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# Challenges in costing health care services

## Recent evidence from the UK

188

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**Abstract** Recent developments in performance measurement and reporting systems in the UK National Health Service (NHS) have created new challenges in costing health care services. In particular, the introduction of the "National Reference Costing Exercise" (NRCE) has substantively changed the way in which health care cost information is reported and used. While the outputs of the NRCE are intended to support hospital management and control by facilitating cost benchmarking, the usefulness of NRCE data depends on the comparability of cost information across hospitals. This paper draws on questionnaire results to explore the challenges in standardising health care cost information, as perceived by those closest to the costing exercise. The results reveal several problems in costing practice, all of which contribute to high variability in the costs reported by hospitals. Until these problems are recognised and addressed, they present a barrier to the effective use of comparative cost data for the management of English hospitals.

### Introduction and background

Improving financial management has been central to successive UK governments' programmes of health sector reform. Since the 1980s, a growing body of literature has examined the nature and impact of these financial management initiatives (see, for example, Bourn and Ezzamel, 1986a; Broadbent *et al.*, 1991; Broadbent, 1992; Preston *et al.*, 1992; Armstrong, 1993; Lapsley, 1994; Power, 1995; Hood, 1995; Llewellyn, 1998). Disturbingly for policy makers and health sector managers, however, studies both within and beyond the UK have noted the frequent failure of financial management developments (e.g. clinical budgeting and resource management initiatives) to achieve the level of use and acceptance required to support management decision making and cost control (see, for example, Pollitt *et al.*, 1988; Preston *et al.*, 1992; Jacobs, 1995; Abernethy, 1996; Panozzo, 1998; Doolin, 1999).

One key issue to emerge in regard to the acceptance and use of financial tools for healthcare management is the perceived reliability of cost information. It is therefore of concern that the reliability of cost data produced in the UK

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National Health Service (NHS) has been in question for some time. A decade-and-a-half ago, Bourn and Ezzamel (1986b, p. 210) noted that NHS costing systems were inadequate and “grossly incomplete”, the result being that “the quality of much of the underlying data is often dubious”. More recently, Ellwood (1996a, pp. 25, 47) has referred to the “inconsistent and crude costing approaches” used in the NHS and has warned that “obtaining costs which are reasonably accurate and comparable is ... problematic”, themes echoed in other studies of NHS costing (e.g. Bates and Brignall, 1993; King *et al.*, 1994; Jones, 1999).

With this central issue of cost information reliability in mind, this paper explores the potential problems and challenges inherent in the most recent UK attempt to secure the use and acceptance of a new costing initiative – the National Reference Costing Exercise (NRCE).

The introduction of the NRCE (DoH, 1998a) has substantively changed the way in which health care cost information is compiled, reported and used for managing English hospitals. Since 1998, the NRCE initiative has imposed an annual requirement on all English NHS acute hospital trusts to report their costs, on a consistent basis, for a comprehensive range of healthcare activities[1]. These healthcare activities are categorised within healthcare resource groups (HRGs). HRG costs are calculated by assigning the actual costs incurred by a Trust over the past year to the various HRGs that reflect the health services the Trust provided (DoH, 1997). Cost data (or “reference costs”) for all NHS Trusts are then published along with indices that take into account the nature of each Trust’s casemix of activities, and rank Trusts on the basis of their overall cost efficiency. An Index score of 100 is thought to indicate a Trust that has achieved average cost efficiency, while a score of above 100 or below 100 suggests below-average or above-average cost efficiency respectively.

