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How important are consumer views in priority setting?

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Abstract

Objective Recent years have seen an increased recognition of the importance of consumer views regarding the allocation of scarce health care resources. This study investigated the importance of consumer views vis-à-vis other criteria for setting priorities.

Methods A review of the international literature was carried out to identify both the main criteria for setting priorities and methods for assigning weights to different criteria. Following this, a questionnaire based survey using two different methods, a discrete choice experiment and an allocation of point technique, was used to establish the relative importance of consumer views vis-à-vis other criteria for setting priorities. The questionnaire was sent to 109 health policy makers and health care professionals in Scotland who were likely to be involved with priority setting exercises and a convenience sample of 39 University of Aberdeen Health Economic Correspondence Course students. A sample of respondents were followed up, using either a structured telephone interview or follow-up questionnaire, to further explore views concerning involving consumers in decision making, as well as views concerning different techniques for eliciting weights.

Results Six criteria were identified as important in priority setting: potential health gain; evidence of clinical effectiveness; budgetary impact; equity of access and health status inequalities; quality of service; community values and priorities. Fifty-seven questionnaires were returned in the given time scale. The discrete choice results identified all criteria, with the exception of quality of service, as having a significant influence on priority setting. Evidence of clinical effectiveness and potential health gain were the most important, followed by budgetary impact and community views. However, the weights were not significantly different. Different rankings were obtained from the allocation of points exercise, potential health gain and evidence of clinical effectiveness still being the most important criteria and community values being least important. Significant differences for the weightings were found using this technique. The follow-up interviews/questionnaires support the view that consumer views are important in the priority setting process.

Conclusions Both choice experiments and the allocation of points exercise found the views of the public to be important in priority setting exercises, though the relative rankings differed across the two techniques. The follow-up telephone interviews supported this finding. Future research should consider applying both discrete choice experiments and allocation of points exercises to developing frameworks for priority setting. Such research should also investigate the decision heuristics employed when subjects complete such tasks.

Keywords: priority setting; discrete choice experiments ; allocation of points

1. Introduction

Limited resources coupled with unlimited demand for health care means that decisions have to be made regarding the allocation of scarce resources across competing interventions. Numerous criteria may be used to help this decision making process. Policy documents have advocated the importance of consumer views as one such criterion. [1-4] For example, in its publication *Local Voices* (1992) [1], the NHS Management Executive has advocated the need to take into account the views of local people when setting health care priorities. Since then, there has been a proliferation of material published regarding the most appropriate methods/techniques to use to elicit such views.[5] However, identifying useful instruments for eliciting views in the priority setting context is only useful if those views are taken into account or, at least, deemed important in the decision making process.

This paper addresses the question of how important consumer views are in priority setting decision making, focussing specifically on the role of the Health Board/Authority and the decisions faced at this level. The next section presents the methodology. This was divided into two stages: a questionnaire based survey including a *discrete choice experiment*^a and *allocation of points exercise* to establish the relative importance of the different criteria^b; and a telephone interview/follow-up questionnaire to further explore views concerning involving consumers in decision making, as well as views concerning the different techniques for eliciting weights. The results from these three stages are presented in Section 3, and Section 4 discusses these results.

2. Methods

A literature review was carried out to identify criteria, other than consumer views, which had been used in priority setting. Consideration was also given to the techniques used to elicit weights for the different criteria. To identify relevant literature the following core bibliographic databases were searched: MEDLINE (1966-), EMBASE (1980-), HealthSTAR (1975-) and the Social Science Citation Index (1981-). In addition other databases used included the Health Management Information Consortium Database (HMIC) and the Institute of Management International Databases (IMID). Search strategies were formulated using appropriate

^a Discrete choice experiments are also known in the literature as conjoint analysis, stated preference and stated preference discrete choice modelling.

