The priority-setting exercise: an instrument for training in health care resource allocation

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SUMMARY *Overt rationing and priority setting in the post-1990 NHS are widely accepted as inevitable. Although surveys reveal that a wide variety of opinions on priorities exist, health care professionals, both clinical and managerial, are likely to have had little experience of establishing priority rankings in practice. We describe a simple priority-setting exercise which we have conducted with subjects from a variety of backgrounds, designed to expose participants to some of the fundamental issues involved in identifying health care priorities.*

Introduction

Since the 1990 National Health Services Act, and possibly because of it, rationing and priority setting in the provision of UK health care have become major topics for debate. However, whilst the majority of participants in this debate appear to accept that, in a world of finite resources, rationing and priority setting are inescapable, no consensus seems to have been achieved in respect of either how the tasks should be accomplished or who should be responsible for doing them (Smith, 1993).

In practice, priority setting can take place both *vertically* and *horizontally*. The former requires the setting of priorities *within* a specific health care area, for example, the care of the mentally ill, whereas the latter entails setting priorities *between* areas, for example, the care of the mentally ill *vs* treatments for cancer. Recent surveys of horizontal priority orderings undertaken within health authorities (Ham, 1993) or more generally (Heginbotham, 1993) reveal, perhaps not surprisingly, considerable variations between the opinions held by physicians, the general public and health service managers. The latter study, for example, demonstrated that breast cancer screening is held in considerably higher esteem, relative to a range of other care services, amongst the general public than amongst doctors

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and managers. Such surveys, however, simply report opinion, without enquiring how opinion is formed. In contrast, at least one exercise in both vertical and horizontal priority setting has been conducted with a health authority purchaser in the UK, with the aim of exposing the decision-making process and relevant criteria for ranking (Cochrane *et al.*, 1991). Similarly, an illustration of the vertical priority setting decision process is provided by a comparison of the decisions of purchasing and non-purchasing health authorities in the case of *in vitro* fertilization (Redmayne & Klein, 1993). Each of these latter studies noted the difficulties experienced by purchasers in setting vertical and, in particular, horizontal, priorities, owing largely to the perceived absence of information relevant to decision making.

Accepting the earlier premise—that the explicit rationing of health care resources is inevitable—health care professionals in the future, both managerial and medical, will be faced with the problem of collaborating with others in deriving priority orderings binding on all. For many, such overt priority setting will be a novel experience and it is thus important that some form of training be provided. As part of our teaching programme in health economics at the University of Nottingham, we are employing a simple horizontal priority-setting exercise designed not only to introduce the notion of choice in health care resource allocation, but also to expose participants to the dynamics of group decision making. This paper reports on our experiences to date.

The priority-setting exercise (PSE)

The object of the PSE is to expose variations in the criteria and processes used by different individuals, and groups of individuals, in setting priorities for resource allocation between different primary and secondary care interventions. We chose a list of 10 well-known interventions, about which participants might be expected to have some subjective notion of typical patient prognosis and benefits of treatment. In general, no additional information regarding the treatments was supplied, on the grounds that limited information reflects the reality of NHS priority setting at present. Each participant was provided with the material presented in Figure 1. The demand data are, of course, hypothetical. All price data are derived from actual GP fundholder price lists, with the exception of GP advice to quit smoking, which is 'guesstimate' from the health economics literature.

During the 1993–94 academic year, the PSE was used with six separate sets of participants, as indicated in Table I. The health care professionals were students taking Masters courses at the university, although virtually all were currently employed in the NHS, for example, as general practitioners, nurses or physiotherapists. For each set, the conduct of the PSE was as follows:

(1) Working as individuals, each participant was required to indicate his or her ranking on a pre-printed list of the 10 interventions, and to write down the criteria he or she used in deriving that priority ordering. We retained copies of these lists, for the purposes of analysis.
(2) Working in groups of three to five, individuals were required to negotiate a consensus-group priority ordering, i.e. to reconcile any conflicts between individual orderings by weighing up the relative merits of the choice criteria.

Objective:

To examine the criteria and processes which might be used in setting priorities for resource allocation in health care.

