Gateway reference: 6053

Supporting practice based commissioning in 2007/08 by determining weighted capitation shares at practice level

March 2007

Summary

The Department of Health has developed a simple toolkit that can be used to determine weighted capitation indicative budgets at practice level. The toolkit is based on a subset of the formulae that have been used to set PCT revenue allocations up to 2007/08.

The weighted capitation formula is a benchmark guide to determine "fair resource shares" and not an automatic means to set indicative budgets. As detailed in *Practice based commissioning: practical implementation (November 2006)*, practice indicative budgets in 2007/08 should be largely determined by actual activity, current prescribing formulae and weighted capitation for services where there is no activity data available.

When PCTs compare budgets based on historic patterns of activity with those based on the toolkit they will observe differences between the two. *Practical implementation* sets out the pace of change approach. Where the indicative budget is more than 10% from the target range then the PCT will undertake a simple utilisation review, and make a maximum shift of 1% of practice budget.

The toolkit that was released in January 2006 has been slightly updated for 2007. There are four main differences.

- The operating limits of the toolkit have been greatly increased to cater for the new larger PCTs. It can now process files with data on 2000 GPs and 500 practices.

- The increased operating limits have slowed-down the initial calculation stage – when GP data is converted to practice data. For a large PCT this can now take more than one minute.

- The 2006 toolkit identified practices by the code of the senior partner. The 2007 version uses national practice codes for this purpose.

- For 2007 the data files include information on GP lists that is one year later that that in the 2006 release. The indicator values for GP and practice lists are based on these newer values.

This guidance is split into two sections. The first is a guide to using the toolkit, and the second is a more general guide on how the outputs of the toolkit should be used. It should be read in conjunction with *Practice based commissioning: practical implementation (January 2006)*.

Any queries on this guide or the toolkit should be addressed to pbc@dh.gsi.gov.uk

1. Using the toolkit

Introduction

1. The toolkit is based on a subset of the formulae that were used to set PCT Hospital and Community Health Service (HCHS) revenue allocations up to 2007/08. These are described in the NHS Exposition Book and in more detail in the Allocation of Resources to English Areas (AREA) report. Fuller references to these works and brief notes on the formulae and their components can be found in Annexes 1 and 2 of this guidance.

2. The toolkit is an Excel workbook that is available on the Department of Health website at:

   http://www.dh.gov.uk/practicebasedcommissioning

3. Each PCT will also need a file of data to paste into the toolkit. PCTs should email pbc@dh.gsi.gov.uk to request the file.

How to use the toolkit

4. There are four main steps in using the toolkit.

   i. Open the toolkit and click on the “Enable Macros” option.

   ii. Copy all the data from the separate data file into the toolkit worksheet labelled “GPs”. There is a note on the worksheet saying where the data should be pasted.

   iii. Click a button on the “instructions” sheet to convert the data on GP lists to data on practices. These combined data can be seen in sheet “SPs”. This conversion is likely to be slower in the 2007 toolkit because of the larger volumes of data and increased operating limits in the toolkit. A prompt will appear in the centre of the screen when the conversion is complete. The toolkit will now handle data

on 2000 GPs and provide results for up to 500 practices. These limits should easily accommodate the largest of the new PCTS.

iv. Enter the total sum to be allocated into a box on the “instructions” sheet.

5. The indicative allocations and percentage shares are then displayed in the “RESULTS” sheet.

6. This version of the template has been kept deliberately simple both in terms of the range of formulae used and the calculation options.

Editing GP data

7. The data on GP lists comes from a full download of the Exeter registration system in April 2006 (the most recent full download available to the Department of Health). Data that was held centrally in late 2006 was used to assign practices to the new PCTs, but PCTs should check that the data includes all their practices and that the practices have the correct GP configurations. The GP data sheet can be edited to incorporate further changes and also to remove old, or small part lists.
8. To remove part lists, or GPs who are no longer affiliated to the PCT, entire rows in the “GPs” sheet should be deleted using the “cut” option. Then the remaining data should be pasted over any gaps. The “delete row” facility should be avoided as it will reduce the ranges in the formulae in sheet “SPs”.
9. To change the GP memberships of practices, change the practice codes on the “GPs” sheet.
10. After making any changes to the GP data, the button on the instructions sheet should be pressed to rebuild the practice details in the “SPs” sheet.

