should be taken into account before any expensive formula development is embarked upon. It was agreed that the work needed to calculate age/gender cost relationships for this PoC could be extremely

complex and costly. Since this would be disproportionate to the potential benefits arising from having such weights, the Group decided not to pursue this work at the time of the 3rd Report from the CFRG.

- 10.6 It was agreed that resources should be allocated on the basis of equal shares for all age groups within the total population.

Additional Needs

- 10.7 The Group recognised, however, that there may be marginal impacts of needs weightings within this PoC relating to health and other variations. Because of the materiality argument, however, it was agreed to adopt a pragmatic approach to identifying an appropriate weighting and it was accepted that applying the 'under 75' SMR to the relevant population offered a reasonable solution. This decision was reviewed by the Group at the time of the 3rd Report from the CFRG, and it was agreed that it should remain, as the interim needs weighting until such times as a better option is identified. It was further agreed that the SMR should be calculated using the latest available 5-year deaths data.
- 10.8 Table 10.1 shows the 'Under 75' SMR for each HSS Board calculated using deaths in the period 1998-2002 and the revised 2000 mid-year population estimates (MYEs).

**Table 10.1 Health Promotion & Disease Prevention Needs Index
(‘Under 75’ SMR)**

HSS Board	‘Under 75’ SMR (1998-2002 deaths and revised 2002 MYE)
EHSSB	104.38
NHSSB	93.63
SHSSB	97.20
WHSSB	102.21
N Ireland	100.00

Note: The ‘Under 75’ SMR is updated on an annual basis

- 10.9 This index was subject to consultation at the time of the 3rd Report from the CFRG and was endorsed by the Minister, and implemented for 2001/02 to 2004/05.

Recommendation

- 10.10 The Group recommends the continued application of the current index for this Programme.

11 PRIMARY HEALTH AND ADULT COMMUNITY

Introduction

11.1 The approach taken to allocating resources for this PoC was developed as part of the work undertaken for the 3rd Report from the CFRG, and the needs index detailed below is still applied as described (see Chapter 10 in the 3rd CFRG Report).

Source of Formula

11.2 Family Practitioner Services costs are met outside of the (HCHPSS) revenue money allocated to the HSS Boards. In terms of resource allocation to HSS Boards, the focus of this PoC is adult community contacts.

11.3 Community patients aged between 16 and 64, for whom the primary reason for the contact is other than mental illness, learning disability or physical and sensory disability should therefore be allocated to this PoC.

11.4 Screening services carried out by General Medical Practitioners, General Ophthalmic Practitioners, General Dental Practitioners and Pharmacists are excluded from the programme.

11.5 Expenditure on the Primary Health & Adult Community PoC, £49.1m, was 2.96% of HSS Board expenditure in 2002/03 (excludes expenditure on capital charges and medical negligence).

Description

Age-Cost Relationship

- 11.6 The Group agreed to adopt the principle that the PoC size (in terms of money spent on the Programme) should be taken into account before any expensive formula development is embarked upon. It was agreed that the work needed to calculate age-cost relationships for this PoC could be extremely complex and costly. Since this would be disproportionate to the potential benefits arising from having such weights, the Group decided not to pursue this work at the time of the 3rd Report.
- 11.7 It was agreed that resources should be allocated on the basis of equal shares for all age groups within the population aged 16-64.

Additional Needs

- 11.8 The Group recognised, however, that there might be marginal impacts of needs weightings within this PoC relating to health and other variations. Because of the materiality argument, however, it was agreed to adopt a pragmatic approach to identifying an appropriate weighting and it was accepted that applying the 'Under 75' SMR to the relevant population offered a reasonable solution. The Group reviewed this decision at the time of the 3rd Report, and it was agreed that it should remain, as the interim needs weighting until such times as a better option is identified. It was further agreed that the SMR should be calculated using the latest available 5-year deaths data.
- 11.9 Table 11.1 shows the Under 75 SMR for each HSS Board calculated using deaths in the period 1998-2002 and the revised 2000 mid-year population estimates (MYEs).

**Table 11.1 Primary Health & Adult Community Needs Index
(‘Under 75’ SMR)**

HSS Board	‘Under 75’ SMR (1994-1998 deaths and revised 1996 MYE)
EHSSB	104.38
NHSSB	93.63
SHSSB	97.20
WHSSB	102.21
N Ireland	100.00

Note: The ‘Under 75’ SMR is updated on an annual basis

11.10 This index was subject to consultation at the time of the 3rd Report and was endorsed by the Minister, and implemented from 2001/02 to 2004/05.

Recommendation

11.11 The Group recommends the continued application of the current index for this PoC.

12 RURAL COSTS

Introduction

12.1 The Group has recognised the importance of accurately taking account of rurality/ sparsity factors in its allocations to Boards. This methodology is detailed in Chapter 12 of the 3rd Report from the CFRG.

Modelling Results

12.2 Table 12.1 shows the 'rurality budget' for each of the 10-modelled services as identified in the 3rd Report at N Ireland level along with each HSS Board's percentage share of that budget. The 'rurality budgets' have been uplifted, on an annual basis, from their 1996/97 base to 2002/03 using Trust expenditure data relating to each of the services (2002/03 is the latest year for which expenditure data are available).

**Table 12.1 N Ireland Rurality Budget (£ 000s) & HSS Board
Percentage Shares in Respect of Modelled Service Areas,
2002/03**

	EHSSB	NHSSB	SHSSB	WHSSB	N Ireland
District Nursing	34.59	24.85	20.94	19.62	£ 5,073
Community Psychiatric Nursing	27.47	27.14	23.96	21.43	£ 1,095
Health Visiting	28.56	25.48	23.45	22.51	£ 2,098
Occupational Therapy	30.19	27.11	20.89	21.81	£ 1,762
Podiatry	30.54	26.44	21.17	21.85	£ 1,561
Community Midwifery	28.85	25.13	23.18	22.84	£ 2,133
Community Social Work	27.83	26.69	22.81	22.67	£ 6,047
Emergency Ambulance	25.56	27.79	21.63	25.03	£ 2,774
Non-Emergency Ambulance	27.25	25.35	22.65	24.75	£ 3,217
Mental Illness Day Centres	29.28	23.88	23.86	22.98	£ 3,088
Total					£ 28,848

- 12.3 The modelled ‘rurality budgets’ were extrapolated to those other services with a significant travelling component using the 1996/97 expenditure data and again uplifted to 2002/03 expenditure levels. The extrapolated results for 2004/05 are shown in Table 12.2. These will be updated annually with the latest information available and will be used in future allocations.

Table 12.2 Final HSS Board Rurality Budgets (£ 000s) and Percentage Share, 2004/2005

	Rurality Budget £ ‘000s	Percentage
EHSSB	£ 13,326	29.60 %
NHSSB	£ 11,541	25.64 %
SHSSB	£ 10,089	22.41 %
WHSSB	£ 10,066	22.36 %
NI Total	£ 45,022	100%

Limitations

- 12.4 It has been necessary to extrapolate results to a number of services. Whilst providing a reasonable estimate of the rurality budget for those services, this will introduce an additional source of error, which is not present in the modelled services.
- 12.5 Travel speeds assumed in the modelling are subject to all sorts of temporary external influences such as weather conditions, road works, etc. However, fluctuations in journey times tend to average out over time and those used in the modelling represent average times over different classes of road. The resultant output journey times have high face validity and compare reasonably well with those used in other N. Ireland transport models. Nevertheless, road improvements and new traffic measures can lead to changes over time so this is an area, which should be kept under review.

- 12.6 Each of the modelled services requires a large number of user defined inputs such as service demand rates, unpredictability of demand, time spent per visit, etc. Whilst, in the main, the current assumptions are based on best available evidence, further research may yield better estimates.
- 12.7 Rurality budgets are calculated for individual service centres and each Board's rurality budget is the aggregate of its individual service centres budgets. This assumes that there is no significant cross-Board flow in the use of services. Although this would seem a reasonable assumption to make at Board level, it is less robust for sub-Board allocations.
- 12.8 The modelling is based on actual rather than optimum locations and thus may give rise to cost inefficiencies which, in some instances, could be regarded as avoidable. The Group felt, however, that they could not endorse a travel related adjustment to allocations based on journeys which travelling professionals would not actually make in reality. In addition, optimised locations would change the current pattern of overhead costs and it has not been possible, as yet, to take account of overhead costs in the economies of scale work. Whilst adopting actual rather than optimum locations may appear inconsistent with the 'Community Services' economies of scale work (reported in Chapter 16), it should be stressed that the economies of scale research is not concerned with travel costs. Rather it is concerned with the relationship between unavoidable scale costs and rurality. It was considered necessary, therefore, to assume theoretical locations in order to properly isolate these particular costs.

Recommendation

- 12.9 The Group recommends that the the HSS Board 'rurality budgets' referred to in Table 12.2 and other recommendations as qualified in the 3rd Report continue to be used as the basis for making a rurality adjustment to Board allocations.

