CCFR Cost Calculator for Children's Services: Report on the pilot phase

Harriet Ward, Lisa Holmes and Jean Soper

Introduction

The Cost Calculator is a computer application currently being developed by the Centre for Child and Family Research, Loughborough University as a practical tool that has the potential to introduce greater transparency into the relationship between costs and outcomes of services for vulnerable children. Although there are plans to develop the model at a later date to encompass a wider population of children and a more extensive range of services, the current version is restricted to the costs of social care processes for looked after children. It has the following three functions:

1) It is a tool that can collate the descriptive information that a local authority holds on its looked after population and relate this to activities which incur costs.

2) It is a calculator that uses data on children's characteristics and unit costs of social work activities as a basis for working out the sequential costs of placements and part placements within a user-specified time period for both individual children and for groups. Calculations take account of all the numerous variations in costs engendered by differences in children's needs, placement type and local authority procedures. Because the model utilises unit costs that have all been developed using the same, standardised approach, it introduces greater consistency into the comparison of costs.

3) It has an analytic function that allows the user to compare the costs for groups of children with different needs over different time periods and to gain a better understanding of why certain children (or groups of children) cost so much more than others. One of the strengths of the model is its use of longitudinal rather than snapshot data. This means that the user can explore how costs accrue over time. The user can also explore alternative scenarios, for example, changes to costs if different placement types are utilised for a particular child.

This paper reports on the findings from the pilot phase of the programme, which aimed to explore how far an application that had been designed as a research instrument (Version V1) could be developed into a fully working model (Version V3) that could be used with current

data by a pilot authority, and to identify the issues that would need to be addressed if it were to be fully utilised as a practical tool. Following the findings from the pilot phase, further adaptations have been made to the model, and a demonstration version (V4) has been produced, intended for wider dissemination. This version, together with a user guide, accompanies this report.

Background to the study

The Cost Calculator is an output of our earlier research study on the *Costs and Consequences of Different Types of Child Care Provision* (Ward, Holmes, Soper and Olsen, 2004), one of the studies commissioned under the Department of Health Costs and Effectiveness research initiative (1999-2004).

The purpose of the original study was to explore the relationship between variations in costs and the quality of care provided for children looked after by local authorities, and to devise methods for local authorities to calculate costs consequences for different types of placements and for children with different needs.

The research team undertook a prospective longitudinal study in which they gathered data concerning the background, needs and experiences of a population of 478 children looked after by three matched pairs of local authorities between the first two Children in Need Census dates of February 2000 and October 2001. These were then related to the unit costs of undertaking the eight social care processes that underpin the task of looking after children specified in the *Children's Social Services Core Information Requirements Process Model* (Department of Health, 2001). The sample was restricted to children aged ten years and over and was weighted to include disproportionate numbers of children with disabilities and/or in residential units in order to provide sufficient data for meaningful analysis.

Unit costs for the eight social care processes were derived from activity data gathered from focussed discussions at team meetings in the six participating authorities, and from information on salaries, fees and overheads provided by the respective finance departments. Extensive variations to the basic costs of each process related to differences in policies, practice and procedures; patterns of service provision (use of types of placement); and children's characteristics. It was evident that children with different combinations of high support needs, arising from factors such as disabilities, emotional or behavioural difficulties

and offending, followed different cost pathways. The children fell into eleven needs groups, categorised by whether they had additional support needs either singly or in multiple combinations. There were five simple groups, displaying no or one additional cost-related support needs, and six complex groups, displaying two or more.

Cost Calculator (Version One)

A decision analysis model was developed for this research study to perform the cost calculations that related the data on children's needs and experiences to the unit costs and their variations. This became Version One of the Cost Calculator. Version One calculated the cost of each of the eight processes, taking into account the many variations according to placement type, children's characteristics and differences between authorities. It was constructed in Excel, using three spreadsheets. Cost calculations were carried out in one spreadsheet that picked up data on children's characteristics, needs and placements from a second spreadsheet and unit costs from a third. Version One was developed to calculate the cost of each placement for every child in the initial study. Costs could then be aggregated for the care episodes of individual children, and for each of the eleven needs groups (see Ward *et al*, 2004, Chapter Nine).

Version One of the model was, however, developed in an academic setting in order to calculate costs for a specific research project. There was initially no expectation that it might be utilised by anyone outside the research team, and therefore it was not designed to be user-friendly. It reflected the specific characteristics of the research sample so that it did not, for example, take account of variations for children under the age of ten. It was also designed to calculate those costs that were needed by the research project rather than those that might be valuable to the commissioners and providers of social care services. The Cost Calculator had evident potential as an analytical tool that might be used by practitioners and their managers in order to better understand the relationship between costs, quality of services and outcomes for children with a range of different needs. However before it could be made more widely available, further work was necessary to develop it to meet the needs of social care organisations and to identify those issues that would have to be addressed before it could be implemented in a practice setting. A short pilot study was therefore commissioned, testing out and developing Version Two (V2), our first attempt at producing a version of the Cost Calculator that could be utilised outside the research setting.

Pilot study: aims and objectives

The overall aim of the pilot study was to produce a working version (V3) of the Cost Calculator, appropriate to a specific local authority, that could be linked with its social services management information system and use exported data to calculate the social care costs incurred by a sample of at least 100 children looked after over a specific period. The model was to be developed in close consultation with the pilot authority, and with other authorities engaged in the original study, so that the research team could ensure that those elements which would be most useful for planning and commissioning strategies could be fully developed. The working version of the model was then to be developed into a standardised demonstration adaptation (V4) that could be more widely disseminated. This version could then be customised to meet the specific needs of other authorities.