Exercise:

You are a member of the Wearington-on-Sea Health Commission, deciding on purchasing priorities for the current financial year. A survey has already identified the health care needs of the local population—400 people require treatment in the form of 10 different primary and secondary care interventions. Interventions and numbers are displayed in the Table below, as are the prices being charged by local providers and the total cost of each intervention.

Intervention	*Demand* *No. of patients*	*Price* *(£)*	*Total cost* *(£)*
Hip replacement	50	2,040	102,000
Hernia treatment	50	280	14,000
Treatment for bilateral prominent ears	30	1,460	43,800
Coronary artery bypass graft (2 vessel)	10	7,100	71,000
GP advice to quit smoking	100	120	12,000
Female sterilization	30	240	7,200
Carpal tunnel (wrist) surgery	25	140	3,500
Cataract treatment	40	1,000	40,000
Double heart valve replacement	5	13,500	67,500
Treatment for varicose veins	60	280	16,800
Total	400		377,800

Task:

To set priorities for purchasing, by ranking the 10 interventions in order of importance. You may assume that your budget is unconstrained, i.e. you have the full £377,800 available. Identify and justify the criteria you have used in deciding on the priority ranking for each intervention.

FIG. 1. Priority-setting exercise.

No guidance was provided on how such a consensus should be reached, this being a key element of the exercise. Each group was required to write down its final ordering on a pre-printed list, and to note the method(s) used in reaching agreement. Again, we retained copies of these lists for analysis.

(3) For stages (1) and (2), the purchasing budget was assumed unconstrained. For the final stage, groups were constrained to a budget of £250,000, implying

TABLE I. Participants in the PSE

Set	No.
Health care professionals	
Master of Medical Science in Primary Care	13
Master of Science in Health Care Policy and Organisation	14
Master of Public Health	6
Final-year undergraduate medical students	45
Final-year undergraduate economics students, taking a course in health economics	30
Senior managers from local district health authority	21
Total	129

TABLE II. Overall rank orderings derived from participating groups ($n = 31$)

Procedure	Rank mean	Rank median	Rank minimum	Rank maximum
1 Hip replacement	3.4	3	1	8
2 Coronary artery bypass graft	3.5	3	1	8
3 Cataract treatment	3.5	4	1	7
4 Double heart valve treatment	4.1	5	1	10
5 Hernia surgery	4.3	5	1	8
6 Carpal tunnel surgery	5.2	5	2	9
7 GP advice to quit smoking	6.2	7	1	10
8 Female sterilization	6.5	7	1	9
9 Treatment for varicose veins	8.7	9	5	10
10 Treatment for bilateral prominent ears	9.2	10	5	10

a shortfall of £127,800. They were required to review their original rankings from stage (2) to decide which of the interventions they, as a group, would not be purchasing. To simplify matters, participants were required to purchase interventions *en bloc*, rather than purchase treatments for proportions of patients on each waiting list.

Following stage (2) and using the data obtained, we presented the orderings arrived at by each group to the participants as a whole and invited each group to explain how their particular consensus had been reached. A period of open discussion and debate followed, salient points being recorded on a flip-chart. Following stage (3), each group was invited to discuss the impact of the budget constraint on its stage (2) orderings. Thereafter, discussion was broadened into the issue of priority setting in general. Again, salient points were written up on a flip-chart.

The 129 participants produced 31 group orderings and these overall results are summarized in Table II. The ordering has been constructed on the basis of mean rank sum, using the rank medians as an additional discriminating criterion. This is by no means the only way of deriving a priority ordering from the data, although it is a simple method to apply and probably indicative of current NHS practice. It should be noted that, with the exception of the two lowest overall priorities, the range of priority ranks offered by individual groups was extremely wide—one group's first choice was often another group's last choice. The range of ranks as constructed by *individuals* was as wide as the range for the groups in three cases and wider in the remaining seven, indicating that the variation in individual opinion was even higher than that between group opinions. Table III displays priority rankings for four sub-samples, classified according to specialist background, using the same criteria as for Table II. As is evident, agreement is higher with respect to the lower priority interventions. For the higher priorities, it is possible to identify a difference in preferences between the health service participants and the economics undergraduates. The latter gave highest priority to the life-extending treatments, which may reflect a preference for 'saving lives' rather than improving the quality of life.

