

Editorial

New developments and data sources for unit costs

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Introduction

This is the twelfth volume in a series that draws together information about unit costs for a wide variety of health and social care services. The information is presented in as detailed and transparent a format as possible to allow users to adapt the estimated costs to suit local or specific circumstances, or draw on particular pieces of information to provide assumptions when appropriate data are not easily available. In each successive year the aim is to improve the quality and expand the range of cost information provided, building on previous data and drawing on new sources. To some extent this process is opportunistic, but it also reflects developing services and demand for information. This is well illustrated by the considerable expansion of information about the costs of child social care services in this volume, based largely on the results of a series of studies commissioned under the Department of Health's Costs and Effectiveness of Services for Children in Need research initiative described below.

Our website statistics indicate that the demand for this type of information continues to grow at a rapid rate. This suggests that more people from different backgrounds are making use of cost information for both evaluative studies and for other purposes. It is important that both in using the unit cost information here and in estimating costs for specific purposes that people understand the basis of the estimates. Costing services is rarely a straightforward process. The best estimates often require that we draw on a wide variety of sources.

This editorial starts by describing developments which have arisen this year and new services that have been included in this volume. We then go on to describe in some detail the variety of resources drawn on in the process of estimating costs, using one of our new additions, nurse practitioner services, as an illustration.

Developments

Land

The cost of land is an important element of the capital costs of many services. In previous years, the Housing Statistics Division of the Office of the Deputy Prime Minister (ODPM) supplied average land prices based on land priced transactions. This year ODPM reported that this method of calculation was considered flawed as this approach produced falling average land prices during the late 1990s when property price rises suggested land values were increasing. The statistics have been replaced with those supplied by the Valuation Office, which are twice-yearly valuations for each Local Authority in England. These figures combined with population weights are used in order to determine regional and national prices. As a result the price of land has increased from £98 per square metre in England in 2002 to £268 in 2003 and from £508 per square metre in London in 2002 to £821 in 2003. However, as land prices form only a small proportion of the total cost of a service, the maximum impact this has made on our estimates is an increase in the unit cost of just over 1 per cent.

Salaries and staffing

In previous volumes social worker, team leader, social work assistant and care manager salaries have been based on a survey carried out by the PSSRU. This year, we have drawn on information from the Employer Organisation's annual national Social Services Workforce Survey. This has been used to directly estimate social worker salaries and to derive a social work wage specific inflator for those workers (such as team leaders and assistants) where specific information was not available from the survey. In practice we found that, although mean estimates were in line with previous estimates, wide definitions of staff type meant there were large variations around these means.

Health service staff salaries are usually based on national scales and agreements. General Practitioners (GPs) have always been different as they were mostly self-employed and the Intended Annual Net Income (IANI) was used as a basis for average personal income. With the move to GP contracts this information is not available so our estimate this year reflects last year's IANI uprated to 2003/2004 levels. We hope next year to draw on new sources of information about GP income.

This year, in estimating the cost of a community mental health team worker (schema 11.2), we have been able to draw on new data from the Department of Health's Mental Health Service Mapping (Adult Mental Health Mapping, Table 20a: Community Mental Health team Workforce, September 2003). In the past staffing information has been based on a 1995 research survey and finance data from national pay scales have been superimposed on the mean full-time equivalent members of an average team (Onyett, 1996). This year, we have used national pay scales as before but included information on staff composition to reflect the teams' developing roles and responsibilities.

New service estimates and information

Children's services

Most of the new developments in this volume reflect the rapid increase in information about the costs of child social care. The results of a Joseph Rowntree Foundation (JRF) funded

evaluation of a Home-Start intervention that was undertaken in England and Northern Ireland is described by Michelle Slead and colleagues (pages 25-28). All of the other new additions and improvements to child care costs draw on the Costs and Effectiveness of Services for Children Research Initiative that was commissioned by the Department of Health. The aim of this initiative was to answer questions regarding the delivery of good and effective services at appropriate costs and to explain variations in costs both within and between local authorities. The Initiative is now in its final stages, with some studies complete. Much of the very valuable information collected does not lend itself easily to our usual schema format. We have included a number of brief articles and tables as well as schemata in order to make best use of the information available:

Adoption Recent policy emphases on increasing the number of children adopted out of care and improving the quality of adoption support services has made the need for detailed cost information extremely pressing. On pages 11-17, Julie Selwyn and colleagues draw on their study of adoption, Cost and Outcomes of Non-Infant Adoptions, to describe the methodology used and resulting unit costs of the adoption process and of supporting families.