Within this overarching aim, the pilot study also sought to identify and explore those practical and technical issues which would obstruct the successful implementation of the model and to examine the potential for linking it directly with the Integrated Children's System.

Methodology

The pilot of the Cost Calculator built on the findings and costing methodology developed by the research team in the earlier Costs and Consequences study. Three activities were undertaken: the formal pilot of the model in a local authority setting; formal consultation with authorities outside the pilot; and the theoretical and technical development of the Cost Calculator. Development of the Cost Calculator was informed by both the other activities and was undertaken on an ongoing basis throughout the project timeframe.

Pilot in one local authority

The Cost Calculator adopts a 'bottom up' approach, aggregating data on individual children to provide a picture that relates costs and experiences for a population as a whole. It utilises data on children's characteristics and social care processes that should all eventually be collected at case management level through the implementation of the Integrated Children's System (ICS). For this reason, a decision was taken at an early stage to pilot the Cost Calculator in one of the four authorities that were also trialling the ICS. A small outer London authority was selected, and the Cost Calculator was tested out using data on all 154 children looked

after by the authority between 1st April 2004 and 31st March 2005. Activities covered within this pilot included calculating unit costs, customised to reflect salaries, fees, activities and variations specific to the authority and its looked after population; exploring how data held in the local authority management information system could be exported and utilised in the Cost Calculator; linking unit costs to current data, calculating costs incurred by groups of children over a specific time period and exploring with senior managers how these might be best presented and utilised within the authority. Attempts were also made to link costs to outcome, but this was not feasible given the manner in which data were collected and stored within this authority, a point which we explore further below.

Wider consultation

Alongside the formal pilot in one local authority, the research team were also engaged in an extensive dissemination of the findings from the wider research study both to the original six participating authorities and also to others as part of the Choice Protects initiative. One member of the research team was seconded to the Looked After Children Taskforce to participate in a national programme of seminars and workshops at which the research findings were explored and the Cost Calculator demonstrated. Structured feedback was collected from these workshops and also from a hands-on exploratory session attended by ten senior managers at Loughborough University. Finally, Version Three of the Cost Calculator was formally reviewed by staff in two local authorities that had not been engaged in any of the other studies and their comments were used to inform the current version (V4) and the accompanying user guide.

Theoretical and technical enhancement of the Cost Calculator

Theoretical and technical enhancement of the Cost Calculator took place alongside its adaptation for the pilot and the wider consultation. Development of the model was continually informed by responses from users. The first task of the pilot stage was to modify the research version (V1), and develop it into a prototype model (V2) that could be used in a practice setting. V2 was a simplified version of V1, designed as a demonstration model, using anonymised data on 30 children to show how costs could be calculated and related to children's needs. It included three unit costs sheets: standard out of London and standard London (using data from the original study) and one customisable sheet. It offered users a choice of which unit costs should be used in calculations, and computed costs for the services

provided between the start and end of each placement, or up till the end date of the data collection period for children who remained looked after.

A suggestion that came from the consultation process was that, since placement lengths are extremely variable, it would be useful to compute the costs for all children over a standard time period. Rather than simply aligning the timeframe with the financial year, the model was provided with a mechanism that allows users to specify any calculation period. Because this user-dates model costed the services provided between particular time points, it therefore required actual dates for reviews, care plans, YOT support and transfer to the leaving care team, whereas the earlier version had only needed information on the number of times these events occurred. In Version Three, the demonstration data on children's characteristics and experiences could be replaced with data from the pilot authority, and unit costs specific to the authority could be inserted on the customisable sheet and compared with standardised sheets. A fourth unit cost sheet was provided to allow authorities to explore the impact of variations in their customised unit costs; this provides a facility that can be developed further to support 'what if?' analyses. Some standard output tables were also provided. Subsequent modifications to the model that were undertaken immediately after the pilot and produced the current version (V4) are described towards the end of this report.

Findings from pilot authority

Selection of pilot authority and implications

The decision to test out the Cost Calculator in a local authority that was also piloting the Integrated Children's System had considerable advantages, but it also produced a number of drawbacks. There were only four authorities piloting the ICS at the time this study began, and only two that were in a position to test out the Cost Calculator. The first one selected proved to be unable to meet the tight project timetable and reluctant to adopt the bottom up approach that the Cost Calculator requires. The other eligible authority agreed to participate, but did not prove an ideal pilot site. This authority only looks after a very small number of children, and much of the information about them is held informally. The view from staff in the pilot site was that the Cost Calculator was a useful concept, but was really more appropriate for use in a larger authority. We do not entirely concur with this view, but this is one reason why more extensive use was made of wider consultation and why two other authorities were asked to review Version Three before Version Four was completed.

On the other hand, staff within the pilot authority welcomed the opportunity to trial the Cost Calculator, and the findings have much to tell us about the availability and accessibility of the data required; about the use of current data in cost calculations; and about the potential for linking with data collected through implementation of the Integrated Children's System. The findings also touch on a number of wider issues, encountered in earlier work undertaken by the research team and replicated in the pilot authority, that would need to be addressed not only in implementing the Cost Calculator but also in making better use of management information systems to support social care strategic planning and practice more generally.