While the outputs of the NRCE are intended to support hospital management and control by facilitating cost benchmarking (DoH, 1998a), the rigour and usefulness of NRCE data depends on the extent to which cost information can be standardised across hospitals. In other words, if HRG costs are calculated using different methods in different hospitals, then comparability is undermined. Conscious of the need for consistent costing practices, the DoH revised the NHS *Costing for Contracting Manual* (DoH, 1994) that was used as the basis for compiling cost data for the first 1997/1998 round of the NRCE. The *New NHS Costing Manual* (DoH, 1999b) now provides more stringent costing guidelines, as its foreword notes:

We need an approach to costing that retains the flexibility to meet local needs, but ensures sufficient consistency across all NHS Trusts to allow robust comparisons ... Building on best practice and drawing on the lessons learnt from the first Reference Cost exercise, [this new costing manual] introduces a more standardised approach to the treatment of costs and activity and through this seeks to improve comparability in cost information ... (DoH, 1999b, p. 2).

Despite this attempt to standardise NHS costing practices, concerns remain about the reliability and comparability of NRCE cost data. Cost schedules

published to date reveal wide variations in unit costs for almost every HRG, and in the overall index measures achieved by Trusts. Table I presents selected statistics across the three available years of NRCE data, to illustrate the continuing extent of cost variability.

As Table I shows, the spread of Trusts' NRCE Index scores around the average score (i.e. 100) has grown slightly, rather than diminished, from 1997/98 to 1999/2000. Also, fewer Trusts (87 per cent compared to 90 per cent in 1997/98) fell within 20 per cent of the average index score in 1999/2000. At the level of individual HRG costs, the examples (one surgical, one medical) shown in Table I, which are two of those highlighted in the NHS Executive's published NRCE reports (DoH 1998b, c; 2000), reveal continued growth in both average cost per episode and cost variability across Trusts. These trends run counter to expectations that the NRCE would highlight inefficiency, promote cost control and, therefore, reduced cost variability across NHS Trusts.

This consistently high variability in NRCE data suggests that factors other than differential efficiency may be contributing to the cost results, making them difficult to compare for benchmarking purposes. As noted in a King's Fund review of health policy:

	1997/1998	1998/1999	1999/2000
<i>Overall index results<sup>a</sup></i>			
Range around the average	-33% to +62 (%)	-33% to +86 (%)	-37% to +74 (%)
Percentage of Trusts within 20 per cent of the average <sup>b</sup>	90	86	87
Percentage of Trusts within 10% of the average	60	61	62
<i>HRG example 1: surgical HRG H02 (primary hip replacement - elective patient)</i>			
Average HRG cost (£)	3,678	3,755	3,899
Range of HRG costs (£)	1,834-£6,494	213-19,960	480-9,337
Percentage variation across range	254	9,270	1,845
<i>HRG example 2: medical HRG D15 (bronchopneumonia - non-elective)</i>			
Average HRG cost (£)	n/a <sup>c</sup>	1,211	1,287
Range of HRG costs (£)	n/a	96-13,443	79-30,702
Percentage variation across range	n/a	13,903	38,763

**Notes:** <sup>a</sup>These figures are based on the "trimmed index", the main index referred to in published NRCE documents (DoH, 1998b, 1999c). This index is adjusted for "market forces" (i.e. high regional costs); <sup>b</sup>This  $\pm$  20% range is highlighted in NHS Executive reference cost publications; <sup>c</sup>Only surgical HRGs were included in the first year of the NRCE

**Source:** Compiled from data presented in DoH (1998b, c, 2000)

**Table I.**  
Selected NRCE  
statistics

The costs vary by very large, indeed unbelievable, amounts, suggesting that although in principle they have been drawn up in a similar way, in practice they have not (Appleby and Harrison, 1999, p. 67).

The aim of this paper is to illuminate the nature of practical costing problems and the extent to which resultant inconsistencies in approach might impair the usefulness of comparative hospital cost data. The next section outlines the questionnaire survey used to gather the views of NHS accountants and finance directors regarding the challenges faced in standardising health care cost information. The results of the survey are then presented and discussed, followed by conclusions.