13 UNMET NEED

Background

- 13.1 The ultimate objective of any equitable resource allocation mechanism is to ensure that there is equity of access to health and social care services for people with equal needs.
- 13.2 The models which have been developed to allocate resources are based on an analysis at small area level of the statistical relationships between the use made of health and personal social services and a wide range of indicators of morbidity, mortality, socio-economic characteristics and supply. In short, this analysis assumes that the use made of health services reflects differences in the relative need for health and social care after adjusting for the effects of supply.
- 13.3 However, an important limitation of this approach has always been recognised, and is summarised by Carr-Hill et al (1994:138):

‘This entire study was predicated on the assumption that utilization of NHS inpatient resources is a good predictor of health care need. For many reasons this assumption may be suspect. Some groups of the population may be systematically excluded from NHS services, while others may “capture” more NHS resources than their clinical need justifies. There is a clear need for research to establish whether utilization is a legitimate predictor of need’

Unmet need can therefore be conceptualised as a gap between need and utilisation: if the level of need is greater than the level of utilisation, then there is unmet need.

- 13.4 The National Review of Resource Allocation Report to the Scottish Executive ‘Fair Shares For All’ (1999:156) similarly noted that resources may not be allocated in line with needs if the needs of some population groups (for example those from deprived or rural areas) are less likely to be reflected in

their use of services than the needs of other population groups. This limitation was recognised in the 3rd Report from the CFRG and was reinforced during consultation. In England, the ‘Allocation of Resources to English Areas Report’ (2002: 89) found evidence of unmet need for Acute services and statistical adjustments were employed to address this.

13.5 In line with current thinking in England and Scotland, the Group commissioned Deloitte & Touche to conduct research, which would assess the implications of unmet need for resource allocation in N Ireland. Specifically, the research was to:

- Define what characteristics are most associated with unmet need for health and social services;
- Identify which services are most affected;
- Assess the implications for resource allocation and for addressing health and social care inequalities:

13.6 The expected outcome was to produce a methodology for adjusting for unmet need in the capitation formula. Full details of the research are contained in the Report “Inequalities in Health and Social Care Use: the Implications for Resource Allocation in the HPSS”, (2003).

Approach

13.7 The aim of the research was to empirically challenge two key assumptions underpinning utilisation based capitation formulae:

- The relative use of services reflects relative need in deprived and rural areas –this was tested by the Shortfall Test; and

- To consider whether the relative use of services adequately represents need across all Boards or administrative areas. It is assumed implicitly that ‘on average the system gets it right’ but some areas might be more ‘right’ than others. The Variations Test tested this.

13.8 The tests were conducted in the five PoCs whose target allocations, at the time the research was commissioned, were calculated using data on the relationship between health care use and population characteristics, viz:

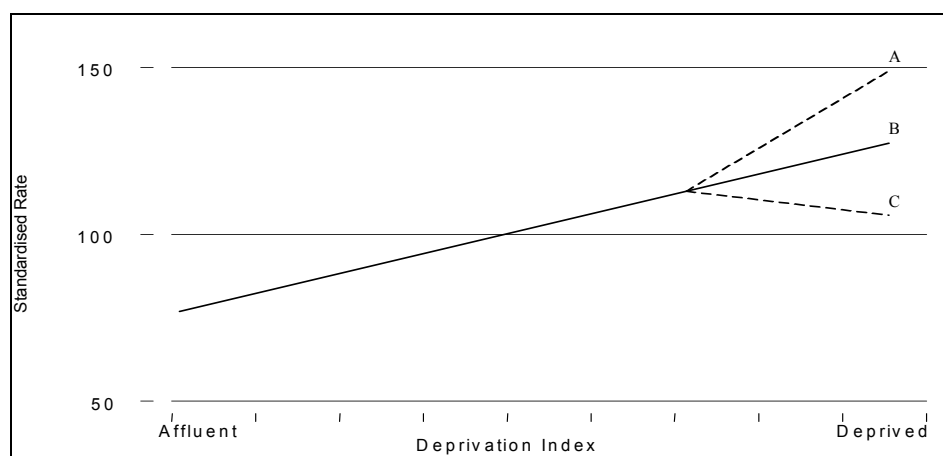
- Acute PoC;
- Mental Health PoC;
- Elderly PoC;
- Family & Child Care PoC; and
- Maternity & Child Health PoC

Unmet Need Test Methodology - Shortfall Test

13.9 The Shortfall Test involves the comparison of the ‘shape’ of the relationship between resource use and deprivation (or rurality) and the ‘shape’ of the relationship between epidemiological data and deprivation (or rurality) over a specific measure of deprivation (or rurality). In this study deprivation was measured using the Noble Multiple Deprivation Measure 2001, whilst rurality was measured using a N Ireland specific rurality measure which was developed during the course of research for the 3rd Report (see Chapter 12 of the 3rd Report for further details).

The Shortfall Test is best illustrated by way of example.

Figure 13.1 Possible Relationships Between Deprivation and Resource Use



13.10 A linear relationship throughout the full range of deprivation is represented by Point B. Point A is the case where the effect of deprivation becomes stronger at high levels of deprivation. Point C is the case where the effect of deprivation becomes weaker at high levels of deprivation.

13.11 There is unmet need in deprived areas under two scenarios:

- If the relationship between deprivation and healthcare resource use resembles line B and the relationship between deprivation and morbidity resembles line A (i.e. shortfall); and
- If the healthcare resource use – deprivation relationship resembles line C and the morbidity - deprivation relationship resembles lines A or B (i.e. shortfall).

The above relationships can also be envisaged in terms of rurality.

13.12 In this research, both resource use (after controlling for the effects of supply) and epidemiological data (derived from the 1997 and 2001 N Ireland Health and Social Wellbeing Surveys) were plotted separately against deprivation and rurality. Tests were then carried out for non-linearity in the relationships (a

non-linear relationship suggesting unmet need). Where any such non-linearity was detected, the option existed to correct it by including an appropriate non-utilisation based measure of deprivation or rurality in the final formula.

- 13.13 The Shortfall methodology also used a set of specifically developed epidemiological health variables (estimated at small area level from the N Ireland Health and Social Wellbeing Survey) to augment the existing needs variables dataset, which tended to be utilisation based. The aim of the overall approach was to select non-utilisation based health and/or unmet need explanatory variables, over and above the effect of existing needs indicators and supply controls, which would correct any identified unmet need. Statistical regression identified whether the additional health and unmet need variables were significant after controlling for the effects of supply.
- 13.14 This approach effectively allowed any identified shortfall in the use of services in deprived or rural areas to be statistically corrected.

Unmet Need Test Methodology - Variations Test

- 13.15 It is recognised that the pattern of relationships between deprivation and use of services may vary significantly between HSS Boards or Trusts. For example, some Boards or Trusts may be more effective than others at ensuring the allocation of resources between affluent and deprived areas more closely reflects the difference in their need for health care. The Variations Test compared the relationship between the use of services and deprivation categories across Health Boards/Trusts. The test looked for significant variations in the relationship between the use of services and population characteristics in each PoC, and a variation adjustment was applied where significant variations were found. The adjustment was made by re-estimating the PoC formulae using the relationship between the needs index and resource use from those Boards/Trusts where resources were most effectively targeted.

Results

13.16 Table 13.1 summarises the evidence of unmet need found in each of the 5 PoC initially investigated.

Table 13.1 Evidence of Unmet Need in Current PoC Models

PoC	Evidence of Shortfall?	Evidence of Variation?
Acute	Yes	Yes
Maternity & Child Health	No	Untested
Family & Child Care	Yes	No
Elderly	No	Yes
Mental Health	Yes	Yes

Note: It was not possible to apply the Variations Test to the Maternity & Child Health PoC because it is based on individual level data.

Acute PoC

13.17 The researchers found evidence of shortfall and that the shortfall adjustment would reallocate substantial resources from affluent to deprived areas. However, they considered that the post-hoc application of the adjustment would not be desirable as there may be correlation between the existing variables and additional variables (i.e. an element of double counting). The researchers also had concerns about the validity of applying an adjustment based on survey data from 1997 and 2001 to utilisation data from 1994. They recommended that ideally the unmet need adjustment should be integrated into the estimation process as a matter of routine, and that this be done using more recent utilisation data.

Mental Health PoC

13.18 The researchers found evidence of shortfall and recommended that the mental health formula incorporates an additional variable based on the General

Health Questionnaire contained within the N Ireland Health and Social Wellbeing Survey. (The research on the mental health programme reported at Chapter 7 applied this text but in the event no further unmet needs adjustment was necessary).

Elderly PoC

- 13.19 The researchers concluded that unmet need was not an important issue in this model and recommended no change to the current elderly model.

Family & Child Care PoC

- 13.20 The researchers found evidence of shortfall but expressed concern that the existing Family & Child Care model is not statistically robust, and they recommended that no adjustment for unmet need be applied to Family & Child Care model until it can be improved (this work is reported in Chapter 5).
- 13.21 The researchers recommended that the variations adjustment not be applied as the evidence base to support this adjustment was less robust. In addition, the variations adjustment would have a relatively minor impact and the researchers felt that the shortfall adjustment would adequately adjust for unmet need.
- 13.22 The researchers also recommended that the shortfall testing and adjustment methodology should become the standard modelling approach within each PoC when elements of the capitation formula are revised. This approach has been applied to each of the new research projects in this report.
- 13.23 Table 13.2 summarises the findings of the shortfall test as applied to the new PoC models.