^b These two approaches make different assumptions about how individuals form their preferences. In the first it is assumed that whilst the individual can provide an overall evaluation of whatever is being valued, they do not have the ability to link the contribution of the individual components (or weights of these components) to the overall evaluation. Assuming this approach, the researcher must infer the weights that are implicit in the respondents' evaluation. In contrast, the second approach assumes that the respondent knows the individual weights they assign to the criteria or characteristics of the good being

combinations of controlled vocabulary where available and free text terms. Attention was also given to searching the grey literature viz. government publications, research reports etc., through use of HMIC, the Scottish Health Service Management Library's in-house database and the Health Economics Research Unit's own specialised library resource. The Health Service Management Centre's database, 'International Approaches to Priority Setting in Health Care' was also consulted. Bibliographic searching was supplemented by citation searching of key publications, review of references from relevant articles and other publications, and by contact with researchers specialising in the field. The results from this literature review are shown in Appendix 1. Following this review, Table 1 shows the criteria that were used in the discrete choice experiment and allocation of points technique. Three other criteria - the severity of the disease/condition, how many people it affects, and whether national/local priorities are fulfilled – were described to respondents in the scenarios presented. Two scenarios were presented - the first involved a health service for a chronic condition and the second a health service for an acute service.

Discrete choice experiment

When using a discrete choice experiment levels must be assigned to the criteria. These were decided with reference to the literature review and discussions with those involved in priority setting (see Table 1).

The criteria and levels defined in Table 1 gave rise to 9375 ($5^5 * 3^1$) possible health care proposals. Experimental design tables [7] identified 25 proposals. These 25 hypothetical health proposals were randomly converted to 13 choices. Given that two different scenarios were presented, this resulted in 13 choices for each scenario. These 26 scenarios formed the basis of two separate questionnaires (Type 1 and Type 2) consisting of 13 discrete choices. Type 1 questionnaire included 6 choices from the first scenario and 7 from the second, whereas Type 2 questionnaire comprised the remaining 7 choices from the first scenario and the remaining 6 from the second scenario. An example of such a choice is given in Figure 1.

valued. Whilst there has been a large amount of psychological work comparing these two approaches to decision making, [6] no such work exists in health care. This study compared the two approaches.

Table 1 Criteria defined with their corresponding levels

Criteria	Levels for discrete choice experiment
Potential health gain (HEALT)	Life saving now sustained improvement now sustained improvement later temporary improvement now temporary improvement later
Budgetary impact (BUD)	Big save small save none small expense big expense.
Equity of access and health status inequalities (EQUIT)	Big reduction in inequality small reduction in inequality remains the same small increase in inequality big increase in inequality.
Quality of service (QUAL)	Two or more direct 'hits' one direct 'hit' two or more partial 'hits' one partial 'hit' no 'hits'
Community values and priorities (COM)	Robust evidence 'support' weak evidence 'support' robust evidence 'indifferent' weak evidence 'object' robust evidence 'object'.
Evidence of clinical effectiveness (CLIN)	Empirical evidence (MA, RCT, descriptive) Expert opinion none

Figure 1 Discrete choice experiment choice

Choice 1	Proposal A	Proposal B
Potential health gain	Temporary improvement later	Life saving now
Evidence of clinical effectiveness	RCT	MA
Budgetary impact	Small save	Small save
Equity of access and health status inequalities	Small increase in inequality	Remains the same
Quality of service	Two or more direct 'hits'	One partial 'hit'
Community values and priorities	Robust evidence 'indifferent'	Robust evidence 'object'

Which proposal would you Prefer (*tick one box only*)?

Prefer proposal A Prefer proposal B

From the choice based responses, the following benefit equation was estimated:

$$\Delta V = \alpha_1 \text{HEALT} + \alpha_2 \text{BUD} + \alpha_3 \text{EQUIT} + \alpha_4 \text{QUAL} + \alpha_5 \text{COM} + \alpha_6 \text{CLIN} + e$$

where ΔV is the change in benefit (or utility) in moving from proposal A to proposal B, and the independent variables are the differences in the levels of the criteria, as defined in Table 1. The α 's are the coefficients of the model to be estimated, indicating the relative importance of the different criteria, and e is the unobservable error term.