### The questionnaire

In October 2000 a questionnaire was mailed to the finance directors in 228 NHS Trusts whose cost data had been included in the 1999 NRCE (DoH, 1999c, pp. 24-31)[2]. Two copies of the questionnaire were enclosed – the blue copy to be completed by the finance director and the yellow copy by the cost accountant most involved in compiling reference cost data for the Trust. By the end of November 2000, responses had been received from 105 Trusts, i.e. 46 per cent of the sample (a high response rate for a survey of this nature). Responses were received from Trusts across the full range of NRCE performance (i.e. at high and low index score rankings), suggesting no particular response bias. Table II shows summary statistics for the questionnaire responses.

The questionnaire listed ten factors that could be problematic in the construction of systematic and comparable HRG costs. These ten factors had been identified in more than 30 interviews with NHS accountants, finance directors, clinical directors and information management personnel, undertaken as part of a related study (see Northcott and Llewellyn, 2002). In the questionnaire, Trust finance directors and cost accountants were asked to:

	N	Percentage
Trusts surveyed	228	
Trusts responding	105	46
Total responses received (FDs and CAs)	169	
Responses from FDs	81	48
Responses from CAs	88	52
Trusts where:		
Both the FD and CA responded	62	59
Only the FD responded	18	17
Only the CA responded	25	24

Notes: FD = finance director; CA = cost accountant

**Table II.**  
Questionnaire survey  
response summary



- (1) Identify which of the ten listed factors impacted significantly on the calculation of reference costs.
- (2) Rank the five most significant factors.
- (3) Note any other factors not included in the list that they thought might affect the determination of reference costs.
- (4) Offer any comments they wished to on their experiences of producing cost data for the NRCE.

The first two questions were designed to explore the significance and prevalence of the costing difficulties identified in interviews, while questions (3) and (4) ensured that other possible problems were not overlooked. The ten factors, presented in a random order, were:

- (1) Differences in clinical coding practices.
- (2) Differences in the counting of patient care episodes.
- (3) Variations in cost allocation practices.
- (4) Differences in how “costed care profiles” (i.e. standard costs for procedures) are produced.
- (5) Variations in the clinical practices that drive costs.
- (6) Differences in the unit cost of variable resources (e.g. salaries and wages; consumables).
- (7) Differences in fixed running costs for hospital facilities.
- (8) Variations in the data collection capacity of Trusts’ information systems.
- (9) Variations in case-mix that are not taken into account within HRG measures.
- (10) Variations in patient lengths of stay.

Factors 5, 6 and 7 could be considered as legitimate indicators of differential efficiency between NHS Trusts. They were included in the questionnaire so that the relative perceived significance of the other, potentially distorting, factors could be considered alongside the “true” cost variation perceived to exist in NRCE data. The potential impact of each of the ten factors is explained briefly below.

#### *Differences in clinical coding practices*

Each episode of patient care occurring within a Trust must be assigned to its relevant procedure code. This task is performed by specialist clinical coders who draw their information either from patient summary sheets completed by clinicians, or directly from patient notes. Clinical coders follow international guidelines (the International Classification of Diseases (ICD-10)) and a national coding system (the Procedure Classification of the Office of Population Censuses and Surveys (OPCS 4)). Since these procedure codes form the

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foundation of HRGs, the reliability of NRCE data depends on the accuracy of clinical coding.

*Differences in the counting of patient care episodes*

Reference costs are the unit cost of an episode of patient care (a "finished consultant episode" (FCE)) occurring within a given health care category (HRG). Determining the level of clinical activity, or number of FCEs, within each HRG category is therefore central to the calculation of NRCE cost data.

*Variations in cost allocation practices*

Some costs are not easily identified with a particular health care episode or HRG. For example, the activities of pathology and radiology support services contribute to many different areas of a hospital's activities and to many different HRG categories of care. The costs of running activities such as pathology and radiology services must, therefore, be allocated to HRGs so that the full cost of any HRG can be determined. As already noted, the rigour and consistency of cost allocation practices is crucial in ensuring the reliability and comparability of NRCE data.