These results notwithstanding, the primary role of the PSE is educational, to illuminate, through interactive role-play and discussion, the processes involved in

TABLE III. Priority ranking according to participant background

Intervention	Medical students ($n = 9$)	Health professionals ($n = 9$)	NHS managers ($n = 9$)	Economics students ($n = 9$)
Hip replacement	2	1	1=	5†
Coronary artery bypass graft	3	4	1=	1
Cataract treatment	1	2	3	6*
Double heart valve treatment	5†	6†	5†	2
Hernia surgery	4	3	4	4
Carpal tunnel surgery	6*	5	7*	3
GP advice to quit smoking	8*	7*	6*	7*
Female sterilization	7*	8*	8*	8*
Treatment for varicose veins	9*	9*	9*	10*
Treatment for bilateral prominent ears	10*	10*	10*	9*

Notes: †—Marginal intervention for purchase with budget constraint applied in stage (3).
*—Interventions not purchased with budget constraints applied in stage (3).

resource allocation decisions. Thus the final rankings derived are of less importance than the processes through which the rankings were obtained.

Playing the PSE game

For many, if not most, of the participants, the PSE represented their first experience of this form of decision making. From the discussions it emerged that participants had found that the difficulty of the task had increased with the stage of the exercise. Many were particularly troubled by stage (3)—the introduction of the budget constraint—because of the implications for denial of care. Discussions on methods of ranking employed within the groups revealed the following as commonly used criteria.

First, almost all participants claimed to have made subjective trade-offs between quality of life and expected survival gain in reaching their orderings. Naturally, different individuals placed different weights on these two parameters, implying that different orderings could be generated using essentially the same criterion. Second, treatments for varicose veins and bilateral prominent ears were seen as improving quality of life but were viewed as low priority by almost all participants, on the grounds that the benefits were 'purely cosmetic'. Third, virtually all participants mentioned cost as a relevant consideration. Interventions such as cataract surgery and hernia treatment were seen as both low-cost and effective, and this generally led to them being placed higher up the priority list. Coronary artery bypass graft was almost invariably placed above heart valve replacement, in that participants claimed they perceived little difference in effectiveness and the former was considerably cheaper per patient.

Fourth, a higher degree of uncertainty over clinical effectiveness generally led to a lower ranking for the intervention concerned. This factor was most relevant to GP advice to quit smoking—a low-cost, high-demand, preventive measure—where many participants indicated they were unaware of any evidence of effectiveness. In such cases, individuals claiming specialist knowledge of particular interventions found it relatively easy to persuade their less well-informed colleagues in the group as to the 'proper' positioning of the intervention in the priority ordering. Finally,

the extent of demand for a given intervention *per se* did not appear influential in determining priorities. However, in stage (3), demand combined with cost data did appear influential in allocation decisions. For example, several groups noted that the exclusion of hip replacements could lead to a larger number of hernia, carpal tunnel and sterilization patients being treated.

Up to 30 minutes was allotted to stage (2) of the PSE, although the time taken by each group in reaching a consensus varied considerably. Some, for example, achieved an agreed ordering in a matter of minutes, participants discovering that they had been randomly allocated to groups of essentially like-minded individuals. As a learning experience for the participants, the PSE was possibly least successful in these cases. For most groups, however, discussions were protracted. One group of medical students, for example, was completely defeated by stage (2) and was forced to conclude that all interventions should be accorded equal priority. Another medical student group felt it appropriate to rank interventions on a purely random basis. Many of the other groups devised their own internal criteria for reaching a consensus, after they realized that individual priorities were at variance with one another and that no single point of view could dominate. Some, for example, made a prior decision on whether to concentrate resources on preventive rather than curative interventions, which permitted them to undertake a preliminary general ranking. At least one group resorted to 'show of hands' voting whilst, with a higher degree of sophistication, a group of the health care professionals employed the simple mean rank sum of the priorities of individual members (analogous to the summary calculation in Table II). The most elaborate attempt in this respect was another group of health care professionals who allocated scores to each intervention on 1–5 priority scales for numbers waiting, quality of life gain, productivity benefits, efficacy and value for money. Under this system, they discovered that GP advice to quit smoking and female sterilization emerged as the highest priorities, rankings completely at variance with most other groups. However, the group itself then decided that the rankings under this system were unacceptable and adjusted their ordering to place life-extending interventions at the top and those which they saw as cosmetic improvements at the bottom.