The above equation was used to estimate the relative importance/weights of the different criteria. α_5 is the weight associated with the public's views criterion and α_n the weights of all other criteria ($n=1,2,3,4,6$). The Wald statistic was used to test whether the criteria weights were significantly different using the following null and alternative hypotheses:

$$H_0: \alpha_5 - \alpha_n = 0$$

$$H_A: \alpha_5 - \alpha_n \neq 0$$

A general to specific approach adopted was adopted, with criteria excluded in a backward stepwise fashion if they were not statistically significant at the 5% level. The Chow-type Likelihood Ratio test was used to investigate whether the weights for the different criteria differed according to the scenarios presented to respondents (acute or chronic intervention). If there was no difference the data sets could be merged and jointly analysed.

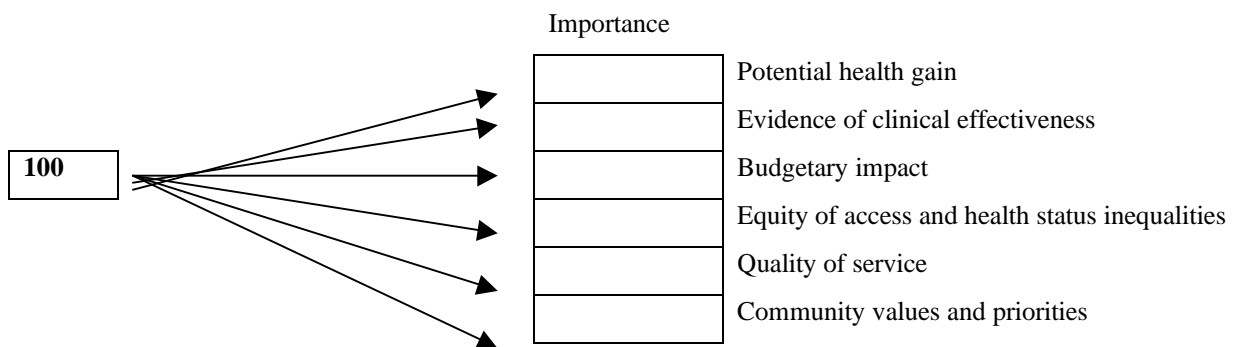
Allocation of points

The allocation of points technique elicits weights for the criteria directly. Respondents were asked to allocate a total of 100 points between the criteria identified. In an attempt to incorporate strength of preference into this exercise respondents were reminded that the points they allocate to the different criteria should represent their strength of preference. An example of this type of question is illustrated in Figure 2. The mean number of points allocated to each of the criteria across all individuals represented the weight and hence the importance of that attribute. Paired t-tests were used to test for statistical differences across the two scenarios. If there was no difference the data sets could be merged and jointly analysed. Paired t-tests were also used to test whether the weights placed on the different criteria were significantly different

(at the 5% level) and the Friedman test was used to test whether there were significant differences between the way the criteria were ranked across respondents.

Figure 2 Allocation of points exercise

Section 2: In this case you are asked to imagine (for the same scenario as above) that you have been given a fixed budget of 100 points which you have to allocate to each of the criteria that have been described throughout this exercise:



You should allocate points to the criteria from your given budget. All of the budget can be allocated to one criterion if you so wish and not all of the criteria have to receive points. The number of points you give reflects the importance, in the priority setting process, of that criterion to you. For example if you allocate twice as many points to 'potential health gain' compared to 'quality of service', this means that you think that the potential health gain criterion is twice as important as the quality of service criterion when setting priorities.

The questionnaire was sent to 109 health policy makers and health care professionals in Scotland who were likely to be involved with priority setting exercises (46 at the Health Board level and 24 at Health Care Trust levels); and a convenience sample of 39 University of Aberdeen Health Economic Correspondence Course students (the typical background of such students includes managers, researchers, and providers of health care).

Telephone interviews and follow-up questionnaire

Respondents to the questionnaire were asked if they would be willing to be contacted to discuss their responses. Those who agreed were initially sent a letter reminding them of the study and a

copy of their completed questionnaire. They were informed that they would be contacted by phone. A structured telephone interview schedule was used. The convenient sample of correspondence course students completed the interview schedule as a follow-up questionnaire. The aim of this further questionnaire was to directly question them on the importance of public views in the priority setting process and to assess their views on the two techniques used to elicit criteria weights. Respondents were also asked to rank the criteria, so that their responses could be compared to the results from the questionnaire-based survey.