Availability and comparability of data used to develop unit costs

Neither the pilot authority (nor any of the others trialling the ICS) had taken part in the original Costs and Consequences study. It was therefore necessary to develop unit costs, customised to reflect social work activities, salary scales and local variations before the Cost Calculator could produce accurate calculations. The methodology developed to calculate the unit costs of the eight social work processes for the earlier study was replicated in the pilot authority (see Ward *et al*, 2004, Chapter Four). Activity data were collected from structured focus group discussions held at meetings of the following teams: fostering; initial response; family support; children with disabilities; children looked after and leaving care. Some data were also collected from the adoption team, in the hope that, building on the work of Selwyn, Sturgess, Quinton and Baxter (2003), costs of adoption processes could be included in the Cost Calculator. However this did not prove possible within the timeframe of the study.

In some teams it was difficult to access sufficient numbers of field social workers, and most of the responses were supplied by their managers, who had inadequate information about the time taken to perform some social care processes. Where activity data were unavailable, estimates based on the average of the figures provided by the original six research authorities were used. Appendix One shows the activity data used in the calculation of unit costs for this authority.

Financial data concerning foster care allowances and salaries of social services personnel were readily available. The latter were used to calculate the unit costs per hour for each member of social services staff involved in the eight processes, with on costs and overheads included, following the schema produced annually by PSSRU (Curtis and Netten, 2004). Standardised data on unit costs for personnel not employed by social services (looked after

children nurses, education welfare officers, members of the youth offending team) were taken from the earlier study and updated. Appendix Two shows the financial data used in the calculation of unit costs for the authority.

Table One shows the unit costs for the eight social care processes for the pilot authority compared with the standardised costs for an inner London authority and an authority outside London.

Table One: Unit Costs for Social Care processes in Pilot Authority

	Pilot authority (2004-5)	**Standard London (2004-5)***	**Standard outside London (2004-5)***
1. Decide to look after/find first placement	£ 735	£ 776	£ 597
2. Care planning	£ 208	£ 152	£ 112
3. Maintaining placement (per month)	£ 2,071	£ 2,392	£ 1,578
4. Exit from care	£ 287	£ 336	£ 246
5. Find later placement	£ 526	£ 250	£ 191
6. Review	£ 444	£ 477	£ 381
7. Legal (care order)	£ 2,852	£ 3,349	£ 2,582
8. Transition to leaving care	£ 851	£ 1,486	£ 1,087

* The 2000-1 costs calculated as part of the earlier study have been inflated using PSSRU pay and prices inflators to 2003-4 (the latest year for which they are available) and the Treasury GDP deflator to 2004-5. The inflation over the period was estimated at 17.5%.

The unit costs shown are the standard costs for a child with no additional support needs, aged ten or under placed in a local authority foster home within the area of the authority. This unit is used as a baseline from which variations for children of different ages, with different needs and experiences and in different placement types can be calculated.

Authorities which implement the Cost Calculator will be able to choose whether to base their calculations on one of the two standardised unit cost sheets for a London or an out-of-London authority or to include their own customised unit costs. The standardised costs are based on average figures, currently calculated from the unit costs developed from the six authorities that participated in the research programme. Customised costs provide a more accurate estimate and can include variations specific to a local authority; however they need to be

calculated separately for each authority, using the methodology described above. A step-by-step guide on how to do this has been written by one of the research team and is included in the resource pack *Looking After Children: At What Cost?*, produced by the Looked After Children Task Force (Holmes, with Lawson and Stone, 2005). The time required for one person to calculate customised costs for eight social care processes in a small local authority, including organising and conducting focus groups at team meetings, consultation with finance officers, calculations and production of spreadsheets is approximately thirty days. More time would be required for a large metropolitan authority or shire county where there would be a greater number of team meetings to attend.

The pilot authority was a relatively affluent London suburb, and its unit costs tended to be closer to those of an inner London authority than to one outside London. The costs in Table One were originally compiled for different years but the earlier figures have been adjusted for inflation to make them as comparable as possible. The table shows that the costs of care planning and finding a subsequent placement in the pilot were substantially higher than those in the other authorities, while those of transition to leaving care services were substantially lower, and indeed lower than the costs in authorities outside London. Comparison of the activity data demonstrates that costs of finding placements were higher in the pilot authority because both field and fostering team social workers attended lengthy placement planning meetings which were not held in most other authorities. Costs of care planning were higher because social workers devoted more time to the care plan and the personal education plan (PEP) than the average from the other authorities, because administrative staff devoted more time to writing up the PEP, and because fostering team social workers were, unusually, fully engaged throughout the process. Unit costs for transitions to leaving care services were lower in the pilot authority because, although more time was spent on completing a needs assessment before a child could be transferred to the leaving care team, less time than average was spent on completing the pathway plan. The standard unit costs are currently based on the averages from two London and four outside London authorities; if more authorities use the same methodology to calculate their unit costs, these standard costs can be improved and made more representative.

Other findings from developing unit costs for the pilot authority indicated where changes might be made to the Cost Calculator. We found that, at least in this authority, there were no major variations for children under the age of eleven in the eight social care processes covered

so far. It is for this reason that we have made a child aged ten or under the baseline unit from which costs are calculated, and against which variations can be made. However findings from the pilot and other authorities have also shown that there are likely to be additional age-specific variations once adoption has been added to the social care processes; that there is little consistency between authorities over the ages at which fostering allowances increase; and that transitional planning for care leavers begins at different ages in different authorities. If the Cost Calculator is to reflect accurately the circumstances of participating authorities, then it needs to be as flexible as possible and the development of V4 has been planned to ensure this.