Table 13.2 Evidence of Unmet Need in New PoC Models

PoC	Evidence of Shortfall?
Family & Child Care	No
Mental Health	No
Learning Disability	Yes – Minimal Impact
Physical & Sensory Disability	No

Quality Assurance

- 13.24 The research was peer-reviewed by Professor John Deeble of the National Centre for Epidemiology and Population Health, Australian National University. Professor Deeble concluded that the study was methodologically sound and that its recommendations were correct.
- 13.25 The research was also peer-review by Dr Gabrielle Kelly of University College Dublin. Dr Kelly concluded that there does appear to be evidence of unmet need in the Acute PoC. However, Dr Kelly raised concerns about the use of survey data in constructing morbidity variables at small area level. She felt that the variables could be biased because they were based on a small sample size, and that this, in turn, would lead to biased estimates of regression coefficients. Dr Kelly also felt that the Shortfall Adjustment might over-adjust. Dr Kelly recommended that numerical results of the research should not be used, and that further research is necessary.
- 13.26 In addition to formal peer review, Project Support Analysis Branch (PSAB) of the DHSSPS examined in detail certain aspects of this research. One area, which was carefully examined, was the representativeness of data from the N Ireland Health and Wellbeing Surveys. PSAB were satisfied that the age/gender, the housing tenure and the religion profile of the survey's respondents was reasonably close to profiles constructed from 2001 Census data. PSAB were also satisfied that respondents were broadly representative of

the types of area they resided in, for example respondents from affluent areas tended to belong to the higher socio-economic groups and those from deprived areas tended to belong to lower socio-economic groups. PSAB were also able to confirm that the survey had a good response rate and that there was no evidence of certain types of respondents (eg from certain areas or belonging to certain socio-economic groups) systematically under- or over-reporting their health status.

- 13.27 PSAB also sought expert opinion from the Office for National Statistics on the suitability of using survey data to construct small area morbidity variables. While ONS are of the view that this can be done, they felt that the methodology used in the unmet need research was not as robust a single multilevel approach. It should be pointed out, however, that the ONS single multilevel approach used in their Small Area Estimation Project had not been fully developed and published at the time of the unmet need research.

Limitations

- 13.28 The research looked at unmet need along only two dimensions: deprivation and rurality. There may be unmet need across other dimensions, which were not explored in this research. For example, investigations in Scotland and England suggests that there is unmet need for health care in minority ethnic groups.
- 13.29 There are complex linkages between deprivation and rurality, which were not fully explored in this research, and there would be merit in disentangling them to look at their influence separately. For example, the research found evidence that the use of services increased in urban areas, but this could be due to a concentration of deprivation in such areas and may drown out any unmet need, which may be apparent in rural areas. In order to further explore, the research could look for shortfall in the use of services after controlling for supply *and deprivation* effects. This would show the effect of rurality alone on resource use.

- 13.30 Many of the needs variables used to re-estimate the PoC formulae, and to conduct the unmet need tests date from the time of the 1991 Census. These data were not consistent with the more up-to-date epidemiological data.
- 13.31 The source of the epidemiological based data was the N Ireland Health and Social Wellbeing Survey. It needs to be borne in mind that small area estimates based on survey data may contain bias, particularly where the incidence of the characteristic being estimated is low. It is important to note, however, that the Shortfall methodology does not rely on the use of estimated epidemiological variables. These provide additional evidence as to the state of the relationship between morbidity and deprivation/rurality and can augment the modelling, but it is still possible to correct for the identified shortfalls in their absence (for example, by using the Noble Multiple Deprivation Index as a control in the modelling).
- 13.32 The variations adjustment includes a subjective judgemental element in choosing an appropriate reference point. Choosing the reference point is purely an arbitrary decision. On the one hand one could use as a reference point the relationship between the use of services and the needs index in the Board or Trust area, which manifestly skews most resources towards deprivation. In doing so there is risk of choosing as a reference point a relationship, which is symptomatic of an over-compensation for need. A reference point closer to the average may well be better, but there is no evidence to suggest which is 'right'. In the course of this research, in the Mental Health PoC, one Trust had a noticeably different relationship between use of services and deprivation. The presence of such relationships gives rise to another decision as to whether to exclude such areas altogether when choosing an appropriate reference point.

Recommendations

- 13.33 The Group recommends that:

- Acute model - Despite shortfall being detected, no adjustment to be made to the existing formula at present. When the formula is next updated using more recent utilisation data, the shortfall test to be carried out again and, if necessary, adjustment be made;
- Mental health – no adjustment to be made to the existing formula as no shortfall was detected in the updated modelling work;
- Elderly model – no adjustment for unmet need to be made. When the formula is next updated using more recent utilisation data, the shortfall test to be carried out again and, if necessary, adjustment be made;
- Family & Child Care model – no adjustment to be made to the existing formula as no shortfall was detected in the updated modelling work;
- Learning Disability – whilst some evidence of unmet need was found when the Shortfall Test was applied to the revised model, the Group note that as the associated unmet need adjustment would result in such small changes to allocations (less than 0.1% at locality level), the adjustment should not be made;
- Physical & Sensory Disability model – no adjustment to be made to the existing formula as no shortfall was detected in the updated modelling work;
- Those areas which exhibit noticeably different relationships with need (as identified via the variations test) should be considered for exclusion from the modelling as outliers if the impact on allocations is material; and
- Methodological issues (such as treatment of supply, the use of epidemiological data, the functional form of models) to be considered as part of the future CFRG Work Programme;

14 CROSS BORDER USE OF HEALTH SERVICES

Introduction

14.1 A sub-group comprising senior HSS Board finance personnel and statisticians from DHSSPS was formed to conduct a study into the use of health services here by residents from the Republic of Ireland and vice versa. The Terms of Reference required the sub-group to report on:

- The background and current position regarding the funding of cross-border treatment;
- Quantification of the level of use of health and social services by Republic of Ireland citizens and vice versa; and
- Any other related issues.

14.2 The full report of the sub-group “Cross Border Use of Health Services” is available upon request from the contact point listed at the start of this report.

Methodology

14.3 The sub-group considered the differences in entitlement to the two health services in Ireland and formulated the hypothesis that given the fact that the N Ireland system provides a service which is essentially free to N Ireland residents, people from the Republic of Ireland may avail of the health service here and hence place a disproportionate burden on HSS Boards which share a border with the Republic of Ireland.

14.4 The evidence used to test the hypothesis came from a number of sources:

- The Department's Hospital Inpatients System (this records the country of origin of all inpatients in N Ireland);
- Statistics on the origin of elderly homes residents;
- Official births data;
- Registered cross border workers data;
- Migration data from the Irish Census;
- The Central Health Index of persons registered with GPs; and
- Data on prescribing costs.

14.5 In addition, representatives from the Central Services Agency and several hospitals were consulted. Data was also obtained from official sources in the Republic of Ireland on the numbers of N Ireland residents availing of acute hospital care in public hospitals in the South.

14.6 Statistical analysis involved examining the distribution of 'list discrepancy'¹ at electoral ward level examining the distribution of the per capita cost of prescribing, and examining the relationship between list discrepancy and the cost of prescribing.

¹ list discrepancy is the difference between an area's actual population and the number of people registered on the Central Health Index

Discussion of Findings

- 14.7 There were 2,430 persons who declared themselves as residents of the Republic of Ireland who attended N Ireland hospitals as inpatients. 698 of these were private admissions; hence they were paid for either under health insurance or by the patient directly. Of the 1,732 non-private inpatients, 1,175 received elective treatment. Enquiries with various hospitals reveal that these patients are typically treated under contractual arrangements: no evidence has been found of patients from the Republic of Ireland receiving free elective treatment here. Republic of Ireland patients do receive free emergency treatment here under the Reciprocal Arrangement, and likewise N Ireland patients can enjoy similar benefits in the South.
- 14.8 Hospital inpatient statistics, however, have no way of revealing the numbers of patients who might ordinarily reside in the Republic of Ireland but who also hold a N Ireland medical card and have an address in N Ireland which enables them to avail of services here. Anecdotal evidence suggests this practice does go on, but it is not possible to estimate the extent of it.
- 14.9 Similarly, there is anecdotal evidence that expectant mothers ordinarily resident in the Republic of Ireland but who also have an address in Northern Ireland, may gain admission to maternity facilities here then return home soon after the birth.
- 14.10 It is known that the number of people registered with GPs in N Ireland exceeds the resident population here (a phenomenon known as ‘list inflation’), therefore there are either people with N Ireland medical cards who are not resident here, or some N Ireland residents have more than one medical card, or there is a combination of both. The number of non-N Ireland residents who retain their N Ireland medical cards cannot be established, nor can it be established where these people live. It is possible, though, that some people who migrate from N Ireland to the Republic of Ireland may retain their medical card. It would not be impossible – or even difficult – for such people to avail of medical services here.