Social work with children and their families In another article (pages 21-24), Costs and Consequences of Different Types of Child Care Provision, Harriet Ward, Lisa Holmes and Jean Soper describe the processes undertaken by social services when a child is placed in care and factors associated with variation in these costs. The resulting *care packages* for children vary from relatively minor interventions to complex packages designed to address a variety of needs and contextual factors. Examples of high, medium and low cost interventions are given on pages 102-105. These results have been incorporated in a decision analytic model that allows users to estimate aggregate costs for both individual children and child care populations. For further information about the model contact Lisa Holmes (01509 228878, L.J.Holmes@lboro.ac.uk).

Individual and group psychotherapy (pages 106-107) show the comparative costs of providing sexually abused children with individual and group psychotherapy. In a brief commentary to these schemata Paul McCrone notes that the approaches have been found to be equally effective suggesting group psychotherapy is more cost effective. The study also compared the costs and outcomes of support for their carer, which are not presented here but can be accessed by contacting Paul at p.mccrone@iop.kcl.ac.uk.

Core assessments A study conducted by Hedy Cleaver and Steve Walker with Pam Meadows investigated the impact of the implementation of the Assessment Framework. On pages 19-20, Hedy Cleaver and colleagues draw on this work to identify the processes involved and costs to social services of carrying out core assessments.

Family support services Drawing on a detailed study of family interventions conducted by Jill Tidmarsh and Justine Schneider on pages 29-31, information is given about the costs of a wide range of services used by 75 families requiring family support over a six month period.

Community homes for children Information provided by Sarah Byford and Helen Weatherly from a study on Leadership and Resources in Children's Homes has fed into improved estimates of local authority homes (page 91) and a new schema for community homes for children in the non-statutory sector (page 92).

Other services

A schema for an *NHS Alcohol Health Worker* (page 74) has drawn from an unpublished study of Barbara Barrett and her colleagues (2004) on the cost-effectiveness of screening and referral to an alcohol health worker in alcohol misusing patients attending an accident and emergency department. This is believed to be the first detailed costing of this type of worker and is an important addition in the light of the Prime Minister's Strategy Unit's recently published Alcohol Harm Reduction Strategy which identifies the problems caused by alcohol and calls for research into effective measures to combat hazardous drinking.

Another new service is a schema for a *Nurse Practitioner* in primary care (page 133). Nurse practitioners perform an increasingly important role in the health service. We discuss the estimation process for this service in some detail below as an illustration of the variety of sources that can be drawn on in order to estimate costs.

Data sources and assumptions in cost estimation

A wide variety of data sources are used both directly and indirectly (as the basis for assumptions) in cost estimation. These include new research, results of previous studies, routine data collections and administrative sources (such as accounts and pay scales). Identifying and putting together this information requires an understanding of the basic principles and of the specific circumstances of the application. We identify these principles and describe the process of estimating the nurse practitioner costs in order to illustrate how data sources are used.

The process of estimating unit costs requires the application of a number of principles in order to ensure that the costing is valid and appropriate in the circumstances for which it is to be used. As nearly as possible we identify the long run marginal opportunity costs, where marginal costs reflect the additional cost of including one more service user and opportunity costs refer to the cost of opportunities forgone rather than actual amounts spent (although the two might be the same). Long-run costs take into account the full costs of creating a new service. However, as we only have certain knowledge of the short-run marginal costs of a service, the convention is to use these revenue costs, plus the cost implications of fixed costs as an approximation of the long-run marginal opportunity costs. Such estimates should:

Be comprehensive — reflecting the opportunity costs of all resources used — including those not necessarily born by the service funder or purchaser. Usually in an economic evaluation the societal perspective is taken so costs implications for all should be incorporated.

Be timely — reflecting practice and circumstances relevant to the period that is the focus of the investigation or intervention

Reflect variations — costs vary as a result of, among other things, context, provider and individual service user characteristics. Such variations need to be reflected and investigated if appropriate use is to be made of cost information.

Be consistent — assumptions are often required in the process of costing and it is important to be consistent in order to ensure that adding costs across different services in order to provide the total cost of the intervention, care package or process, results in valid estimates and that like is compared with like.

In applying these principles to our work on the Nurse Practitioner (NP), we have chosen, as with other health professionals in the Unit Costs volume, to provide bottom-up estimates, which require us to identify individual resources tied up in the delivery of the service and to assign a value for each of these resources. This then allows users to substitute information to reflect local circumstances and the perspective of the costing exercise. This method of costing is particularly useful in cases such as for the NP where skill mix is being debated as it allows for the inclusion of education and training costs, which can be easily substituted to allow for training applicable to other health professionals.