Availability of data on children's needs and experiences

The Cost Calculator currently links the unit costs described above to data on children's needs, and the frequency of social care processes that are undertaken on their behalf, to perform calculations that demonstrate how costs are incurred over time both for individuals and for groups. These calculations can, in theory, also be linked to data on outcomes so that eventually it should be possible to explore relationships between children's experiences and progress (see below). The pilot study explored how far, following the implementation of the Integrated Children's System, such data could be located and downloaded directly in a selective report from the authority's management information system for those children who were looked after for the financial year 2004-5.

The pilot authority was one of the first to begin implementation of the Integrated Children's System and the move over to electronic social care records was therefore relatively advanced. Implementation of this system with social work practitioners means that data collected in the course of completing routine social care processes with individual service users are inputted directly onto the authority's management information system. It was therefore hardly surprising – though perhaps a relief - to find that data available from the management information system in the pilot authority was substantially more comprehensive than that available from the six local authorities that had participated in the original study four years previously. Table Two shows the list of key variables on children's needs and social care processes that relate to unit costs and their variations and are required to calculate the costs incurred over the period. Data on all but three of these variables were readily available for most children and could be easily downloaded, processed and imported into the Cost Calculator spreadsheet.

Table Two: Variables on children's needs and experiences

Variable
Numerical identifier for each child
Date of birth
Gender
Whether the child has disabilities
Whether the child has emotional or behavioural difficulties
Whether the child receives mental health support
Whether the child is an unaccompanied asylum seeking child
Numerical code for the child's legal status
Whether the child has been convicted of a criminal offence
Dates of reprimands, final warnings or convictions
Whether the child has support from the Youth Offending Team (YOT)
If so, the start date(s) for YOT support provision
If YOT support has been provided, the date(s) on which it ends
Care episode start date
Placement start date*
Placement end date*
Numerical code for the type of placement*
Whether the placement is provided by the local authority*
Whether the placement is within the area of the local authority*
Whether the placement includes an education provision*
Whether the placement includes health facilities*
Weekly fees (if residential or agency placement)*
Whether the child has left care at the end of the placement*
Dates of review meetings
Dates of care plan updates
Date of transfer to the Leaving Care team

*This information is required for every placement

There were, however, problems in identifying whether children had emotional or behavioural difficulties; whether they received mental health support and whether they had received a reprimand, final warning or conviction for a criminal offence in the previous year.
These data were held electronically, but were not captured in a standardised format. Where children had been looked after for very short periods only very limited data of this nature were held, a point that would need to be addressed by authorities planning to implement the Cost Calculator.

Emotional and behavioural difficulties

There is a wealth of evidence that demonstrates a lack of clarity as to how emotional or behavioural difficulties, and indeed physical and learning disabilities, should be defined (see

for instance Baker, 2005). Findings from the inter-agency pilot of the Integrated Children's System reveal a lack of consensus not only between local authorities and social care practitioners, but also between other professionals (see Cleaver *et al*, forthcoming). Yet it was clear from the focus group discussions that social care agencies need to be able to identify such children at an early stage, not only because they require additional support services, but also because they often require additional activity from social care practitioners in each of the routine processes, and these lead to increased costs of service provision. Given the extensive prevalence of emotional and behavioural difficulties amongst this population (see Meltzer *et al*, 2003), authorities might find it useful to use a validated scale such as the Strengths and Difficulties Questionnaire to identify children who require additional support in this area when they first become looked after, as is recommended in the guidance to using Core Assessments and Assessment and Progress Records. However such scales are rarely utilised on a routine basis, and in their absence, evidence of emotional and behavioural difficulties has to be pieced together from a range of different fields, most of which cover a service response to specific behaviours rather than the behaviours themselves.

In the pilot authority, a report selecting free text data on 'Emotional and Behavioural Development of the Child/Young Person' could be extracted directly from the management information system for the total population of children looked after during the year. However this domain was used to record development as well as difficulties, and was not therefore suited to the requirements of the Cost Calculator.

It proved more useful (though more time-consuming) to extract data manually from fields in the ICS exemplars held on individual electronic files. Emotional or behavioural difficulties were considered to be present if there was evidence of one or more of the factors shown in Table Three. The table includes all the criteria used in the original Costs and Consequences study, plus two additional variables, added in response to the manner in which data were recorded in the pilot authority. Using the criteria identified in the table, 59 children and young people (38% of those looked after) had shown evidence of emotional or behavioural difficulties during the financial year 2004-5. For the majority (50) of the children the necessary data could be found on the social worker's or chair's reports in the review input forms; for nine others it had to be extracted by searching through electronic case-notes.

Table Three : Emotional or Behavioural Difficulty: Identifying factors

Classification
Attendance at EBD school
Statement of SEN for EBD
Permanent school exclusion due to behaviour
More than one placement breakdown attributed to child's behaviour
Self harming
Eating Disorder
Prostitution
Emotional or behavioural difficulties stated on file (inc ADHD)*
Receiving mental health support
Refused mental health support
Identified as requiring mental health support (service not yet in place)*

*Not included in original study

Support services

The original study found that very little had been recorded on either case files or management information systems to show whether children were receiving additional support services such as those provided by mental health or youth offending teams. Such support may prove invaluable in promoting better outcomes. It was possible to extract a report from the MIS in the pilot authority listing all the professionals working with a child. However, additional support services cannot be accurately costed without clear information concerning the frequency and duration of provision. These data were not currently available.