Combining practices into commissioning groups

11. Some PCTs have expressed an interest in looking at indicative shares for groups of practices that may work together as practice based commissioning consortia. This can be done by replacing the existing codes for the separate practices with a single dummy code for each practice in the group. Each group then becomes, in effect, a single practice.

Using the data and results for other purposes

12. Although the formulae in the template are protected, both the data and results can be copied into other packages or Excel applications.

PCT mergers

13. It should be noted that the toolkit computes the relative shares across all practices in a PCT and the differences between practices may change following the merger of PCTs with very different population characteristics.

Updating the data

13. For consistency with the PCT level allocations, the reference files of ward level socio-economic data are the same as those used for the current PCT allocations. As can been seen from Annex 2, some of these data are now quite old and it may be the case that some practice shares should be altered to take account of subsequent changes in list size, patient age or socio-economic characteristics.

14. List size and patient age can be relatively easily updated by the PCT, as these are updated quarterly. Such changes should be made to the individual GP data in the “GPs” sheet – or data on an entire new practice pasted into this sheet.Pasting any data into the practice sheet “SPS” will overwrite the existing formulae.

15. The socio-economic data for the additional need formulae are not so easily updated. It would be a major exercise to fully update the ward level socio-economic reference files; and, were this done, the allocation formulae would have to be recalibrated. All we can suggest is that where the characteristics of a GP's catchment area have radically changed, you do the following:

    - identify a GP working in an established area of the type to which the new area has changed;
    - paste the values for the 13 indicators for that GP’s list into the row for the GP whose area has changed; and
    - check the direction and scale of any effects are as anticipated.

How the template works

16. The data supplied is of two basic types:

    - details of each GP’s list: the numbers of registered patients and their age breakdown; and
    - details of the attributed socio-economic characteristics of the patients on the list. These are calculated from the numbers of the list in each census ward and census and other data on the characteristics of each ward. The values for the list are the weighted average of the ward values.

17. The practice codes in the GP data are used by the toolkit to create the practice level summaries in the “SPs” sheet. The practice indicator values are simply the weighted averages of each of the GP list values.

18. There are three sheets in the template that do the basic calculations.

    - The “agewt” sheet multiplies the numbers of patients in each age group in each practice list by the HCHS cost weights – an estimate of the cost of services used by each age group. The ratio of the costed list to the

uncosted list is then used to compute an index of the relative practice need, based on its age distribution.

- The “acute and maternity” and the “mental health” sheets are used to compute values for the additional need for these services once the ages of the people on the practice list have been taken into account. Each of these two sheets is based on an additional need formula, which is a constant, plus the sum of the product of a set of coefficients and the practice values for the formula components. More details of the formulae and the data sources can be found in the Annexes to this note. The data sources are also described in one of the worksheets of the template.

19. Both of these calculation sheets compute a practice value for the respective formulae, and multiply this by the number in the practice list. These products are then “normalised” across all the practices in the PCT to give a value for the relative additional need of each practice.

20. The results sheet provides five sets of indicative shares based on the indices derived from the age weights and formulae:

    - the indicative shares if practices were allocated funds proportional to the numbers on their lists;
    - the results when the lists are weighted by the HCHS cost weights – i.e. these are the shares if we take the age distribution of the patients into account;
    - estimates based on both age and the index of additional need for acute and maternity services;
    - estimates based on both age and the index of additional need for mental health services; and
    - estimates based on age, the acute and maternity, and mental health additional need indices.

21. There are two further worksheets in the template containing:

    - the totals from the calculation sheets – this is unlikely to be of interest to the user; and
    - a table listing the data sources (a copy of Annex 2 from these notes).

2. Applying the results of the toolkit

Introduction & summary

22. The results of the fair shares toolkit are intended to be advisory and indicative budget setting for 2007/08 should be determined as stated in *Practice based commissioning: practical implementation (November 2006)*.