Usually when a unit cost is being estimated it is for a specific purpose and this provides both context, which facilitates assumptions to reflect the objectives of the exercise and sources of information (such as accounts) about the service. Our purpose, in estimating nurse practitioner costs was to provide readers with national estimates so that they could, if required, substitute our figures with their own specific figures to tailor the schema to their own purpose. Our estimates are based therefore, mainly on secondary sources of information such as nationally based salary scales and previous studies carried out for other health professionals. In this instance we were able also to carry out some primary research through making contact with the Organisation of Nurse Practitioners (ONP). This enabled us to check information we had found from published sources and also provided us with valuable information on time use that we had not been able to find from secondary sources of data.

There are four stages that are important in the process of estimating unit costs. These stages can be summarised as service description, identification of activities and service unit, identification of cost implications and estimation of total and unit costs (Allen and Beecham, 1993). At each stage, but most particularly when identifying the cost implications, it is often necessary to draw on a variety of sources.

Service description

A full understanding of a service is a prerequisite of estimating unit costs. It is only when resource use is thoroughly understood that the associated expenditure information can be correctly interpreted and need for further information identified. The ONP provided very helpful advice for this purpose for our schema.

In the past few years, the role of the NP has developed considerably as they have moved into most health care settings, including general practice, walk-in-centres, accident and emergency, minor injury units, and a range of acute and chronic care specialities and facilities. Responsibilities and use of time in each sector are very different and each sector merits a separate analysis of costs. In our previous volume Jennifer Beecham (2003) described the use of a nurse practitioner in improving care in care homes. As described below our investigation found that information was most readily available in the primary care sector so we have developed the schema for this setting.

Calculate a constant and relevant service unit to which a cost can be attached

Once there is a clear understanding of the service, it is necessary to identify a relevant service unit to which the cost can be attached on a consistent basis. Whilst the purpose of the Unit Cost volume is to provide a variety of estimates to allow adaptation for different purposes, cost work done for a specific study will need to reflect the type of information that

can be collected about the service use. We drew on advice, administrative sources and new data for this purpose.

Routinely prepared expenditure accounts usually span one year and there may be times when it is most useful to present costs information annually. However, in the case of NPs the most relevant service units are likely to be time spent in face-to-face contact, individual consultations or episodes of care. To cost episodes of care requires either information about number of episodes per NP or information about the number of contacts per episode. Neither of these were available. For our purposes it made most sense to identify time spent in face-to-face contact and the cost per contact to allow readers of the volume to adapt the information for their own purposes.

For most purposes in estimating the cost of time we require information about the number of hours per week, allowances for leave and expected levels of sickness. For nurses information is available from the Royal College of Nursing and Nursing and Midwifery Staff negotiating council conditions of service. When a specific study is being undertaken information may be available about actual hours worked and levels of sick leave. While people often work more than their contracted hours and may take less leave it is rarely appropriate to allow for unpaid overtime in estimates as any generalisations would assume that type of behaviour would continue, underestimating the likely cost implications of the intervention. However, local estimates of sick leave reflect real cost variations and are more appropriate to include than our standard allowance of 10 days per year.

The cost of face-to-face contact requires that allowance is made for other activities necessary in order to deliver face-to-face contact time. Often information about time spent on training is available at an organisational level in terms of days per year. But for details about the balance between administrative, travel and similar tasks and patient contact we need information about the time use of individuals. We discuss elsewhere the details of the estimation process (Netten and Beecham, 1999), here we are concerned with data sources. In order to reflect current practice it is desirable to collect information about current time use from those conducting the service in the form of either time diary or a description of distribution of time over a working week from the staff providing the service: normally be those involved with the intervention. For our purposes, the ONP, who have regular contact with their member, sent questionnaires to their members that generated 27 responses from NPs in primary care but very few involved in secondary care. NPs in primary care provided information on the proportion of their time they spent in the surgery, at home, on the telephone, getting prescriptions signed and travelling. They were also asked to estimate the length of a surgery, telephone consultation and home visit. The results enabled us to estimate multipliers to calculate the cost of a client contact and surgery consultations (see Appendix to Netten and Beecham, 1999).

Identify and collect the information on the cost implications of the service elements

In order to be comprehensive costs should include the cost of salaries and associated oncosts, clerical support, relevant share of the capital and maintenance costs of buildings and equipment and the management of the department. To avoid underestimating costs, it is also important to understand the degree to which the service draws on other support or services that may not be included in any cost-centre accounts. Examples are overhead costs such as central financial and human resource services.

When collecting information for each type of resource, there are often a variety of sources on which to draw. If access to accounts is possible, information on salaries and the running costs associated with the use of the building will usually be presented annually as they are recurrent expenditure. In the absence of expenditure accounts, for a guide to the average salary for the NP, we searched the web for published sources that enabled us to identify the grade assigned to most NPs, which we then used in conjunction with national pay scales for nurses. We then were able to confirm this with the ONP. Employers' national insurance and employers' contribution to superannuation were then added. We draw on national rules for the estimation of National Insurance payments and assume that employers contribute 4 per cent of salary to superannuation schemes, although this does vary by employer and specific information should be collected wherever possible.