Availability of data on outcomes

One of the ultimate objectives for the Cost Calculator is that it should introduce greater transparency into the relationship between costs and outcomes of services. To do this it would need to link information concerning children's needs, social care and other agency processes and their costs with data concerning outcomes. It is easy to misinterpret such data, particularly where individuals are concerned, but if it could be shown that, *on average*, children and young people in certain needs groups are more (or less) likely to show positive outcomes with some packages of care than with others, then attempts could be made to balance costs against

effectiveness. The pilot authority was particularly interested in using the Cost Calculator to explore whether such relationships could be identified.

There are two types of outcome data that, in theory, should be held on management information systems and therefore might routinely be extracted. Basic outcome data for looked after children concerning stability of placements, offending behaviour, education, and access to health care, and the activities of care leavers have been required for annual government returns (OC2 and SSDA903) since performance management was introduced to social services in the late 1990s. Following implementation of the Integrated Children's System, more detailed data concerning both children's current positions and their progress in the seven developmental dimensions, collected through the Assessment and Progress Records and monitored through the review process when children are looked after away from home, should also be available.

However in the pilot authority very little quantifiable data of this nature were routinely recorded. The Assessment and Progress Records were not being used, and the corresponding fields were not completed on the review exemplars. Data for OC2 returns were collated from a variety of sources and were not routinely inputted on the authority's MIS. Education outcomes were collated from the separate education department database and provided directly to the officer responsible for statistical returns; health outcomes data came from a variety of sources, some from the social services MIS, some from looked after teams and some from the LAC nurse. Data concerning offending behaviour were collected through the review exemplar in the Integrated Children's System and could be available on the MIS; however the field was not always completed and additional information could often only be gleaned through searching through individual electronic case notes. Offending behaviour is also one of the key variables on children's needs and experiences that underlie cost variations (see Table Two): for the pilot study the data had to be collected and recorded manually on the Cost Calculator spreadsheet.

Staff in the pilot authority considered that it was not necessary to hold quantifiable outcome data on the social services MIS, because the population of looked after children was sufficiently small for it to be possible to complete gaps in the OC2 returns by contacting team managers concerning individual children. However earlier studies undertaken by the research team and others have demonstrated how easily the requirement to produce government returns

becomes an end in itself, and the data become divorced from the children to whom they refer. This is particularly likely to happen where quantifiable outcome data are held separately from other information about individual children, making it difficult to establish feedback loops through which aggregate data can be explored at case management level and used to improve understanding of how the needs of both individuals and groups of children can better be met (Gatehouse and Ward, 2003; Gatehouse, Statham and Ward, 2004; Friedman, Garnett and Pinnock, 2005). It was outside the brief of the study to explore how data from government returns were utilised in the pilot authority, and it may be that the group of looked after children was sufficiently small for their outcomes to be well known and understood. Nevertheless it was evident that the lack of quantifiable child level data made it impossible to use the Cost Calculator to explore relationships between costs and outcomes of different care pathways. Once such data are available, analyses according to outcomes will be able to be performed in a similar way to those by gender and by needs groups in the demonstration Version Four. Subsequent versions of the Cost Calculator might include all outcome variables required for Government returns. Ensuring that such data are accessible is an area that authorities wishing to utilise the Cost Calculator to its full capacity would need to address.

Although there was a dearth of routine data, the authority did, nevertheless, hold data on two other outcome variables that could be incorporated into the Cost Calculator. Quantifiable data on postcodes could be utilised to provide indications of the distance children are placed from family and friends that would be of much greater value than the current crude distinction between 'in' and 'outside' the authority. These data should be available in most authorities as they are a new requirement for the SSDA903 return. Other data on contact arrangements might also be utilised to explore how far placements supported children's family relationships, although it would be necessary to ascertain how far such arrangements reflected reality – and to what extent children and young people benefited by such contacts.

Processing data

Although a small number of data items had to be extracted individually and input manually, it nevertheless proved relatively simple to select the majority and export them directly from the social services MIS into the Excel spreadsheets utilised by the Cost Calculator. A small amount of processing was necessary before the dataset could be utilised – the dates for legal status only changes were intertwined with those for placement changes and had to be separated from them, placement provider and location characteristics that are not explicit in

the 903 codes had to be picked up, and child information had to be replicated in the data row for each placement. Some recoding formulae had to be written to eliminate alpha-numeric values and ensure that the dataset was formatted in a manner acceptable to the way in which the Cost Calculator had been constructed.

Importing data held on other systems proved to be more problematic. Data on the amount of YOT support received were held separately by the youth offending team and could not be accessed. The local authority finance system did not link up with the social services MIS, and utilised invoice dates rather than placement dates, with the result that there were numerous discrepancies which had to be resolved in calculating costs of those placements which included a fee element. Such difficulties reflect much wider issues concerning the implementation and use of IT systems in social services departments that again have been raised by other studies (Gatehouse and Ward, 2003; Gatehouse, Statham and Ward, 2004; Ward and Cleaver, forthcoming). They added to the time and the difficulties of processing data but were not insurmountable problems and are likely to be resolved as the use of IT improves. Altogether it took one person approximately thirty days to locate, process and import the data into the Cost Calculator spreadsheet. This includes all the data on the variables listed on Table Two for all 154 children looked after by the authority during the financial year 2004-5. The bulk of this time was spent in manually searching for missing data.