*Differences in how "costed care profiles" (i.e. standard costs for procedures) are produced*

Since it is impossible to measure the actual cost of every procedure performed in a hospital, costed care profiles are used to identify a standard cost per unit (i.e. per FCE) for a healthcare procedure. There are usually several procedures grouped together within any HRG code, so an HRG reference cost comprises a weighted-average of the relevant costed care profiles. To construct costed care profiles, any identifiable direct cost is traced "bottom-up" to the procedure (for example the cost of expensive drugs or prostheses), while other costs are pooled and apportioned to procedures based on the consumption of cost driving activities (such as patient length of stay). The more sophisticated the "bottom-up" costing approach, the more an HRG (reference) cost can be thought of as reflecting direct cost causality, rather than an arbitrary process of cost allocation.

*Variations in the clinical practices that drive costs*

Clinical practices drive many of the direct costs of healthcare activities. Each time a clinician decides to order a blood test or X-ray, prescribe drugs or keep a patient in hospital, for example, it impacts on costs. The different working practices of clinicians impact on costs, therefore.

*Differences in the unit cost of variable resources*

Direct costs may differ due to resource purchasing decisions taken by Trusts. Also, some direct costs such as labour are geographically dissimilar, with London and south-east Trusts generally incurring higher costs than other Trusts. The NHS Executive has attempted to "eliminate the effect of

unavoidable cost differences due to different geographical locations” (DoH, 1999c, p. 19) by adjusting Trusts’ NRCE index ratings using a “market forces factor”. This adjustment may not take full account of all geographical cost variations, however.

*Differences in running costs for hospital facilities*

Fixed running costs (e.g. capital charges and depreciation) can vary due to factors such as the age, sophistication and location of a Trust’s facilities.

*Variations in the data collection capacity of Trusts’ information systems*

Trust accountants draw on diverse information systems to compile the data necessary for reference costing. These information systems include the general ledger accounting system and hospital information systems that monitor cost driving activities such as admissions, theatre time, days of bed-stay, diagnostic tests, pharmacy prescriptions and the use of prostheses. Data quality and availability within Trusts is crucial to the NRCE exercise, therefore.

*Variations in case-mix that are not taken into account within HRG measures*

The HRG system of categorising health care activity was designed to “group together treatments that are clinically similar, consume similar quantities of resources and are likely to be similar in cost” (DoH, 1998a, p. 4). However, Trusts may have different mixes of procedures within HRG categories due to the variable nature and complexity of their “case-mix”. Even within procedures, Trusts may experience different case-mix characteristics. For example, a specialist or teaching hospital may take on more complex cases than those dealt with by a general district hospital within the same procedure code and/or HRG. It is possible, therefore, that the benchmarking of HRG costs across Trusts does not compare like with like.

*Variations in patient lengths of stay*

The time a patient spends in a hospital bed is usually related to the severity of their condition or the complexity of their treatment, and is determined by clinicians’ discharge decisions. Since length of stay is a key driver of patient care costs, it has a significant impact on both the incurrence of cost and the way in which costs are attributed to HRGs within the NRCE.

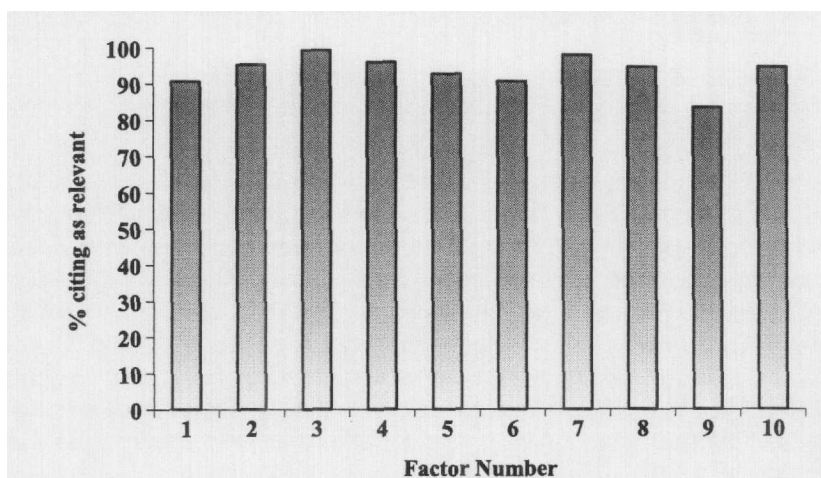
The questionnaire results, indicating the perceived significance of these ten factors in contributing to apparent cost variability, are discussed next.