- 14.11 An analysis was carried out to establish whether list inflation in border areas corresponded with either higher than expected prescribing costs or inpatient utilisation after controlling for the impact of both age and socio-economic factors. However, the statistical correlation was found to be weak against both of these utilisation measures.
- 14.12 Overall, it has not been possible to prove beyond all doubt the existence of unentitled use. However, the enablers for unentitled use are clearly present – a differential costing structure between the two jurisdictions in Ireland, the potential for people outside of N Ireland to retain N Ireland medical cards, the ease of use of a N Ireland address even if the individual is ordinarily resident elsewhere – so it seems reasonable to conclude that unentitled use does occur. Furthermore, anecdotal evidence from a number of experts at different hospitals suggested the problem existed, even though it could not be proven. On the balance of probability, therefore, the Group conclude that there is some (unknown) degree of unentitled use.

Conclusions

- 14.13 There are a range of refinements to information systems and initiatives which could potentially make it easier in future to quantify the use (both entitled and non-entitled) of our health service by persons not ordinarily resident in N Ireland land, and which could make non-entitled use more difficult. These are listed below.

- Modification of the Hospital Inpatients System so that details on the payment for treatment are captured. In addition to the existing NHS/Private and Elective Emergency/Other fields, the following fields might be included for patients originating from outside N Ireland:

Payment by Health Board/Health Authority in country of origin

Payment by Health Insurance Company

Payment by individual

Payment from other source

No payment – emergency

- Monitoring of the cost of emergency treatment under the Reciprocal Arrangement.
- The conduct of a regular census by Boards of nursing home residents including the gathering of information on the residents' last address, the address of their next of kin, funding information, and length of stay information (this information would also be of use in future CFRG research).
- Greater connectivity between the Child Health System and similar systems in Great Britain and the Republic of Ireland, so that when a child leaves N Ireland the destination of the child is known.
- The CFRG, or a sub-group, could meet annually with counterparts in the Republic of Ireland to discuss issues of cross-border flows.
- Development of an inter-agency approach, utilising various data systems, in order to establish the whereabouts of all medical cardholders registered in N Ireland. An accurate Central Health Index needs to be viewed as a worthwhile investment, which will save money in the long term.
- Monitoring of best practice and future developments in Great Britain and the Republic of Ireland in respect of preventing and detecting non-entitled use of health and social care services.
- Ensuring that up to date guidelines and legislation regarding entitlement to health and social services in N Ireland is effectively disseminated to all 'gatekeepers' of the health and social services here.

Recommendations

14.14 The Group recommends that:

- information systems are refined and mechanisms are put in place in order to help monitor and quantify future cross-border patient flows with a view to restricting non-entitled use of health and social care services; and
- births data used in the Capitation Formula should in future exclude births occurring in N. Ireland to mothers who reside outside N. Ireland because such births will already be compensated for by way of payment to Trusts.

15 USING THE FORMULA TO INFORM LOCAL EQUITY STRATEGIES

Introduction

- 15.1 At the N Ireland level the capitation formula seeks to provide for equity of access to services for the population as a whole by ensuring that the resources available for health and social care are distributed fairly across the four HSS Boards, taking account of differential need and the age/gender profile of their populations. Adjustments are also made for factors such as rurality and ability to contribute towards the costs of certain social care services. Responsibility for achieving an equitable distribution of resources across the four Boards ultimately lies with the Department.
- 15.2 HSS Boards are responsible for ensuring an equitable distribution of resources across their local populations, thereby helping to provide for equity of access to services for their populations after similarly taking account of differential need associated with differing structural socio-economic and age/gender factors within those populations.
- 15.3 Achieving equity in the distribution of resources at local level has always been an important consideration in local health and social care investment decisions. There is in effect a moral imperative to achieve this. However, the issue in recent years has attracted increasing importance given the formal establishment of policy priorities such as New Targeting Social Need, promoting social inclusion, rurality proofing and meeting equality obligations.
- 15.4 The application of the formula at local level has an important contribution to make in assisting Boards meet their policy obligations in this regard and this section provides advice on this issue.

Applying the Formula at local level

- 15.5 There are a number of factors, which need to be considered in applying the formula at local level. These point to the need to apply judgement in local investment decisions in the pursuit of equity between sub-Board populations. The key factors for consideration are outlined below.

The Reliability of the Formula at Small Populations Level

- 15.6 In its 3rd Report, the Group emphasised that the formula was statistically robust for populations of over 250,000 people. Below this threshold confidence intervals in the statistical analysis become wider producing less robust results for given populations' target fair shares of the resources available. That said, the target shares represent the best statistical assessment of a given populations equitable share of the resources available. The limitations in the statistical analysis, however, do mean that in considering the equitable distribution of resources across localities other factors than the mechanistic application of the formula need to be taken into account.
- 15.7 In assessing the degree of equity achieved in the current profile of services Boards will wish to compare current expenditure levels with target fair shares of allocated resources derived from the direct application of the formula. The above analysis suggests that a degree of caution is required in the interpretation of the analysis as the formula will not be sufficiently sensitive to pick up all differential need across localities, nor will it compensate populations appropriately for certain unavoidable costs which fall disproportionately across the Board populations. Such factors are further discussed below.

Sensitivity to Local Need

- 15.8 It should be emphasised that at N Ireland level the statistical analysis underpinning the formula seeks to develop relationships between the need to provide for care and hence incur expenditure, and socio-economic variables which may explain different levels of service utilisation across communities. Although the formula is built up from local area analyses (generally at electoral ward level), the relationships that emerge at the NI level and for which the formula subsequently compensates populations will have been strong enough to impact across the NI populations. This of course does not mean that the formula is sensitive to each and every single need presenting in a given local population. There may well be some significant needs impacting on the total need for care within a local population to which the NI formula is not sensitive.
- 15.9 Examples of the need presenting in local populations, which may not be strong enough to influence the NI formula include those associated with ethnic groups or with particularly localised problems (homelessness, drug abuse etc). Such issues however will need to be considered by Boards in determining the degree of equity achieved in the existing profile of services.

Family Practitioner Services

- 15.10 The NI formula does not apply to Family Practitioner Services. Increasingly, and particularly under the new General Medical Services Contract, GPs and other primary care professionals have the potential to offer services previously provided in the hospital sector. Family Practitioner Services may therefore substitute for services normally funded through monies distributed by the NI formula. As Boards develop equity strategies they may wish to take this into account.

Expenditure not directly linked to Localities

- 15.11 Not all resources distributed by the formula relate directly to specific localities, and judgements need to be made in considering whether or not to count such expenditure against the target shares of resources for localities. For example, Accident and Emergency hospital facilities are not sited in all localities and it would not be reasonable for a locality hosting a facility that is accessible to all, to be charged with the full costs of such provision. Ideally adjustments will be made so that host localities are not penalised with the full costs.
- 15.12 Similarly it makes sense to exclude Board administration and management costs from local equity considerations.

Infrastructure Costs

- 15.13 Chapter 16 considers the need to make adjustments to take account of the fact that depending on the inherited profile and structure of services some providers may be better placed than others to exploit economies of scale. Infrastructure costs can also fall disproportionately across populations, and these may need to be recognised in equity assessments. Local judgements need to be made about such matters in developing local equity plans.

Other Technical Factors

- 15.14 In applying the capitation formula at locality level, decisions have to be made in a number of areas about whether to use average NI results or those that relate specifically to the given Board area. These are discussed below.
- 15.15 The relative cost of young people compared to adults or older people is not precisely the same in each Board and the NI results represent the average position across the four Boards. The additional needs formulae have been

developed using the NI average age/cost relationship so if the NI needs formulae are to be used to distribute resources to localities then it would seem more appropriate to use the corresponding NI age/cost relationship. If however a particular board had a policy of focusing some additional resource on a specific age group, they may wish to use their local age/cost relationship to fund localities in such a way as to enable them to spend the extra resource on the specific age group. Sample checks have shown that the difference in outcome between these two approaches is not large.

15.16 As has been discussed in Chapter 19, the results from the different PoC formulae are weighted together using expenditure so that the largest spending Programmes can have most influence on the overall result. There are clear reasons why expenditure would be distributed across PoCs differently from one board to another. A Board with a greater proportion of young people will need to spend a larger proportion of their resources on family and child care or child health services whereas a Board with a higher level of older people will have to invest more in services for older people. When allocating resources to localities, Boards will have to consider whether to use PoC weights for their Board produced by applying the NI regional formula to their own population. These decisions, although technical in nature, are also a matter of judgement for the Boards.

Recommendations

15.17 The Group recommends that:

- the capitation formula is used to inform equity analysis and the subsequent preparation of Board strategies to maintain or achieve equitable resources for localities taking account of their differing needs;
- the accuracy of the Formula for locality-sized populations be borne in mind in reviewing the equity position; and

- Boards take full account of local factors and other technical issues in arriving at a judgement about the equity position.