Calculations

The Cost Calculator can pick up data concerning the characteristics of each child and allocate them to groups according to age, gender or cost-related needs. Costs for individual children can be aggregated to form costs for groups to provide an overall picture of expenditure over a specific time frame. Once the data described above are in place, calculations are performed in seconds.

Version Three of the Cost Calculator could produce calculations for each individual child and summary tables for groups of children. The summary tables produced for the pilot authority are shown here as Tables Four and Five.

Table Four: Pilot Authority: Summary costs incurred by all children looked after during the financial year 2004-5 by needs group

Need	Number of Children	Total Cost	Total weeks	Average Cost per week	Weeks per child
None	66	1118732.19	2135	524.00	32.35
Disab only	13	567916.01	497	1143.67	38.20
EBD only	41	1605640.46	1710	938.81	41.71
UAS only	13	396606.87	475	834.21	36.57
Offend only	3	90454.57	103	880.64	34.24
Disab+EBD	5	310454.77	222	1398.44	44.40
Disab+Offend	0	0.00	0	0.00	0.00
EBD+Offend	11	763776.46	381	2004.66	34.64
EBD+UAS	2	143190.92	59	2438.77	29.36
Disab+EBD+Offend	0	0.00	0		
Disab+UAS+EBD	0	0.00	0		
All need groups	154	4996772.26	5582	895.20	36.24

Table Four shows that the 154 children who were looked after by the pilot authority during the financial year 2004-5 spent a total of 5,582 weeks in placements at a cost to social services of just under five million pounds. During this financial year, each child spent an *average* of 36 weeks in placement, at an *average* cost of £895 per week.

The original study had shown a relationship between costs and children's additional support needs, with costs increasing in line with the complexity of need (Ward *et al*, 2004, Chapters Six and Seven). As Table Four shows, the children in the pilot authority could be allocated to eight of the eleven needs groups identified in the original study, and again, by and large, the more complex the needs, the greater the costs. Sixty six (43%) of the children in the pilot authority had shown no evidence of additional support needs: the average cost per week incurred by each of these children was £524. A further seventy children (45%) showed evidence of one additional support need (physical and/or learning disability, offending behaviour, emotional or behavioural difficulty) or had displayed a different pattern of needs because they were unaccompanied asylum seekers. The average costs per week incurred by these children were between £834 and £1144, ie between 159% and 218% of the costs incurred by children with no additional support needs. The remaining eighteen children displayed combinations of additional support needs: five children showed evidence of

emotional or behavioural difficulties and physical and/or learning disabilities; eleven had emotional or behavioural difficulties and also were convicted or received final warnings during the pilot year, and two were unaccompanied asylum seekers who also showed evidence of emotional or behavioural difficulty. The average costs per week incurred by these children with more complex needs ranged from £1398 to £2439, ie between 266% and 465% of the cost of placements for children with no additional support needs. In the pilot authority there appeared to be no looked after children displaying three or more additional support needs, and no children with disabilities who also offended. As Table Four also shows, there were considerable variations in the mean number of weeks children in each needs group spent in care or accommodation during the financial year studied and this, inevitably, was an important factor in determining costs.

The Cost Calculator operates by calculating the cost of each social care process undertaken within each placement or part placement and using these as a basis for building up sequential costs over specific time periods. Table Five, which shows the costs incurred during the financial year broken down by placement type, covers the costs of all social care processes undertaken during the course of each placement, though it should be noted that the original study found that the cost of Process Three (maintaining the placement including social work activity costs and subsistence costs or fees) accounted for 96% of the total.

As Table Five demonstrates, placements with children's own parents were the least costly, at £312 per week. However these costs are not strictly comparable, as they do not include a subsistence cost, and there are also frequently raised concerns about the extent to which very vulnerable children are adequately supported when they are placed at home on care orders (see Farmer, O'Neill and Sturgess, forthcoming; Ward, Munro and Dearden, 2005). Without data on outcomes, it is particularly difficult to evaluate such placements. Placements in local authority provided foster homes, both within and outside the area of the authority, were amongst the least costly options and were most commonly used. Kinship placements cost much the same as local authority foster care placements – an encouraging finding as in the past these have been notoriously under-resourced (Ward *et al*, 2004; Tapsfield and Collier, 2005).

Of particular concern to the authority were the high costs of agency foster care (171% of the cost of in-house provision within the area of the authority and 222% of the basic cost when

children were placed externally). The authority also had no residential provision of its own; almost all such placements had to be bought from agencies outside the area of the authority at an *average* cost of £2409 per week, 128% of the average cost of placements in secure units (£1880). Once again, without adequate data concerning either outcomes or the additional support services provided, it was not possible to assess how far these very expensive placements met children's needs.