**Results and discussion**

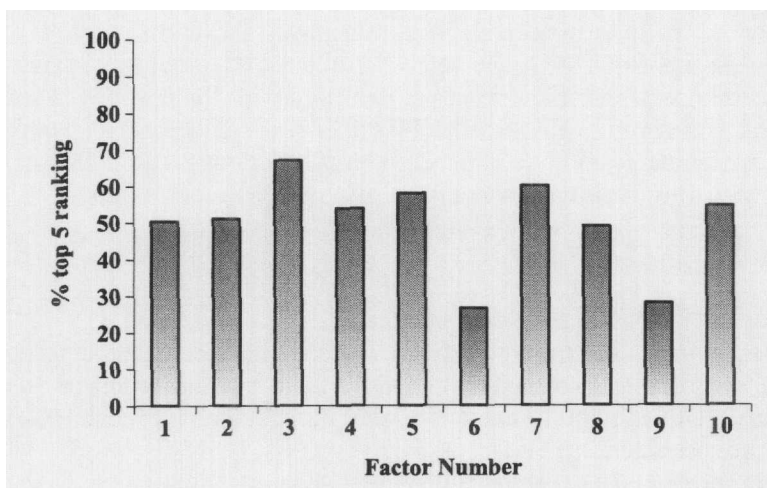
Respondents were asked to tick those factors that they considered did affect the calculation of reference costs. The results confirmed that all ten factors were widely perceived as problematic to the compilation of systematic and comparable cost data (see Figure 1 below).

In order to concentrate on those factors perceived as having the greatest impact on reference cost variability, we can look to the results related to the "top five" rankings. Respondents were asked to rank in order the five factors that they considered had most impact on the calculation of reference costs. Figure 2 below presents the results. It is worth noting that there was no substantive difference in the rating awarded to each factor when it appeared in the "top with all factors scoring an average ranking between 2.5 and 3.5. This suggests that the frequency of "top five" ranking alone provides a reasonable indicator of the relative perceived importance of the ten factors.

It should be noted that the results presented in Figures 1 and 2 are based on all responses received from finance directors and cost accountants. The results therefore include duplicate responses from the 62 Trusts where both the finance director and the cost accountant responded. A comparison of responses received from the finance director and the cost accountant within each of these



**Figure 1.**  
Percentage of respondents citing each factor as impacting on reference cost results



**Figure 2.**  
Percentage of respondents ranking each factor in their "top five"



Trusts revealed that in no instance were the same five factors identified and/or ranked in the same order by both people. This suggests that responses received represented the views of individuals, rather than of Trusts *per se*, and that equal weighting can be given to every response as an independent view from an NHS actor close to the reference costing activity.

Figure 2 shows that “differences in cost allocation practices” (factor 3) was most often ranked in the “top five” in terms of its influence on reference cost variability. Of the respondents, 67 per cent ranked this factor in their “top five”, and open-ended comments offered by respondents confirmed that a lack of standardisation in cost allocation methods was a major problem in securing comparable NRCE data, as the following quotes illustrate:

Although costing guidance has been updated to try to standardize cost allocation, wide variations still exist.

The guidance in the costing manual is still flexible, allowing the use of more sophisticated methods or just minimum standard methods. Different allocation methods could have a major impact, therefore.

Considerable latitude is allowed in the interpretation of the instructions for allocating costs. Whilst these exist, a wide [cost] variation should be expected ... [and] reference costs will never be reconcilable.