3. Results

Questionnaire-based survey

Of the 109 questionnaires sent out, 57 were returned in the required six-week time scale (with no reminders), giving a 52.3% response rate. Of these, 5 were returned uncompleted. The remaining 52 (47.7%) constituted the sample. The professional background of these respondents is shown in Table 2.

Table 2 Profession of respondents to the questionnaire.

Profession.	Frequency.
Health professional employed at Health Care Trust level (e.g. associate medical director, clinical GP co-ordinator, head of service etc.)	13 (25%)
Health professional employed at Health Board level (e.g. public health consultant, health economist etc.)	19 (37%)
Health Economics Correspondence Course students.	20 (38%)

Discrete choice experiment

The Chow-type Likelihood Ratio test did not reject the null hypothesis of homogeneity that is, the hypothesis that the coefficient results are the same irrespective of the scenario under which they were presented. The results gained under the two different scenarios could therefore be merged and presented as one. The results from the regression equation are shown in Table 3.

Table 3 Results from discrete choice experiment

Criteria	General	Specific
	Coefficient (weight).	
Potential health gain. (α_1).	0.3992**	0.3067**
Budgetary impact. (α_2).	0.4188**	0.3265**
Equity of access and health status inequalities. (α_3).	0.3807**	0.2877**
Quality of service. (α_4).	0.1206	
Community values and priorities. (α_5).	0.4082**	0.3202**
Evidence of clinical effectiveness. (α_6).	0.4773**	0.4756**
Number of observations	671	671
Log-likelihood function	-294.9988	-297.3248
Restriction/null hypothesis		Chi-squared (p value)
$H_0: \alpha_1 - \alpha_5 = 0$		0.14 (0.71)
$H_0: \alpha_2 - \alpha_5 = 0$		0.04 (0.85)
$H_0: \alpha_3 - \alpha_5 = 0$		0.42 (0.51)
$H_0: \alpha_5 - \alpha_6 = 0$		3.51 (0.06)

** p<0.01 * p<0.05

With the exception of quality of service, all criteria have a significant effect on the choice of the health proposal. All criteria have a positive effect, indicating that the better the level of the attribute, the more likely the respondent will choose that health care proposal. The relative importance of the criteria identified is given by the size of the coefficients – the more important the criterion, the higher the absolute value. Evidence of clinical effectiveness is considered to be the most important of the criteria, followed by potential health gain, budgetary impact and then community values. However, there is no significant difference between the importance of community values and the other 4 criteria.

Allocation of points.

Paired t-tests indicated no difference in the allocation of points according to the two different scenarios. The results presented in Table 4 are therefore for the combined data set.

Table 4 Results from allocation of points exercise.

Criteria	Minimum number points.	Maximum number points.	Mean number points.	Relative importance.	Friedman test mean rank
Potential health gain.	15.00	65.00	28.5	1	5.44
Evidence of clinical effectiveness.	5.00	60.00	23.1	2	4.58
Budgetary impact.	0.00	30.00	15.7	3	3.52
Equity of access and health status inequalities.	0.00	30.00	13.3	4	3.04
Quality of service.	0.00	20.00	11.0	5	2.53
Community values and priorities.	0.00	20.00	8.5	6	1.89
Paired sample t-tests			t-test	p	
Community values – quality of service			2.901	.005	
Quality of service – equity of access			2.821	.007	
Quality of service – budgetary impact			3.667	.001	
Equity of access – budgetary impact			1.861	.069	
Budgetary impact – clinical effectiveness			4.157	.000	
Clinical effectiveness – health gain			2.652	.011	

Different rankings to those found using the choice experiment were obtained though potential health gain and evidence of clinical effectiveness were still the most important criteria. Community values, in this case, were however deemed as being least important criterion. Paired sample t-tests revealed significant differences (at the 5% level) between all the criteria, excluding budget and equity. The Friedman test shows further that there are no significant difference between the way the criteria were ranked across respondents i.e. health gain was ranked first (with the highest number of points) a significant number of times.