Table Five: Summary costs of different placement types used by the pilot authority during the financial year 2004-5

Placement type	Total cost of specified type of placement	Number of weeks type is used	Average Cost per week
la foster care in la	562098.21	1026	547.63
la foster care outside la	745623.08	1399	532.91
agency foster care in la	5499.93	6	939.01
agency foster care outside la	542782.66	447	1215.06
kinship	333967.68	603	553.58
parents	141399.17	454	311.65
la residential unit in la	0.00	0	
la residential unit outside la	0.00	0	
agency residential unit in la	26201.02	13	1951.14
agency res.unit outside la	2108114.38	875	2409.27
secure unit in la	0.00	0	
secure unit out la	38133.52	20	1879.82
semi-independent unit	304732.42	352	865.72
Independent living	49487.92	91	542.97
young offender's institution	0.00	0	
Mother and baby home	14665.70	7	2138.75
Adoption	124066.57	288	431.00
All types	4996772.26	5582	895.20

Both Tables Four and Five show mean costs per week, by needs group and by placement. However there were extensive variations around these means, and the authority needed to explore these further in order to better understand how costs accrue and how these relate to children's needs. Version Three of the Cost Calculator allowed the authority to do this by 'drilling down' into the data on individual children. For instance Table Four appeared to show that the most expensive group of children were unaccompanied asylum seekers with emotional or behavioural difficulties, who appeared to cost the authority an average of £2439 per week. However there were only two young people in this group, and further exploration of their individual data showed that the results reflect their both being placed in expensive

residential units outside the area of the authority, one for all the 49 days that he was looked after within the study period and the other for the complete year. Larger numbers in the group of asylum seekers with EBD might well have been offered a greater diversity of placements and therefore have shown lower average costs.

By and large one would expect placements to match needs, so that children with the most complex needs receive the most costly placements. Concerns are, however, frequently raised about the high cost and poor value of some placements; without adequate outcome data these remain unresolved. There was, however, evidence from the earlier study that the more efficient the authority, the less likely it was, for instance, to place children with no evidence of high support needs in costly residential placements. The pilot authority could explore the case-level data to identify how far placement types appeared to match what was known of children's needs. The case-level data also ranked children by costs incurred over the study time period – it was possible for the authority to select, for instance, the ten children who incurred the highest costs and examine their histories to understand more about how costs had spiralled and why they had consumed such a high proportion of resources.

The pilot authority now has a working version of the Cost Calculator, incorporating its own customised unit costs and set to use the dataset for all children looked after during the 2004-5 financial year. As already indicated, it does not plan to make regular use of the Cost Calculator until costs can be more closely related to outcomes. Nevertheless, responses from personnel in both the pilot and other authorities suggest that the Cost Calculator would have considerable value as a practical tool to aid decision-making. It would be used in numerous different *fora*, for instance to inform managers engaged in quality assurance and strategic planning of placements; to inform discussions with other agencies concerning jointly funded placements; to inform strategies for replacing expensive placements outside the authority with provision closer to children's parental homes; to inform team leaders and individual social workers of the cost consequences of decisions about individual children. Many authorities now operate devolved budgets, and there has been particular interest in exploring how the Cost Calculator might be used to inform budgetary decisions made by front line managers. Respondents have considered how the Cost Calculator might be developed further to better support these activities; in developing Version Four, their feedback has led us to focus on flexibility, user-friendliness and improving the potential for making comparisons.

Modifications to the model following the pilot (Version Four)

It was evident from the pilot that the Cost Calculator needed to be developed in such a way as to make it as responsive as possible to the changing needs of a wide range of different users. The current version (V4) has now been programmed in VBA to increase its flexibility. This version is being produced both as an illustrative model, for demonstration purposes (included as part of this report), and also as an agency specific version (still under construction), for those authorities that wish to begin using it. The demonstration model includes dummy data for 56 children, taken from real data used in the research programmes, but with ID numbers and dates changed to preserve anonymity. Both versions will run on any computer that uses Excel 2003.

Improved user choice

The Cost Calculator now offers users a range of different options which can be selected to meet different reporting needs. Within the period for which the dataset is valid, they can define the timeframe over which the cost calculations are made. This flexibility allows users to compare costs in different time periods. For example, they can separately calculate costs for each month of the financial year, and then for the year as a whole.

Users can also choose which of four sets of unit costs they wish to use for particular calculations, and can switch to other cost sheets for comparison purposes. The unit cost sheets provided are: standard out-of-London, standard London, customisable (where users can change figures to investigate the impact of variations in unit costs) and customised (for authorities that have participated in the research projects, or that purchase the agency specific version and estimate unit costs for their authority). The standard sheets reflect unit costs for 2001-2, updated using an inflation rate of 17.5% to produce estimated costs for 2004-5 in order to offer better comparisons with current timescales (see Curtis and Netten, 2004).

Version Four of the model does not include data on outcomes variables, and therefore it is not possible to identify relationships between outcomes and costs. As this pilot and other studies have shown, quantifiable outcome data of this nature are as yet rarely available, and these calculations will not be realistic until data quality improves. Identifying which additional variables on children's characteristics and outcomes might be necessary to better meet the reporting needs of individual authorities, and deciding how these might be incorporated into

later versions of the Cost Calculator and utilised is one of the next steps in the programme for development. Additions might include variables on which outcome data are collected for OC2 and the SSDA903 returns, a variable which captures data on the type of admission (emergency, planned or unplanned), and postcode data that make it possible to calculate how far placements are from the child's parental home.

The unit costs for maintaining placements in Version Three were calculated as an average of all costs available for any placement type. This was always seen as an unsatisfactory compromise, particularly for residential units, where costs may vary dramatically from one placement to another. In Version Four the customised and customisable unit cost sheets contain only the social work costs of this process for agency and residential placements, and a facility is provided to add on the specific placement fees. There is also a greatly increased list of 42 placement options. In the agency specific version, users will be able to include within this list specific placements that are regularly used, along with their cost data.