16 ECONOMIES OF SCALE

Introduction

- 16.1 The 3rd Report from the CFRG had identified that an important requirement of the resource allocation formula was to allow for any differential costs faced by areas in meeting a given level of demand. One such additional cost arises through the existence of economies of scale, which may affect the revenue costs of providing hospital and community-based health services (HCHS) and personal social services (PSS) in N Ireland.
- 16.2 The Group wished to determine any funding implications for the HSS Boards associated with their unavoidable attempts to balance scale and access, involving the quantification of the economies of scale (EoS) costs faced by the various Boards due to their unique population distribution characteristics.
- 16.3 The Group commissioned MSA Ferndale to explore this issue and specifically to:
- Establish how this effect differs between administrative and service catchment areas across N Ireland; and
 - Quantify such effects in terms of the relative costliness arising from these issues alone that could be applied to compensate HSS Boards for such legitimate and unavoidable cost differences.
- 16.4 The analysis has not been concerned to evaluate the adequacy or otherwise of the overall quantum of resources available for the provision of the selected services in NI.

Background

- 16.5 The 3rd Report from the CFRG had adopted research to develop a method for allocating resources to the HSS Boards, to take account of the “varying costs of providing health and personal social services in areas of different population distributions”. However, this work was specifically concerned with differential travel costs incurred by health and social care professionals when providing their services and is separately reported in Chapter 12.
- 16.6 The MSA-Ferndale Secta research reflected in this report has now considered the issue of Economies of Scale and specifically the scale relationships for the two distinct service groups of ‘Hospital Services’, and a range of ‘Community Services’.
- 16.7 The hospital services research has paid regard to the spatial demand for different levels of provision from community hospitals, Acute general hospitals, and regional centres.
- 16.8 In respect of a range of community services, the research has explored the scale relationships associated with configuring community services delivery in order to achieve equity of access to services for respective local populations. The community methodology has been developed to extrapolate the community service results, from those services explored in detail, to all relevant services.
- 16.9 Technical details of the work undertaken by MSA-Ferndale Secta are contained in their report: ‘Research on the Differential Costs of Providing Health and Social Services in Areas Across NI Arising Through Economies of Scale’ (2003).

Services Selected for Research

16.10 The Project Steering Group, in collaboration with the research team, agreed that the following services should be tested for EoS effects.

Hospital Services

- Current operational locations for main Acute services;
- Locations determined through the process as 'optimal' from an access and volume perspective; and
- The locations envisaged under *Developing Better Services* proposals.

Community Services

- District Nursing;
- Day Centres;
- Social Work (Family & Child Care);
- Emergency Ambulances;
- Health Visiting;
- Home Help;
- Occupational Therapy;
- Community Midwives; and
- Community Psychiatric Nursing

Modelling Approach

Hospital Services

16.11 The modelling approach adopted by the researchers in respect of N Ireland's Acute hospitals explored their associated activity and costs in order to:

- Determine (or otherwise) whether there was evidence for EoS effects in the operations of hospitals;
- Identify and quantify such scale effects if they were present in NI so that the relevant scale costs for hospitals of different sizes could be estimated;
- Model a number of alternative hospital configurations or scenarios in terms of access, activities and flows with a view to estimating overall scale costs; and
- Attribute the derived EoS costs to each HSS Board taking account of expected or actual patient flows to each hospital in each scenario.

16.12 The researchers sought to explain the difference for each hospital between the actual cost of running the hospital and its 'expected' cost. The main factors assumed to contribute to expected cost were: (a) the number of specialties covered by the hospital; and (b) the overall case complexity of the hospital.

16.13 The model assumed that the observed cost per episode (inpatient and outpatient) in Acute facilities was affected by:

- Case mix complexity and marginal differences in length of stay;
- Achievable scale-related efficiencies in delivery; and
- Residual cost differences that reveal no obvious causal relationships.

- 16.14 The derived expected cost for each hospital was based on the available NI Hospital Related Group (HRG) weights and where these were not available the relevant English average HRG weights otherwise. These expected costs were then compared with the actual revenue costs and differences related to activity levels using the combined volumes of day cases and inpatients.
- 16.15 This approach builds on similar work undertaken for the Arbutnott Report (“Fair Shares for All – National Review of Resource Allocation for the NHS in Scotland, 1999”) in respect of the capitation formula in Scotland.
- 16.16 The relationship estimated by the hospital EoS modelling (not including the residual unexplained effects) was then applied to estimated demand at facilities under the three different delivery configurations outlined in paragraph 16.10.

Community Services

- 16.17 In relation to Community Services, the researchers argued that the cost efficiency is a function of achievable scale. This is particularly the situation where a proportion of the community services demands that arise are unpredictable and a standard of service response is desired. As such achievable scale will be driven by a requirement to configure community service delivery in such a manner as to provide equity of access to services between respective geographical areas across NI.
- 16.18 In support of this modelling assumption, the researchers cited observations that smaller delivery teams need proportionally more capacity in order to respond in an adequate manner to demands on busy days (days where demand is above the average level) than do larger teams. Therefore, cost efficiency will be depressed in smaller teams under such performance assumptions.

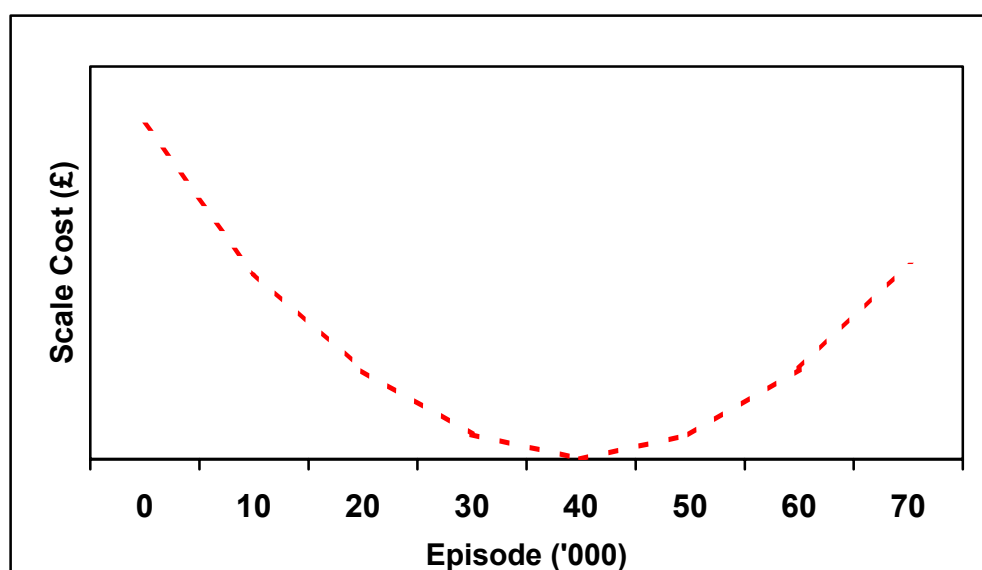
- 16.19 The researchers argued that there are three possible aspects of community services, which might be relevant to an examination of EoS, including:
- The size of offices / facilities used;
 - The size of the operating teams; and
 - The population distribution (rurality) of the areas served.
- 16.20 However, it was only been possible to examine the scale effects associated with the size of facilities in respect of day centres. This is because community services very often share facilities with other community and non-community services leading to difficulties in apportioning costs. For services, the research concentrated on scale effects associated with the size of teams and the interaction with population sparsity.
- 16.21 The work has involved developing an optimal configuration for each service, allowing LGD population access within target times agreed with the Steering Group.
- 16.22 In order to quantify the workload at each location for a respective population, the researchers used a computerised model of the type employed in the rural travel costs research (see Chapter 12). This model made use of the expected distribution of demands on a travelling service together with simplified models of the routing, scheduling and delivery of the service to estimate key outputs in respect of travelling distances and travelling times. However, the researchers also considered the adoption of this model reflecting congestion travelling factors, and recommended that an average of the two methods be used in the calculation of the community services EoS model.
- 16.23 As was the case with the hospital services component of the research, EoS costs were attributed back to Boards based on the modelled service user flows.

Modelling Results

Hospital Services

16.24 The researchers found a statistically significant relationship between the volume of inpatient episodes (including day cases) at a hospital site and the scale cost per episode. The general shape of the relationship, derived from averaging a number of different cost scenarios, is illustrated in Fig. 16.1. This graph shows that scale costs are greatest for relatively small volumes of episodes (around 5,000 per annum) but decrease rapidly up to a volume of approximately 40,000 episodes per annum. At this point, scale costs are minimized, as economies of scale are exhausted. Costs then appear to begin rising again, but there are difficulties in interpreting whether this increase in costs relates to a diseconomies of scale effect or is attributable to some other phenomenon. This issue is discussed later in the chapter.