This factor was followed closely by “differences in fixed running costs for hospital facilities” and “variations in the clinical practices that drive costs” (factors 7 and 5 respectively). Both of these factors could be considered as “real” indicators of differential cost efficiency, since standardisation of hospital running costs and clinical practices (such as the time taken in treating or operating on patients, choices of drug prescriptions, discharge decisions) could, theoretically, result in cost homogeneity across Trusts. It is interesting to note, however, that the other factor related to “real” cost variations – differences in the unit cost of variable resources – was ranked as the least important factor in this survey.

The aim of the NRCE is to highlight just these sorts of cost differences where they occur, so the high rankings given to factors 7 and 5 in the questionnaire responses does not in itself suggest that they present a problem in compiling comparative cost information. However, in accord with the findings of previous studies (e.g. Ellwood, 1996a; Jones, 1999), the open-ended comments indicated that some running costs lay outside the control of Trusts, dictated instead by geography or the physical nature of the Trust’s facilities. For example:

The capital charge and the efficiency of how you work are affected a lot by whether you have an old or new hospital.

Recruitment black spot areas, such as the North-West, carry excessive agency [staff] costs.

Such costs, having external cost drivers, are not easily managed by Trusts in order to improve cost efficiency. This raises the question of whether comparative NRCE data is able to highlight variations in how efficiently hospitals are managed.

The factor ranked fourth highest was “variations in patient lengths of stay” (factor 10). Over 54 per cent of respondents ranked this factor “top five” in terms of its influence on NRCE cost variability. Indeed, one respondent argued strongly that this was a critical factor in conflating HRG cost comparisons between hospitals:

I have done extensive benchmarking and variations in length of stay is clearly the number one reason why costings come out different.

While poor clinical management may conceivably result in excessive lengths of stay, thus incurring unnecessary cost, open-ended comments noted that variable length of stay was often due to factors that could not be managed by Trusts, for example:

LOS [length of stay] is very variable for complex, specialist procedures.

Average length of stay is directly influenced by the availability of residential/nursing home beds for discharge.

If, as the survey results suggest, average lengths of stay within HRG categories vary between Trusts for reasons beyond their control, then this reduces the comparability of NRCE data for the purposes of benchmarking and identifying potential areas for improved cost efficiency.

Variations in how “costed care profiles” are produced by Trusts (factor 4) were also perceived as highly problematic in distorting the way in which costs are attributed to HRGs. Around 54 per cent of respondents ranked this factor in their “top five”, with open-ended comments noting that Trusts achieved varying levels of accuracy in ascertaining and tracking cost-driving activities within HRG care profiles. For example:

Some Trusts are more sophisticated than others in constructing care profiles. For example, some Trusts’ care profiles are based purely on length of stay, whereas others’ include theatre minutes, pathology tests, X-rays, drugs, prostheses etc.

Such variation in the complexity of cost pools and cost drivers used to allocate hospital costs to HRGs (e.g. from simple length of stay allocation bases to drivers related to the consumption of theatre, pathology, radiology, pharmacy and prosthetics resources), will inevitably lead to different cost allocation methods and outcomes, even where Trusts undertake equivalent activities at comparable levels of cost efficiency. However, survey respondents noted that some Trusts were constrained in their ability to produce “sophisticated” costed care profiles by the information available to them:

Differing levels of sophistication in costed care profiles are dependent upon Trusts’ capabilities to capture detailed information.

In bottom-up costing, the information systems used by our patient treatment services (e.g. cardio respiratory, radiology, pharmacy etc.), usually fail to provide any link to patients at HRG level, as these systems are not patient based.

Also related to problems in obtaining good quality data for costing “differences in the counting of patient care episodes” (factor 2) and “differences in clinical coding practices” (factor 1) were both considered “top five” problems by around 51 per cent of respondents. Previous studies have noted problems with the counting and coding of clinical activity in healthcare organisations (see, for example, Benster, 1994; Radical Statistics Health Group, 1995; Lowe and Doolin, 1999), and these kinds of problems were clearly reflected in the questionnaire results, as the following typical comments illustrate:

There is the whole issue of activity and activity measures, which are inconsistent and poorly collected.