In Version Four, users can choose whether to view individual costs for any child within the dataset or aggregate costs for specific groups of children. When the group option is used Version Four provides two summary tables that include data on all children in the population studied: costs by needs group (see Table Four above), and costs by placement type (see Table Five above). Average weekly costs are included in these tables. Users can also explore the database at a different level by creating pivot tables using different combinations of variables.

Cost calculations in Version Four more accurately reflect activity in that, wherever possible, actual dates rather than estimates are used. For instance, the frequency of care plans and reviews, estimated in Version Three, are now tied to actual dates of meetings. All date information has now been moved to an additional worksheet – this will increase efficiency in selecting different timeframes, and will be of added value when additional support services are included.

A user friendly model

Efforts have been made to ensure that Version Four of the Cost Calculator can be used outside the academic setting, by managers and practitioners with minimal training. This version clearly indicates how to select timeframes, cost sheets and inflators, and incorporates a drop

down menu system giving access to specific reports. It is accompanied by a more extensive User Guide. The demonstration version is set up so that each of the main results tables can be printed on a portrait-oriented page of A4.

What if? analysis

All authorities which have examined the Cost Calculator wish to use it both with retrospective data (as in Version Three), but also prospectively, allowing for 'what if?' analyses. Initially such analyses would allow the user to compare potential costs such as if, for instance, all children in one particular needs group were offered a specific supportive service, or if residential placements were replaced by treatment foster care. With better data it would be possible to compare different packages of support services, or to compare probable costs and outcomes of alternative scenarios. Eventually it might be possible to use historical data concerning the authority's performance in the past to predict probable costs and outcomes for the future – this is an area which is currently being explored by colleagues from PSSRU, and will be reported on separately. Version Four of the model allows users to carry out a limited number of 'What if' analyses by directly entering unit costs, fees and placement types. A more extensive and user-friendly facility for exploratory analysis is the next stage to be developed.

Conclusion

The Cost Calculator currently enables agencies to calculate unit costs for social services processes for looked after children and has the potential to link these to basic data on needs and outcomes. The original version, constructed for academic purposes, has now been piloted in one authority, reviewed in two others and been subsequently developed further to meet the requirements of managers and practitioners in a service setting.

It took one researcher about thirty days to gather the appropriate activity data and calculate the unit costs, and a further thirty days to locate, download, process and import data on 154 children's characteristics and placements into the Cost Calculator. While the customised version will include an input facility which should reduce the time required for processing and importing data, the majority of the latter time was spent in manually searching for data items that could not be directly downloaded from the MIS. This would be the expected timeframe required to set up the Cost Calculator in a small local authority with a well-functioning MIS – it would take longer in an authority that had less quantifiable data on

the MIS or that looked after more than 150 children in a year. Once the Cost Calculator had been implemented, new data would need to be regularly imported and reviewed, and unit costs updated, but these tasks should be less onerous than initially setting up the model.

Some authorities may also need to overcome a number of obstacles before they can use the Cost Calculator. It will not be feasible to try to implement it in authorities where routine data on children's characteristics and placement experiences are not held on management information systems. Implementing authorities will also need to make decisions about how emotional and behavioural difficulty should be defined, and ensure that their MIS holds adequate quantifiable data on this and other variables. It will not be possible to relate costs to outcomes or to calculate the costs of providing additional support services unless improvements are made in the data generally held at present. Difficulties in extracting, processing and inputting data into the Cost Calculator will also persist where different data items are held separately on a variety of systems, as is frequently now the case. We anticipate that some of these difficulties will be overcome as the Integrated Children's System becomes more widely utilised, and as authorities make more general advances in the uses of information technology.

The research team has so far received enquiries from twenty authorities and other agencies asking to be informed when the Cost Calculator will be available for use. Version Four has been developed as both a demonstration and an agency specific version in order to facilitate wider dissemination and implementation. The current plan is to issue the agency specific version under licensing arrangements with accompanying service agreements.

While Version Four of the model should allow agencies to calculate the costs of social care processes for looked after children, this will provide only part of a wider picture. The original study demonstrated the importance of adopting a systems approach to analysing the costs of social care provision. Reductions in the numbers, and therefore costs, of looked after children might be accompanied by increases in the numbers and needs of children requiring effective family support services, and therefore increased expenditure on other children in need. Building on the work of Cleaver, Walker and Meadows (2004) it would be possible to develop comparable unit costs for social care processes for all children in need and incorporate these into the Cost Calculator. It would also be possible to add the costs of

adoption processes, building on the work of Selwyn *et al* (2003) and the preliminary discussions held in the pilot authority.

A systems approach to cost calculations would also demonstrate how costs are spread across agencies, so that reducing the costs to one may increase costs to another. When looked after children are excluded from school, for instance, there may be a reduced cost to education, but possibly an increased cost to youth justice and to social care if the consequences are greater opportunities for offending and a disrupted placement. The overall objective is to develop the Cost Calculator to incorporate unit costs for all services that children receive within specific time frames. These will include the unit costs of social care, education, health, mental health, socio-legal and youth justice processes so that eventually it will be possible to calculate the true costs to the public purse of providing services to children with extensive needs and to explore how these might be better configured to improve outcomes. The aim is to implement this development programme in conjunction with a further research study which will explore and compare in four authorities how costs have accrued over time for 100 children with extensive needs, and how these relate to outcomes. The proposal for this study is currently being developed.

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