Fig 16.1 Estimated Scale Cost per Episode-by-Episode Volume



- 16.25 The modelling investigated a number of cost scenarios and alternatives for controlling for length of stay effects. However, all produced a similar relationship to that depicted in Fig 16.1 suggesting an optimum hospital size of around 40,000 episodes per annum. In the N Ireland context, this equates to a hospital in the range of 400 – 500 available beds.
- 16.26 The derived cost function ($EoS\ Cost\ per\ Episode = 0.2335x^2 - 18.6201x + 372$, where x is the annual number of episodes in thousands) can be applied to each of the 3 hospital configurations considered by the researchers to produce an EoS cost for each hospital. These individual hospital scale costs can then be attributed back to HSS Board of residence based on the patient flows from each hospital. Table 16.1 shows the aggregate EoS Cost faced by each Board resultant from modelling each configuration.

Table 16.1 Total Hospital EoS Costs for Each Modelled Configuration and Associated HSS Board Share

Hospital Scenario	EHSSB (%)	NHSSB (%)	SHSSB (%)	WHSSB (%)	N Ireland (£ 000s)
Theoretical Optimum*	30.6	24.6	20.4	24.4	19,547
Current Locations	44.6	28.6	13.4	13.4	35,688
Developing Better Services*	39.4	25.3	17.8	17.5	22,754

*Uses average of SMOSS and congestion weighted results

- 16.27 It should be noted that the main reason for the large difference in result between the theoretical model versus the current and, to a lesser extent, DBS configurations is that in the theoretical model, the additional costs incurred by hospitals above the optimum size are presumed to be avoidable.

Community Services

- 16.28 As previously stated, the results for the community services research are based on an optimal configuration of service designed to meet pre-determined access criteria. It is necessary to take this approach in order to properly isolate the EoS cost from those other costs, which could be deemed avoidable.
- 16.29 The main output from modelling each of the selected services is the relative staffing level, which is required at each service centre to meet average daily demand levels (includes direct and travel related workload). It is then possible, via the application of a statistical model linking utilisation and variability in demand, to calculate the additional staffing required at each service centre to cope with the failure to maintain full utilisation – this is an unavoidable EoS effect. The additional staffing can then be costed and costs apportioned to HSS Boards based on modelled service user flows.
- 16.30 The 9 community services modelled in detail were selected on grounds of materiality and because they displayed different service delivery characteristics. From these detailed results, the researchers were able to identify a general statistical relationship between the additional scale-related staffing required at each service centre and the (unplanned) variability of its workload. This then allowed results to be extrapolated to other non-modelled community services grouped according to the similarity of the variability in their workload. Table 16.2 show the overall EoS costs for all modelled and extrapolated community services at HSS Board level.

Table 16.2 Total community EoS costs and associated HSS Board share

EHSSB	NHSSB	SHSSB	WHSSB	N. Ireland
(%)	(%)	(%)	(%)	(£000's)
32.4	28.6	19.3	19.7	14,156

Note: Also includes fixed Day Centre costs

Quality Assurance

- 16.31 The research was peer reviewed by Professor Sally McClean (University of Ulster). A report was prepared based on a systematic evaluation of all aspects of the study, detailing where the research was strong and highlighting any areas where improvements could have been made.
- 16.32 Professor McClean's overall conclusion was that the research is a thorough piece of work and employs reasonable assumptions and models. She applauded the range of data sources taken into account and the modelling options investigated. The main area of concern related to the identification of diseconomies of scale effect associated with large-scale facilities. Professor McClean pointed out that the evidence for this effect was rather inconclusive as it was based on only one group of hospitals, and should be further investigated. Nevertheless, she believed that the report "sets a very high standard in terms of research competence, and contains ground-breaking work in terms of methodology".

Limitations

- 16.33 In respect of community services, more empirical work could be undertaken in relation to scale costs that might be experienced in facilities with differing workloads and in teams facing different levels of daily demand in the community services area.
- 16.34 There is also a limitation in that, apart from day centre staffing, it did not prove possible to identify the fixed costs associated with facility size, primarily because such costs are typically shared with other services. Future work should investigate ways of apportioning such fixed costs to the service being modelled.

- 16.35 The community services modelling relies on a lot of user defined input parameters. Whilst these are largely based on expert opinion, results are likely to be quite sensitive to changes in the parameters.
- 16.36 Similarly, the access targets agreed by the Steering Group for each service (community and hospital), having been defined at LGD rather than N Ireland level, are quite challenging. This was necessary in order to isolate scale costs from other avoidable costs. However, such targets may be quite difficult to achieve in reality. This limitation does not effect the ‘Current Hospital’ or ‘DBS’ scenarios.
- 16.37 The evidence for the diseconomies of scale effect is not conclusive as, within N Ireland only one hospital is of sufficient size to provide such evidence. Reliance on a single observation to justify this effect, in the absence of other corroborative evidence, is far from ideal and a detailed examination of costs at the hospital concerned should be undertaken and benchmarked to larger teaching hospitals in GB regions.
- 16.38 The analyses of the various theoretical and future service configurations have had to rely on the assumption that patients will attend their nearest service centre providing the required service (the ‘DBS’ scenario has somewhat modified this assumption to allow for an additional patient flow into the Belfast hospitals based on an examination of current flows). The extent to which this is a reasonable assumption for all services, particularly hospital services, is questionable and requires further work.

Conclusions

- 16.39 There was much discussion amongst the Group about how best to use the results of this groundbreaking work. Whilst the evidence for economies of scale effect was accepted by all (and is heavily supported in the literature), some members did not believe that the case for a diseconomies of scale effect had been sufficiently proven. The researchers themselves, although recommending that both economies and diseconomies effects are recognized

in large and small hospitals, state that further work is required in order to properly interpret the higher costs identified at the upper end of the scale. This view is endorsed by the comments of the reviewer.

- 16.40 It is possible that the higher than expected costs exhibited by the hospital in question could be explained by other factors such as the provision of a teaching and research function or, as a regional centre, a more complex caseload than that reflected in the HRG weightings. It is also possible that, even with a shared management structure, it may not be appropriate to treat the organisation concerned as a single hospital in the analysis but rather to treat it as three independent entities. On the whole, the Group accepted that while there may be higher costs in the hospital group concerned, these could not definitively be attributed to diseconomies of scale without further research. However, because the excess costs may still be unavoidable, members accepted that the research findings should be implemented pending further work on this issue.
- 16.41 There was also considerable debate as to which of the three hospital configurations should be accepted. Whilst, the researchers advocated the theoretical model on the basis that the results were least likely to be contaminated by inefficiency effects, the Group felt that it could not endorse a hospital configuration, which was never going to be implemented. This then left the 'Current' and 'DBS' models with convincing arguments being offered in support of each. It was eventually agreed that as the 'DBS' model represented the strategic plan for hospital services in NI it made most sense to recognize this scenario in future allocations. In view of the existing current cost structures in the hospital sector, some group members expressed strong reservations about this. It was, however, acknowledged that as full implementation of 'DBS' would take considerable time, progress and the associated hospital costs should be subject to periodic review and taken into account when moving HSS Boards toward their revised target capitation shares. Moreover, it was accepted that further research into the predicted patient flows associated with the 'DBS' scenario was required, particularly given the need to apply results at sub-Board level.

16.42 The results of the community services modelling were accepted by all although the need to take fixed facility costs into account in any future work was re-iterated.

Recommendations

16.43 The Group recommends that:

- the regional formula compensates HSS Boards for both the EoS costs associated with ‘DBS’ (as per Table 16.1) and community services (as per Table 16.2) using the same methodology as employed in the existing ‘Rural Costs’ adjustment;
- progress towards implementing “DBS” should be one of the factors taken into account when moving HSS Boards towards their target shares;
- a detailed examination of gross costs in large hospitals be undertaken, and be benchmarked to larger teaching hospitals in GB regions and the implications for the model considered;
- research be commissioned to develop a predictive model of patient flows associated with future hospital configurations;
- any future modelling exercise empirically investigates community scale costs related to facilities with differing workloads and in teams facing different levels of daily demand;
- future research takes account of fixed community facility scale costs using an appropriate apportionment mechanism; and
- all input and demand assumptions associated with the modelling be periodically reviewed and updated as new evidence becomes available.

17 ALLOWING FOR ABILITY TO PAY

Introduction

17.1 Individuals who are looked after in residential or nursing homes make a significant contribution to the costs of their care – based on an assessment of their ability to pay. The level of total income to a Health and Social Services Trust will therefore vary according to their catchment population’s “ability to pay” and this in turn impacts on the total purchasing power amounted with individual Board allocation. A further complication is that until quite recently a number of individuals resident in the residential and nursing home sector since before 1993 had the costs of their care met from the Social Security system. The contribution from the Social Security system was additional to the resources available to the HPSS.

Adjustment for additional income

17.2 Since the 3rd CFRG Report an income adjustment has been made to the formula to equalise the effects of differential income from individuals and the Social Security system at individual Board level. This adjustment was made to the Elderly Programme of Care.

Recent Issues

17.3 CFRG are aware of a number of recent developments which impact on the direct contribution of individuals to the cost of their care and on the notional contributions from the Social Security system. These include;

- The introduction of free nursing care
- The abolition of the residential care allowance
- The transfer of resources for individuals funded by the Social Security system to the DHSSPS

- The introduction of the Supporting People initiative offering alternative forms of care to people previously living in residential or nursing home accommodation.
- 17.4 In addition, as part of the analysis undertaken for this review a number of incompetence's in the recording of income were noted across the HPSS Trusts.
- 17.5 CFRG were also aware that although the income adjustment is currently restricted to the Elderly Programme of Care, there is strong argument for applying the adjustment to other Programmes of Care. However, given the inconsistencies and changes noted above CFRG took the view that the roll out of the adjustment should be on a phased basis.