23. This makes it clear that for 2007/08 PCTs should calculate indicative budgets on the basis of historic activity. A measured pace of change policy should be applied where there is a greater than 10 per cent difference between the indicative budget and fair share target.

24. This section describes how to use weighted capitation-based indicative budgets as a guide to more transparent and equitable allocations in the future.

Determining indicative budgets using the fair shares toolkit

25. The toolkit can be used to calculate Hospital and Community Health Services (HCHS) weighted capitation target shares at practice level. As detailed in Section 1 of this guidance, practices can be merged or GPs can be moved from one practice to another reflecting any changes between April 2005 (when the GP list data was extracted) and the current position. The tool will then apply the national resource allocation formulae and age-cost curve to all practices within the existing set of PCT boundaries.

26. A major review of the needs element of the national weighted capitation formula, led by the Advisory Committee on Resource Allocation (ACRA) will report to Ministers in 2007. The review will address the issue of capitation budget setting for practices..

27. The remainder of this guidance covers the following issues:

- local versus national formulae;
- the use of weighted capitation shares;
- allowing for local factors;
- risk management;
- different blocks of service;
- pace of change; and
- conclusion.

Local versus national formulae

28. The key advantages of weighted capitation targets over budgets based entirely on historic spending and referral patterns are that they are transparent, avoid perverse incentives, use objective means of establishing relative need and can be seen to be fair. The existing national formula used to allocate resources for acute and maternity services to PCTs is based on extensive research, as detailed in Annex 1.

29. The fair shares toolkit can be used to set practice level budgets using the same national formula and age-cost curve that are used for making allocations to PCTs.

30. Adopting the national formula for local use will be straightforward and less contentious than using either locally derived formulae or some other national formulae that were designed for other purposes (e.g. the Carr-Hill Formula for GMS or the prescribing formula).

31. We recommend that PCTs use the national resource allocation formula for acute and maternity services. If they wish to set indicative amounts for mental health services, they should use the national mental health formula. Local formulae that have been used in the past and have widespread support within the PCT community may be used, though using them may result in future problems (e.g. when PCTs using different formulae merge and/or if a national recommended formula is developed).

The use of weighted capitation shares

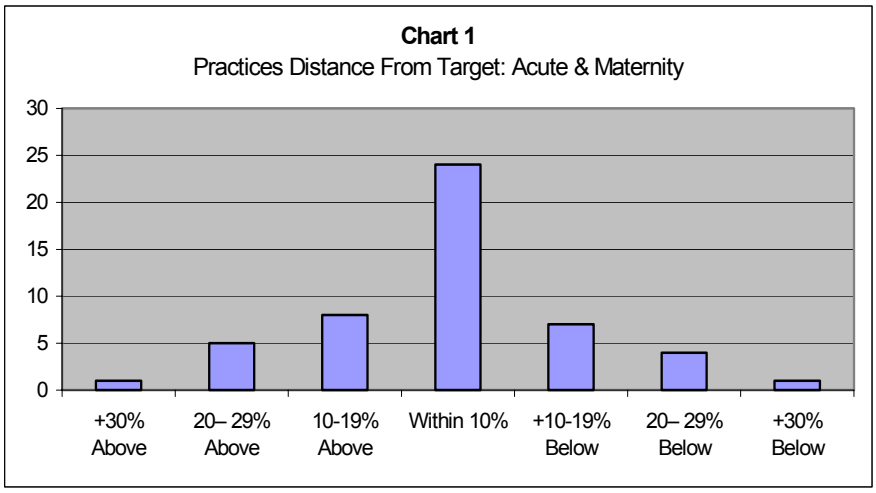
32. A key objective for resource allocation in the NHS is to ensure equal opportunity of access for populations at equal risk, irrespective of where they live or which practice serves them. Where a PCT devolves resources to its practices, the PCT should calculate weighted capitation shares to help monitor and achieve the equity objective.