Clinical coding is very important, and should be uniform throughout the NHS. However, difficulties arise when data is input inaccurately, or not at all. Constant monitoring is required and it is improving, but we are some way off “perfection”.

There is quite a lot of incorrect coding. We see procedures that we never do appearing on our coding system.

Both the counting and coding of patient activity (FCEs) are critical to determining the denominator volume when calculating the average cost for each HRG category. It is therefore of major concern that over half of the respondents perceived the counting and coding of clinical activity as a problem in compiling health care cost information.

The perceived significance of factors 4, 2 and 1 has clear links to another high-ranking factor, “the data collection capacity of Trusts’ information systems” (factor 8, ranked “top five” by 49 per cent of respondents). One respondent noted that “Trust data collection systems are poor”, a concern echoed by other open-ended comments, some of which referred to the difficulties of obtaining accurate information about key cost-driving activities. For example:

The quality of costing information is primarily driven by the quality of PAS [patient admissions system] data and data extracted from other systems to support cost apportionment.

Within each care profile will be an element relating to time spent in theatre, so variations in theatre information and collection systems could have a significant effect on reference costs relating to surgical specialties.

This recognition that Trusts do not share the same level of sophistication and reliability in their information systems leads to an expectation that HRG cost data will vary due to differences in the quality and availability of both cost and activity data, and to reluctance in accepting NRCE results as comparable across Trusts.

The factors least often rated “top five” were “variations in case-mix that are not taken into account within HRG measures” (factor 9) and “differences in the unit cost of resources used by Trusts (i.e. direct costs)” (factor 6, discussed already along with the other cost efficiency factors, 5 and 7).

The use of HRGs as a basis for costing is not new. Prior to the introduction of the NRCE, most NHS acute hospital trusts were already using HRG costs as a basis for price-setting within the previous competitive, market-based NHS framework (Lapsley, 1994; Ellwood, 1996a, 1996b, 2000; Jones, 1999). The problem now though is that, since HRGs form the cost objects for reporting reference costs, it is crucial that they are directly comparable across all hospitals. Around 28 per cent of respondents felt that this was not the case, noting that the failure of HRGs to account for variations in case-mix across Trusts was a "top five" problem in compiling accurate health care costs. The following quotes illustrate the nature of respondents' concerns:

We have done a fair amount of work and are convinced that there are significant issues in case-mix not being fully reflected in HRGs.

There are variations within the case-mix of individual procedures that are collated under each HRG, so the iso-resource assumption is not valid.

The complexity of procedures is not measured in HRGs. For example, complex hip revisions undertaken at [this hospital] are referred by other orthopaedic surgeons across the country because they are too complex to be dealt with in a local DGH [District General Hospital].

Although this was the least significant problem identified by questionnaire respondents, it does point to unresolved problems in assigning costs to appropriate cost objects, given the heterogeneous "product (case) mix" experienced by different hospitals.

In addition to the ten factors identified in the questionnaire instrument, respondents were also given the opportunity to identify any other factors that impacted on the accuracy of reference costs. Few respondents identified additional factors, and those factors that were identified were cited infrequently. However, it is worth noting two further issues that emerged: communication (especially between financial managers and clinicians), and the level of organisational commitment afforded to the costing exercise. One respondent wrote that:

Many Trusts spend a great deal of time to produce their costs, others do not.

Accountants in those Trusts where little time and effort is attributed to the costing exercise are likely to produce less accurate cost information, given the limited resources at their disposal. A similar issue arose in respect to the level of commitment and involvement of clinicians in the costing exercise, seen as an important determinant of information quality. Two respondents noted that:

The accuracy of costed care profiles depends on whether they have been discussed with the relevant clinicians to ensure that all factors have been identified.

Commitment from the finance team is important, as is quality input from clinicians and other health professionals.