Limitations

- 17.6 It is the view of the Group that the income adjustment currently represents the most equitable method of equalizing purchasing power amongst HSS Boards. However, it is acknowledged that there are a number of limitations associated with it. These are listed below:
- There still remain some inconsistencies between the various data sources used in the income adjustment such as between client contributions data and information relating to latest numbers of preserved rights cases. There is also a lag with respect to the allocation year although the impact of this will be significantly reduced if, as expected, the Strategic Resource Framework planned expenditure is used in future to inform the PoC expenditure weights. In order to move to an entirely consistent dataset would necessitate taking the income adjustment outside of the formula (i.e., calculating as a fixed amount to be added/subtracted to/from each HSS Board's monetary allocation) and freezing the number of preserved rights cases for a year. The Group carefully considered the pros and cons of the various options and concluded that, on balance,

timely preserved rights data and a 'within' formula technical adjustment were preferable.

- In a scenario where the balance of care between the domiciliary and residential sectors differs markedly across HSS Boards, there will not be the same opportunity to collect income by those HSS Boards who, for whatever reason, rely more heavily on the domiciliary sector. The extent to which this potential distorting effect would be offset by the methodology employed in the additional needs modelling is questionable.
- Self-funders have been excluded from the current elderly income adjustment, as it was not possible to build a robust model incorporating the needs of this particular client group. This is still equitable because, in effect, no income is allocated in respect of self-funders through the needs formula and, consequently, no income is redistributed via the income adjustment. However, if possible, it would be more accurate to include the needs of self-funders in the allocation and to then have an income adjustment.
- There is an extra cost to HSS Boards in respect of self-funders who are now entitled to free nursing care. This additional cost has not been reflected in any of the current needs research but ideally should be taken into account when formulae are re-estimated.

Recommendations

17.7 The Group recommends that:

- the income adjustment continues to be applied in the Elderly PoC;
- additional validation measures are introduced by both DHSSPS, HSS Boards and HSS Trusts in respect of the TFR (E) financial return;
- the contributions element of the income adjustment is extended to cover other relevant PoCs in a phased manner; and commencing at a level of 50%;
- planned expenditure information, when shown to be robust, is used to inform the PoC expenditure weights thus bringing the income adjustment more in line with the actual allocation year;
- preserved rights are excluded from the income adjustment when Boards cease to be funded on the basis of actual numbers of such cases;
- the feasibility of including self-funders in any future re-estimation of the Elderly PoC needs formula should be considered; and
- the impact of recent and future changes to social security allowances, care costs and the introduction of the ‘Supporting People’ initiative should be monitored with a view to considering and, if deemed necessary, a revision to the income adjustment.

18 OTHER RESOURCES

Introduction

18.1 The DHSSPS annual budget amounts to some £3.2bn. Of this, some £2.0bn is distributed to Health and Social Service Boards using the weighted capitation formula. The balance of £1.2bn represents the resources made available to the Department for a variety of other services and initiatives. CFRG examined the scope for distributing these resources using the formula and the Group's conclusions are set out below.

18.2 The Group were also aware that significant other resources from a variety of funding agencies or within the control of other Departments could also have an impact on the health and social care arena. These resources were distributed by those funding agencies using a variety of means and it was noted that at least some of the resources in question could be contributing to meeting local needs to which the DHSSPS formula was also skewing resources. Given the potential for over compensating for need the Group therefore considered whether some adjustments to the formula would be appropriate to take account of such effects. The Group's conclusions on this issue are also set out below.

DHSSPS Resources

18.3 As indicated above some £1.2bn of Departmental resources are distributed by means other than the capitation formula for Hospital, Community Health and Personal Social Services. A breakdown of these resources is set out at Table 18.1:

Table 18.1 Analysis of DHSSPS Resource not distributed by the Weighted Capitation formula

	£m
Primary Care	630
Professional Teaching and Training	120
Pay Related issues	70
Non-HPSS revenue	210
NDPB's and other Agencies	85
Services, Grants and Special Initiatives	55

Primary Care - £630m

18.4 These resources finance Family Practitioner Services, the community drugs budget and the remuneration of local pharmacists and dentists etc. The greater proportions of the resources (some £500m) are already distributed using a specific weighted capitation formula developed for GP remuneration and prescribing. The balance reflects remuneration for independent contractors (pharmacists, dentists and ophthalmologists) and amounts paid are workload related. There is no case for applying the Hospital, Community Health and Personal Social Service formula to the distribution of these resources.

Professional Teaching and Training – £120m

18.5 These resources cover the cost of professional teaching and training of doctors, nurses, social workers and allied health professionals. The arrangements for the delivery of such training are largely centrally managed and there is no case for applying the weighted capitation formula.

Pay Related issues - £70m

18.6 This reflects resources held centrally to cover the cost of the introduction of new contracts for doctors and other staff, and other related matters. It includes

resources for the introduction of Agenda for Change. The CFRG view was that the vast majority of these funds should be distributed by the weighted capitation formula.

Non-HPSS Revenue - £210m

- 18.7 This includes the capital budget, the Department's own administration budget and other resources of a technical nature required under the resource accounting and budgeting regime. There is no case for applying the weighted capitation formula to these resources.

NDPBs and Other Agencies - £85m

- 18.8 This reflects the running costs of a number of Non Departmental Public Bodies and other Agencies (Fire Authority, Health Promotion Agency etc). There is no case for applying the weighted capitation formula to these resources.

Service Grants and Special Initiatives - £55m

- 18.9 These resources cover expenditure on a variety of schemes and initiatives such as Sure Start, Investing for Health Initiatives, Early Years Development, and Vaccination programmes. In practice the resources are often targeted at specific needs, related for example to age or deprivation. Separate needs based formulae are frequently used in such circumstances.
- 18.10 CFRG noted that there was scope for applying the needs indices identified by its research in the distribution of these resources. It noted however that the adoption of the formula for these purposes was a matter for DHSSPS.

Funding Sources Outside DHSSPS Control

18.11 As noted above, some funds allocated by organisations outside the DHSSPS, e.g. by both other NI government Departments or agencies, or by external bodies both inside and outside NI, may have an impact, either directly or indirectly, on the provision of health and social care by HSS Boards. These funding sources include the following:

- EU Funding
- Supporting People
- Lottery Funding

EU Funding

18.12 At the time of the 3rd CFRG Report, it was recommended that work should be commissioned by the Department to “identify and quantify all EU funding which impacts on HSS Board purchasing power and to consider incorporating a suitable adjustment into the regional formula”. However, it was also recognised that this recommendation was unlikely to be addressed in the Work Programme for the 4th CFRG Report. Due to other more pressing priorities this work has not been taken forward. This may be considered in a future Work Programme, but will also be dependent on future decisions made regarding EU funding for Northern Ireland, given the impact on new EU members on funding availability.

Supporting People

18.13 This expenditure is funded by the Department for Social Development (DSD) and administered through the NI Housing Executive. A Supporting People Commissioning Body, chaired by the Housing Executive, was established to decide how the Supporting People fund can be used to deliver quality and choice in supported housing, and how it can improve the health and well being of the local community. This Body contains a representative from the Department, as well as representatives from each HSS Board.

- 18.14 Supporting People funding may have an impact on HSS Board investment decisions for example in contributing towards the accommodation costs of service users who may otherwise have to be looked after in residential homes, or in placing obligations on Boards/Trusts to finance domiciliary care packages to support residents in supported housing schemes. CFRG noted that the costs and benefits of such schemes could fall disproportionately across Boards.
- 18.15 As the Supporting People initiative had only recently been introduced CFRG were not in a position to assess its materiality and determine whether any adjustments should be made to the weighted capitation formula to take account of the effects noted above. It was very much aware of the sponsor body's intention to distribute the Supporting People resources in an equitable way across the NI population and concluded that the overall position should be monitored to assess any equity implication that may emerge. This would be particularly relevant to the Elderly Programme of Care.

Lottery Funding

- 18.16 The Department of Culture, Arts and Leisure (DCAL) is responsible for the allocation of National Lottery funding. 28% of the money raised by the National Lottery goes to good causes, and Northern Ireland's share of this is distributed by the following organisations:
- Arts Council of Northern Ireland
 - Sports Council of Northern Ireland
 - Heritage Lottery Fund
 - Community Fund
 - New Opportunities Fund
 - The Big Lottery Fund. From June 2004, the Community Fund and New Opportunities Fund will be merged to form this new fund.
 - Awards for All. This is a Lottery Grants Programme aimed at local communities, giving grants of between £500 and £5000.

18.17 Whilst Lottery funding may not be directly provided for HSS Boards or Trusts, in some areas the grants awarded may have an impact on the provision of health and social services in a particular area. Boards should be aware of the potential impact of Lottery funding within their respective areas.