33. Weighted capitation is a benchmark guide to “fair resource shares” and not an automatic means to set allocations. In the first instance, practice level indicative budgets will be largely determined by historic spending and referral patterns. This “baseline” will be the main factor in determining practice indicative amounts.

34. It is important that PCTs begin using weighted capitation methodology in 2006/07, even if they do not use the results to reallocate growth money. All practices need to understand the idea and effects of an indicative budget that is based on their “fair share” of the PCT’s total resource.

Allowing for local factors

35. When PCTs compare budgets based on historic patterns of activity with those based on national formulae they will observe significant differences between the two. An inner city PCT with 50 practices might have a distribution of "distance from target" as shown in Chart 1, below.



36. Almost half of all practices' expenditure is within 10% of their capitation-based budget, but 4% (2 practices) are more than 30% away from target and 18% (9 practices) are between 20% and 29% away from target.

37. Some of these differences will be due to:

- differences in clinical treatment patterns;
- differences in the help-seeking behaviour of local populations;
- the national formula being an incomplete measure of relative need, especially at practice level; and
- the random element in the need for health care.

38. Weighted capitation budget setting is intended to bear down on the first two of these factors over time. Inappropriate variations in clinical treatment (e.g. too few or too many referrals to secondary care) and variations in patients' expectations of treatment (e.g. inappropriate use of A&E departments) will be partially revealed by capitation budgets.

39. Nevertheless, additional to these reasons for differences between spend and capitation is the fact that no national formula can capture all of the variation in relative need at practice level. Some of the local factors that cannot be picked up by the current national formula are listed below:

- practices that draw atypical populations from wards (e.g. ethnic minorities or students), where these groups are not in the majority in the ward;
- concentrations of sheltered housing, of asylum seekers, nursing homes, homes for the mentally ill, etc; and

- the fact that the need element in the national weighted capitation formula uses some variables from mid 1995. New build housing and gentrification may have modified the relative need position since then.

40. It is therefore important that PCTs take an informed view of weighted capitation shares and adjust capitation shares for known factors that are not captured by the national formula.

Adjusting for risk

41. Another reason for differences between historic spend and capitation is the level of randomness around the need for health care. Obvious examples of randomness would include accidents, or local outbreaks of contagious diseases. But randomness would also include the incidence of high cost diseases or treatments (e.g. dialysis) that are essentially unpredictable and will vary year on year. We would therefore expect there to be some volatility in health care expenditure even with a perfectly adjusted formula. These random fluctuations are likely to have a larger impact on budgets in smaller practices, because of the limited opportunity for risk pooling.

42. PCTs should, in line with *Practice based commissioning: practical implementation (November 2006)*, develop strategies for handling random fluctuations in health care expenditure for practices. Monitoring activity and expenditure in year is essential so that problems can be flagged early.

Different blocks of service

43. PCTs and practices are free to jointly agree the range of services covered by indicative practice budgets, subject to the minimum requirement to include budgets that cover tariff activity, prescribing, community services and mental health as set out in *Practice based commissioning: practical implementation (November 2006)*. For greater transparency, all aspects of the PCT budget should be devolved indicatively to practices. The acute and maternity formula included in the fair shares tool is an appropriate vector to allocate budgets for tariff activity. The simplest way of determining weighted capitation budgets for tariff activity would be to:

    - Step 1: identify the “pot” of money available for tariff activity
    - Step 2: use the fair shares toolkit to divide up this “pot” of money between practices
    - Step 3: Apply any blocking back for central management costs, specialised services etc.

44. A similar process could be adopted for the prescribing budget. The prescribing formula is tried and tested for making practice level allocations and is available at:

    http://www.ic.nhs.uk/psu

45. What the above description illustrates is that, in order to set weighted capitation shares for two or more blocks of service with different needs drivers it is necessary to have two or more "pots" of money with the two formulae calculating shares for each "pot". Determining the size of the individual "pots" can be difficult if the needs drivers are different, or where the needs drivers are less certain than they are for prescribing and acute HCHS.