Ideally, when available, accounts information should be drawn on for overheads, as these costs are otherwise difficult to estimate. Overhead costs are difficult to establish on a consistent basis as they cover support services and indirect resources that are often delivered through departments that perform these functions to a range of other services. Good practice requires that the process by which these are allocated reflects activity and allows for the consumption of overhead costs by all departments (Graves, 1996).

NPs in primary care will normally work in a health centre together with other community health professionals and there will be a degree of sharing of facilities and capital resources. In the absence of any specific information about overheads we had to draw on previous sources of information collected for other health professionals who we considered would have similar overhead costs. This information however is dated and therefore obviously not ideal. Costs for other community nurses had been based on previous research (Knapp et al., 1992) and we made the assumption that NPs have the same direct overheads as practice nurses who work in the same setting (see page 132). For indirect overheads, which includes the finance and human resource function, a fixed sum equivalent to other health centre based community staff has been added based on work conducted with Trusts as part of a research project to develop a ready reckoner for health service staff costs (Netten et al., 1999).

Information on the building (and land) in which a service is located might appear in accounts as estimated depreciation allowance or debt charge, the exact amount being a function of the original construction cost and the method of depreciation accounting employed. If the building is likely to remain in service for many years to come, the opportunity cost should be taken into account on a consistent basis so debt charges and depreciation are deducted from accounts and capital estimates included. The method we use is either to obtain a valuation of the building when available or in the absence of any specific information, the new build value from data from the Building Cost Information Service (BCIS). These values are then annuitised over 60 years at 3.5 per cent (see Netten, 2003 for a discussion about the discount rate).

There are cases where this approach cannot be used. For example, when costing private sector residential or nursing homes, valuations for building and other capital-intensive items are rarely available. In these cases convention suggests that the fee (for shelter and care) is set at a level that covers both revenue and capital costs. Given the public policy focus of the evaluation and the likely proximity of the fee (as a market price) to the real cost, this is an acceptable compromise. Similarly, when costing privately-rented accommodation, it is often inappropriate to ask residents or landlords for the value of a property. Again, convention suggests that the rent (fee for shelter) covers the cost implications of the original capital investment.

An important cost to include, particularly when evaluating services that involve changes in skill mix, is the cost of training and qualifying workers. Ongoing training is usually accounted for through ongoing revenue costs of the service and time use of individual members of staff. However, investment in qualifications requires more detailed information about the process and expected working lives than it is often practical to collect for a specific study. These volumes provide information about the costs of investment in training for a variety of health service professionals that can be supplemented by specific information about particular types of professional (see page 115).

In the case of NPs expectations in terms of qualifications were used to identify appropriate courses to include for non-specialist qualifications. For information on the specific NP accredited programme, direct contact with course leaders provided information on mentor requirements and the number of hours that they are required to support students during their studies. There are also post-graduate courses available for NP graduates or nurses with a first degree in health or nursing. Information on these courses was found on the web and details required were either provided in course information or provided by personal communication with course leaders. As the DH provides funding for the Extended Formulary and Supplementary Prescribing Course, which many nurse practitioners are now required to undertake, we were able to obtain an average cost for tuition through Strategic Health Authority Directorates of Workforce. We then added replacement costs for speakers on the course according to information provided by the education providers (excluding travel and accommodation costs) and also lost production costs for the nurse based on the number of days they would have to devote to studying.

Calculate the unit cost for the service

The service description and the collection of cost information then allow the total cost of the service to be calculated. This is achieved by dividing the total cost of the service by the unit of activity, which in the case of NPs was the number of hours worked during a year. Allowance for non-contact time provides an estimate of face-to-face contact and information about the average length of a consultation (15 minutes) from our 27 NPs allows us to estimate the average cost per surgery consultation.

Conclusion

The purpose of this editorial has largely been to draw the reader's attention to the many new sets of cost data available which are largely as a result of the Children in Need Research Initiative studies being finalised. We have also outlined certain important issues that have had an impact on the calculation of unit costs this year, the most notable being the basis for land cost estimates.

The estimation of unit costs requires the use of a wide variety of sources of information. We have described how the application of principles, the use of information from these volumes and the variety of other sources available make this possible.

We always attempt to keep our data as up to date as possible. However, if you know of any more recent sources which can be drawn from, please contact Lesley Curtis on L.A.Curtis@kent.ac.uk or 01227 827193.

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