In reviewing their learning experiences at the end of the exercise, the majority of participants reported favourably, having found the PSE both stimulating and novel. For groups where a consensus had proved difficult to achieve (i.e. the majority), participants expressed surprise that individuals from essentially similar backgrounds could hold such widely differing views. We have yet to test systematically, however, the impact of such a realization on participants; for example, whether they found this realization depressing or encouraging and how they intended to take this knowledge through to their further work.

The most regular observation made by participants was that they would have liked more clinical effectiveness data to aid their decision making. This observation is interesting in view of the fact that, with the exception of the economics students in whom ignorance of clinical matters is understandable, the participants must be amongst the best informed individuals in the health care arena, certainly in comparison with, for example, the general public. Limited information was, of course, a central ingredient of the PSE, reflecting the realities of NHS decision making. In fact, the participants were somewhat *better* served with information (implying that the task ought to have been easier) than would be true of the real

world. Both demand and costs were known with absolute certainty, whilst the number of interventions available for purchase was constrained to only 10.

Lessons from the PSE

In the follow-up discussions, participants were asked their views as to who, in reality, should determine health care priorities. There existed a widespread feeling that, in principle, as wide a range of opinions as possible should be canvassed. In some degree, this corresponds to the approach taken in the Oregon experiment (Dixon & Welch, 1991; Kitzhaber, 1993) although, as participants in both exercises came to appreciate, consensus becomes progressively harder to achieve in practice as the number of opinions increases. Moreover, as was the case for Oregon, the possession of specialist knowledge on the part of individual PSE participants permits them to play a disproportionate role in the decision process.

Possibly the most important lesson learned by PSE participants is that collective priority setting in health care is a political process. In the absence of complete information and with differing individual opinions, procedures for the reconciliation of views are required and these appear to emerge quite spontaneously when people are confronted with an unfamiliar problem. The function of these procedures is essentially to mechanize the problem, that is, to redefine it in a form capable of resolution. Whether the procedures adopted by any given group are 'correct' or 'appropriate' remains a moot point and here we would wish to echo Klein's observation that the appropriate *structure* of decision making is the cornerstone of the entire priority-setting debate (Klein, 1993).

Seen in this light, it would seem evident that the request for more effectiveness information made by almost all participants results from a desire to facilitate the mechanization of decisions. Indeed, this is a hypothesis we intend to test in future with the PSE. Up to now, we have followed stage (3) of the PSE with a directed discussion of the use of cost-effectiveness data, such as costs per quality-adjusted life year gained (Drummond *et al.*, 1993), in informing priority setting. Although we have yet to test systematically whether the provision of such information subsequently alters group priority orderings, such a discussion serves to re-open the debate over the appropriate criteria for priority setting implicit in stage (1).

Conclusions

Priority setting is complex because it is prone to the condition of 'essential contestability' (Jennings, 1992). As PSE participants come to appreciate, the difficulty in reconciling opposing views stems fundamentally from a disinclination to establish an objective set of 'correct' criteria for defining priorities. The real world of health care, however, does not permit such toleration of opposing viewpoints. It is a simple fact of economic life that NHS resources *will* be allocated, in quite specific amounts, across the range of health care programmes from one year to the next. If priority setting does not take place explicitly it will therefore simply occur implicitly, with the strong possibility of resource misallocation under virtually *any* priority criterion. We commend exercises in priority setting, such as the PSE, as an essential training experience for all those concerned with the management of modern medicine.

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