46. The fair shares toolkit can be used to set capitation based budgets for other areas of health care spending, including mental health, community health services and management costs.. For example, the tool can be used:

    - where PCTs cannot accurately attribute historical mental health activity to practices, then the mental health "pot" can be divided using the results based on both age and the index of additional need for mental health services;
    - to divide community health services expenditure using the results based on age, the acute and maternity, and mental health additional need indices; and
    - to divide PCT management costs on an age-weighted basis.

47. These "notional allocations" are used in the absence of accurate data on historic activity or spend. Where areas of spend are being blocked back to a PCT, this should be done on the same basis as which they were allocated.

48. The most important aspect of indicative budget setting will be in ensuring transparency and fairness throughout the process.

Pace of change

49. Where the 2006/07 indicative practice budget is more or less than 10 percent from the target range, the PCT will undertake a simple utilisation review with the practice, based on data for disease prevalence and present usage of hospital services. The intention is to have a reasonable dialogue and develop a greater understanding as to why a particular practice is spending more or less that its potential 'fair share' budget. It would also be an opportunity for practices to make sure their prevalence data are sufficiently robust. Prevalence data are important to ensure that all unmet need has been identified by the practice and the intention is for such data to be used in future 'fair share' budget methodology.

50. Any percentage adjustments to bring to 2007/08 indicative budget closer to the ‘fair share’ budget target range would be for local discretion based on the utilisation review results, up to a maximum shift of 1 percent of the indicative practice budget available for use by practice based commissioners to commission care for their patients.

Conclusion

51. Any method of calculating weighted capitation shares at practice level will be imperfect. Although PCTs have discretion to set weighted capitation budgets using their own data and formulae, the use of the national formula is strongly recommended. The use of the national formula should minimise the level of debate and using the fair shares toolkit will make it relatively straightforward.

52. Nevertheless, it is important to realise that the national formula is a yardstick measure of relative need. It is not a micrometer. It cannot give precise answers to the allocation problem and should be used to guide a move towards a more equitable and efficient distribution resources in the future. For 2007/08, it is more important that the methodology used is consistent, fair and transparent, compatible with budget setting plans for 08/09 onwards, simple and that any pace of change does not adversely affect PCT financial stability.

Annex 1. The formulae and weights

53. The formulae used in the toolkit were developed by a multi-centre team between 2000 and 2002 to best predict health care utilisation at ward level in England, after taking account of age.

54. The acute and maternity formula is based on Hospital Episode Statistics (HES) data for the financial year 2000/01 costed using the national reference costs for HRGs. The total care cost per ward is estimated from the episode cost and the patient's home postcode. This total is then compared with the expected cost for that ward, based on population age. The ratio of actual to expected cost is then modelled.

55. The procedure is similar for mental health. Activity data is derived from HES, but costs had to computed on a bed day basis, rather than via HRGs. The services covered by the model are: Mental Illness, Child and Adolescent Psychiatry, Forensic Psychiatry, Psychotherapy and Old Age Psychiatric specialties.

56. The variables and coefficients in the formulae are listed in Table A.1.1.

57. These formulae were designed to compute part of the HCHS segment of PCT revenue allocations. Other formulae used to estimate PCT allocations relate to general practice (GMS/PMS), general practice prescribing, and HIV/AIDS services, amongst others. The two used here were chosen as most relevant to the costs of commissioning hospital care. However, the PCT will have access other proxy indicators for the morbidity of a practice population, including actual expenditure on prescribing and components of the Global Sum formulae for GP payments.

58. When the two formulae are used jointly they are weighted (as in the Exposition Book) according to the relative expenditure.

59. The age cost weights used in the template are shown in Table 2. These are the general cost weights for HCHS as used in the Exposition Book

60. Full details of the development of the formulae can be found in:

    M.Sutton, H.Gravelle, S.Morris et al., *Allocation of Resources to English Areas*, NHS Scotland Common Services Agency/ISD Consultancy (2002). An electronic version of the report can be found at:

    http://www.isdscotland.org

61. The application of the formulae to determine PCT allocations are shown in the HCHS section of the NHS Exposition Book. A short guide to resource allocation weighted capitation formulae is also available at:

    http://www.dh.gov.uk/PolicyAndGuidance/OrganisationPolicy/FinanceAndPlanning/Allocations/AllocationsArticle/fs/en?CONTENT_ID=4108515&chk=t1hmGo