Again, the theme here is one of ensuring information quality, a widespread concern among those NHS actors responsible for producing cost information on health care activities.



To sum up, evidence gathered from nearly half of all English NHS acute hospital trusts confirms that all ten factors identified in the questionnaire, as well as issues of communication and commitment to the costing exercise, present substantial and widespread practical problems in health care costing. These findings suggest that the introduction of the NRCE has, despite corresponding efforts to improve the consistency and comparability of NHS costing practices, done little to alleviate concerns about the reliability of health care costing. Those closest to the practicalities of the costing exercise have reported widespread concerns about a number of factors that complicate the costing exercise. Consequently, it is difficult to assert that concerns about data quality (Bourn and Ezzamel, 1986b), incorrigible complexity in health care costing (Jones, 1999) and inconsistent costing approaches (Ellwood 1996a) have been resolved. The issue of cost data quality appears to remain as a very real barrier to the use of the NRCE as a new cost management initiative, therefore.

### Conclusion

The NRCE was intended to provide NHS Trust managers with a database of comparative cost information against which they could benchmark their own Trust's results. As noted by Jones (1999, p. 16), standardised HRG cost information, on which the NRCE is based, was expected to provide "a significant step forward in understanding how costs are incurred and thus provide a focus for identifying ways of improving cost efficiency". Yet, despite attempts to standardise NHS costing practices, Trust accountants and finance directors remain concerned about the challenges faced in compiling rigorous, systematic and comparable cost information for benchmarking and management purposes.

It is important to keep in mind that, while the results of this study reflect the perspectives of only the surveyed finance directors and cost accountants, the views of clinicians and other NHS actors may have equal relevance to determining the usefulness of this recent costing initiative. Indeed, prior studies have noted the crucial role of clinicians in the use of financial information for operational level management (Jones, 1999; Comerford and Abernethy, 1999) and the potential for clinicians to resist modes of management and control that they perceive as unhelpful to their own needs and roles (Doolin, 1999; Lapsley, 2001). Further research is needed to explore the vital impact of clinicians' perceptions of, and responses to, the NRCE as its uses become shaped in practice.

Notwithstanding this limitation, the results of this study reveal that those closest to the costing exercise perceive three key challenges in producing rigorous cost information about health care activities:

- (1) variations in costing practices (specifically, approaches taken in constructing "costed care profiles" and allocating indirect costs);
- (2) problems of information quality (specifically, the counting and coding of patient care activity and limitations of NHS information systems); and

- (3) heterogeneity in the nature of the cost object (specifically, HRG case-mix and length of stay assumptions were perceived as flawed).

These problems contribute to variations in the cost results reported by hospitals, and call into question the usefulness of NRCE cost information as a basis for highlighting and managing cost inefficiency. The implications for both health sector policy makers and managers appear to be twofold. First, there is a continuing need to improve the standardisation of NHS costing practices at levels of best practice, so that variations of method are minimised and the comparability of NRCE data is enhanced. Second, care must be exercised in the interpretation of comparative NRCE data and index rankings for arriving at resource allocation, service commissioning, service provision and cost management decisions. Given the concerns raised in this study about the reliability of NRCE cost information, there is the potential for erroneous decision-making signals to be inferred from these data if the reasons for apparent cost variation are not appropriately explored.

This study has highlighted critical issues about barriers to the effective compilation and use of cost information for hospital management. Although considered here in the context of the NRCE, these problems are not restricted to the UK. Indeed, attempts to introduce health care costing initiatives within any country need to recognise the possibility of similar difficulties, so that interpretations attributed to cost information appropriately account for the practical costing challenges faced.

#### Notes

1. The NRCE is being extended to include other NHS Trusts, such as those engaged in community care and mental health services. To date, however, most available results pertain to acute hospital Trusts.
2. Although the NHS Executive lists 244 Trusts in the 1998/1999 NRCE, a database of current Trusts and their addresses (provided by the NHS Executive in October 2000) could be matched with only 228 of those Trusts.

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