Conclusions and Recommendations

18.18 With regard to the Departments resources, which are not currently subject to the weighted capitation formula, CFRG noted that there was limited potential for applying the formula in the distribution of these resources. The majority of expenditure was already subject to other allocation formulae or were not amenable to such an approach. However, the Group identified two areas for further consideration by the Department as follows:

- the further application of the Capitation Formula to distribute pay related resources which are currently managed centrally; and
- as a range of services are provided by organisations funded directly by the Department, the absorption, where appropriate, of these resources into Board allocations using the Capitation Formula for their distribution. CFRG acknowledges that this would require changes to policy in how certain initiatives are taken forward.

18.19 With regard to the resources outwith Departmental control CFRG recommends that:

- no adjustment is made to the capitation formula in respect of monies allocated by other agencies; however
- these resources should continue to be monitored to determine their potential impact on HPSS investment decision and to assess their materiality; and

- bodies providing funding for health and social care related services should be encouraged where possible to adopt a suitable needs-based approach to their investment decisions to ensure equity across the NI population and avoid duplication.

19 COMBINING PROGRAMME OF CARE RESULTS

Background

- 19.1 The Department distributes to each Board its share of total available resources and does not constrain resources to specific Programmes of Care (PoC) in order to facilitate local needs assessment and decision-making. The weighted populations calculated for each PoC cannot be simply added together in order to produce an 'All PoC' population as individual PoCs are not of equal size (in terms of resource requirements).
- 19.2 The weight that should be given to any PoC should be based on the relative need for expenditure in that Programme. The results from the high spending Programmes will therefore have most influence on overall Board shares. There are a number of ways of estimating relative need for expenditure and these are explored below.

Approach

Current Position - Historic Expenditure Exceptionally Modified for Policy Change

- 19.3 The current method recommended in the 3rd Report from the CFRG uses the historical pattern of expenditure with an option for modification as a proxy for need in the year to which the allocation relates. The NI expenditure in each PoC can be used to weight programmes together. However, such an approach may be regarded as inequitable to the extent that it ignores changes in demography, intended policy developments and new initiatives. Individual HSS Board responses to demography and policy changes should result in changes in HSS Board expenditure patterns between PoCs but there will inevitably be a time delay while policy implementation feeds through into expenditure.

- 19.4 In addition to the problem of expenditure lagging behind changed ‘needs’, using historic expenditure to calculate the PoC weights could introduce an element of instability to the weights. This is because a significant amount of non-recurrent funding is provided each year specifically for new initiatives and also to relieve service pressures. However, the allocation formula is quite stable given minor changes in the PoC weights.
- 19.5 In theory, adjustments to the weights would normally be considered where significant new money has been targeted for new initiatives and the impact is known although, in practice, such an adjustment has not occurred since the new formula was first implemented in 1998/99. Such a one-off adjustment did occur, however, under the previous ‘Proposals for the Allocation of Revenue Resources’ (PARR) formula when HSS Boards were allocated significant additional funds in support of ‘People First’.

Other Options Rejected in the 3rd Report from the CFRG

- 19.6 Historic Expenditure Only - This was rejected as it had the same issues as the recommended option but without the flexibility of being able to adjust the weights to take account of major one-off injections of money into the system targeted at new initiatives.
- 19.7 Historic Expenditure Minus Non-recurrent Expenditure - This has the merit of basing the PoC weights only on that element of funding which is recurrent thus ensuring a greater degree of stability year-on-year. HSS Boards have indicated, however, that there could be practical difficulties associated with identifying their expenditure related to a non-recurrent allocation on a consistent basis. Information on non-recurrent allocations, rather than expenditure, is available centrally from the Department but such allocations are not always PoC specific. The option was rejected as not being feasible at this time.
- 19.8 PoC Targets (Policy Determined) - An alternative approach to relying wholly on historic expenditure to weight PoCs together is to use PoC targets based on

current Government expenditure plans. These targets would ideally remain fixed for a certain period of time (e.g. three years) thereby providing HSS Boards with a stable planning environment. The problem with this option is that the target-setting process may be more subjective than that resulting from the certainty of historic expenditure. Under the 'Impact Assessment' process, any policy decision to shift money from one PoC to another would rightly need to be evidence-based in order to show that the resultant gains/losses in HSS Board allocations were justified (for example, the EHSSB gains from increased expenditure in the Elderly PoC whereas WHSSB gains from increases in Family & Child Care). A further disadvantage associated with this option is that, at the end of any fixed period spanning a number of years for which the weights had remained static, a distinct policy change may then necessitate a relatively large change in the PoC weights. This may be more turbulent than if the policy change had been allowed to gradually influence the weights each year via historic expenditure.

PoC Targets (Policy Determined and Aimed at Reducing Health Inequalities)

- 19.9 There is a question about whether the Department should be proactive in changing PoC weights to target PoCs, which have a high impact on health inequalities. The 'additional needs' indices should address inequalities within PoCs, but there is no equivalent mechanism for identifying differential need between PoCs. As with the previous option, extensive research would be required to identify appropriate shifts e.g. to allow comparison in need between, for example, an elderly person with dementia and a physically disabled child. This again was rejected as not being feasible.

Use of Weights from Planned Expenditure

- 19.10 Planned expenditure is now collected by the Department, providing a breakdown by PoC for Board planned recurrent expenditure at the start of the financial year. It is more up-to-date than historic expenditure as it relates to the year immediately prior to the allocation year. It takes account of some of the issues rejected above as not being feasible since it does not include unstable non-recurrent funds and does reflect Board plans.
- 19.11 Concern was raised however about expenditure, which while labelled as non-recurrent was actually required each year. Certain items are held back annually, to be funded from additional monies received during the year or through slippage resulting from delays in other projects. It would be appropriate to include this type of on-going expenditure in the PoC weights but this could be better catered for if more funds could be allocated on a recurrent basis.

Results

- 19.12 The Group considered the pros and cons of the possible methods and concluded that the use of planned expenditure information was best in principle. Nevertheless, given that the matter of the regular non-recurrent expenditure required further work, immediate implementation was not considered appropriate.
- 19.13 Another reason for delaying implementation is that it has emerged that some minor changes are required in PoC definitions and this could have some impact on the balance of spending between Programmes. It would be preferable to give these changes time to work through the system. For these reasons it was decided that the new approach should not be introduced before 2006/07. At this point, a run of years would be checked to ensure that they consistently reflected planned policy changes, before a final decision to implement this approach would be confirmed.

19.14 An analysis was undertaken to see how material a change from historic, to planned expenditure weights would be on Board shares. When Board plans were used the maximum difference between historic expenditure in 2001/02 and planned expenditure for 2002/03 was 0.02% (difference between shares). This exercise was reassuring in indicating that the choice of method is unlikely to make a major difference to Board shares.

19.15 In the meantime the current approach will continue and the calculation of the historic expenditure weights for 2002/03 is described below.

Historic Expenditure: Derivation of PoC Weights

HSS Board Expenditure

19.16 Board historic expenditure by PoC is derived from a central return (BFR (B)) supplied by each HSS Board. It should be noted that HSS Boards do not follow a standard methodology for compiling the BFR (B). The EHSSB constructs its BFR (B) based upon signed service level agreements between it and Trusts. The methodology adopted by the other three HSS Boards, however, is based around Trust expenditure returns. Both of these methods have their own particular strengths and weaknesses.

Capital Charges and Clinical Negligence Payments

19.17 Both of these elements of Board expenditure are not allocated via the regional capitation formula. It is therefore necessary to exclude the distorting influence of this expenditure when calculating the PoC weights.

19.18 The latest available expenditure data in respect of HSS Boards relate to 2002/03 and, give rise to the PoC weights shown in Table 19.1.

Table 19.1: NI Commissioner Expenditure by POC (%), 2002/03

Programme of Care (POC)	% Spend
Acute Services	41.14
Maternity & Child Health	5.58
Family & Child Care	6.69
Elderly Care	23.69
Mental Health	7.70
Learning Disability	7.00
Physical & Sensory Disability	3.51
Health Promotion & Disease Prevention	1.72
Primary Health & Adult Community	2.96

Notes:

- Expenditure on “services to GPs under open access” in respect of laboratory diagnostic tests, radiology etc. has been included in the Primary Health & Adult Community PoC.
- Expenditure on capital charges and clinical negligence is excluded.

Quality Assurance

19.19 Sensitivity analysis has shown that overall allocations are reasonably tolerant to change in the PoC weights and that it would be difficult for any single Board to purposely influence the weights to their own advantage.

Limitations

19.20 The limitations of the current approach and that proposed from 2006/07 onwards (if analysis at that point confirms its appropriateness) are described above.

Recommendations

19.21 The Group recommends that:

- the PoC weights shown in Table 19.1 should be updated to 2003/04 for 2005/06 allocations;
- the flexibility to adjust the weights to take account of significant special allocations related to major policy changes should be retained by the Department; and
- that planned expenditure weights are accepted in principle, and should be introduced for 2006/07 if the Group's review of these weights confirms their consistency with Board policy plans.