Table A.1.1 Components of formulae

(Annex 2 contains more details of the variables)

Acute and maternity formula	
Constant	-0.1515188
Education domain	0.0083445
Low birth weight	0.012797
SMR < 75	0.0699283
Aged 75+ living alone	0.0260532
Standardised birth ratio	0.1078432
Income domain	0.1030725
Nervous system morbidity index	0.2250154
Circulatory morbidity index	0.547875
Musculoskeletal morbidity index	0.3753729
(relative weight of formula)	0.8553
Mental health formula	
Constant	0.384636
CMF<65	0.357849
Income support > 60	0.3377034
Housing domain	0.0342811
Psychiatric morbidity	0.6360935
(relative weight of formula)	0.1447

Table A.1.2 Core HCHS Age weights

Core HCHS age weights						
0-4	5-15	16-44	45-64	65-74	75-84	85+
542.04	269.01	525.78	655.41	1,245.37	1,976.50	2,799.22

Annex 2. Definitions, sources and dates for additional need formula components.

Table A.2.1

Data item	Definition/source and date
PCT Code	PCT codes as of October 2006 (152 English PCTs)
PCT Name	
Practice code	From Exeter registration system download (March/April 2006)
Practice name	Practice or senior partner name – from CFH Codes Disc or GP Census Unit
GP code	From Exeter registration system download (March/April 2006)
GP name	From GP Census Unit
People in list aged 0_4	From Exeter registration system download (March/April 2006)
People in list aged 5_15	From Exeter registration system download (March/April 2006)
People in list aged 16_44	From Exeter registration system download (March/April 2006)
People in list aged 45_64	From Exeter registration system download (March/April 2006)
People in list aged 65_74	From Exeter registration system download (March/April 2006)
People in list aged 75_84	From Exeter registration system download (March/April 2006)
People in list aged 85&over	From Exeter registration system download (March/April 2006)
Total list	Sum of above age group totals
IMD 2000 Education Score – comprising:	Working age adults with no qualifications (1995-98)
	Children aged 16 and over not in full-time education (1999)
	Proportion aged 17+ unsuccessfully applying for HE (1997-8)
	KS2 primary school performance 1998
	Primary school children with English as an additional language 1998
	Absenteeism at primary level 1998
Proportion low weight singleton births	ONS 2000
Standardised Mortality Ratio under75	ONS 1996-2000
People aged 75+ living alone	2001 Census
Standardised birth ratio	ONS 2000

Data item	Definition/source and date
IMD income score – comprising:	Adults in income support households (1998)
	Children in income support households (1998)
	Adults in income Based JSA households (1998)
	Children in income Based JSA households (1998)
	Adults in Family Credit households (1999)
	Children in Family Credit households (1999)
	Adults in Disability Working Allowance households (1999)
	Children in Disability Working Allowance households (1999)
	Non-earning, non IS pensioner and disabled Council Tax Benefit recipients (1998)
Nervous system morbidity index	Model based on individual data from Health Survey for England – estimates based on: University non-participation (1999); attendance allowance recipients aged over 60
Circulatory morbidity index	Model based on individual data from Health Survey for England – estimates based on: Ethnic minorities (1991 census?), IS/SDA claimants (1998), University non-participation (1999)
Musculo-skeletal morbidity index	Model based on individual data from Health Survey for England – estimates based on: Ethnic minorities (1991 census?); Standardised illness ratio (1991 census); IMD2000 Health Domain score
Comparative mortality factors 0-64	ONS1996-2000
Income support claimants aged 60&over	DWP (1998/9)
IMD housing score – comprising:	Homeless households in temporary accommodation (1997-8)
	Household overcrowding (1991 census)
	Poor private sector housing (1996)
Psychiatric morbidity index	Model based on individual data from Health Survey for England – estimates based on: Ethnic minorities (1991 census?); Standardised illness ratio (1991 census); IMD2000 Income Domain score