Telephone interviews and follow-up questionnaire

From the returned questionnaires 15 respondents were willing to be contacted at a later date to discuss their responses in a telephone interview and 11 Health Economics Correspondence Course students completed a follow-up questionnaire of the same structure. However, given time constraints^c, 6 people were contacted by telephone: 2 were health care

^c This study was part of a larger study whose deadline was fast approaching.

professionals at trust level, and 4 were health care professionals at board level, and all 11 questionnaires from the students were used. A number of interesting findings emerged from the follow-up interviews and questionnaires (Table 5). Foremost, respondents felt that the important criteria in priority setting had been covered in the questionnaire.

Regarding the discrete choice experiment approach to eliciting weights, 11 of the 17 respondents thought that this was a realistic or very realistic approach. Ten respondents found such choices very difficult or difficult. However, in retrospect, the term 'ease of making choices' does not distinguish between whether the questionnaire was difficult to understand or whether the questions were difficult to answer, that is whether the answers required careful consideration. The two are quite different. Though we may be looking for ease of comprehension, when we are considering a difficult subject such as priority setting, we would not expect the choices to be easy. This conclusion is supported by the fact that studies applying the technique to the general public and patients have reported respondents having little difficulty completing the choices. [8-14] Discrete choice experiments assumes that individuals consider all the criteria in the study, and that they are willing to trade between these. However, 9 of the 17 respondents indicated that they focused in on some of the criteria. This suggests that future work should explore in more detail the decision heuristics that respondents employ when completing choice based experiments.

Six of the 17 respondents thought that the allocation of point exercise was difficult or very difficult. Again, this may reflect the nature of the questions being asked. In the allocation of points task individuals were encouraged to think about their strength of preference. However, the results suggest that this may not have been the case, and that the resulting weights may be ordinal.

Despite community values and priorities being considered the least important of the criteria in the ranking exercise (Table 6), 15 of the 17 respondents thought that the community had a role to play in priority setting and 12 indicated that this role was important or very important.

Table 5 Responses to the telephone interview/follow-up questionnaire.

Question	Number of responses			
Were any criteria irrelevant?		Yes. 1	No. 13	
Discrete choices				
Realism of choices posed?	Very hypothetical. 1	Hypothetical. 4	Realistic 6	Very realistic. 5
Ease of making choices?	Very difficult. 1	Difficult. 9	Easy. 4	Very easy. 2
Decision heuristics?	Consider all the criteria. 8		Focus on some criteria. 9	
The allocation of points.				
How easy did you find allocating the points?	Very difficult. 0	Difficult. 6	Easy. 8	Very easy. 2
Reflection of strength of preference?		Yes. 12	No. 5	
Comparing the methods.				
Which of the two methods did you find easiest?	The paired choice exercises. 5	The allocation of points exercises. 6	Neither. 4	
Which of the two methods did you find quickest?	3	7	5	
Priority setting and the community.				
Do you think that the community has a role to play in priority setting?		Yes. 15	No. 2	
How would you rate community views when deciding whether or not to implement a proposal?	Of no importance. 4	Of little importance. 4	Important. 4	Very important. 8

Table 6 Criteria ranked in order of importance by telephone interview/follow-up questionnaire.

Criteria	Mean ranking	Rank
Potential health gain.	1.1	1
Evidence of clinical effectiveness.	2.8	2
Equity of access and health status inequalities.	3.4	3
Quality of service.	3.7	4
Budgetary impact.	4.8	5
Community values and priorities.	5.3	6

4. Discussion and conclusions

A discrete choice experiment was used to estimate weights indirectly, and the allocation of points approach was used to estimate weights directly. Both approaches found the views of the public to be important in the priority setting exercise, though the relative rankings differed across the two techniques. The results from the allocation of points exercise were similar to the direct ranking exercise carried out in the telephone interview/follow-up questionnaire. This may reflect the fact that a direct ranking approach, like the allocation of points approach, assumes that individuals know the weights they attach to individual criterion.

The weights derived from both the choice experiment and allocation of points exercise were used to establish the importance of public views vis-à-vis other criteria for setting priorities. However, an extension of this data set would be to develop these methods and incorporate them within priority setting process. Within the UK, three frameworks (or weighting and scoring methods) were identified in the literature review: rating exercises, allocation of points techniques and discrete choice experiments (see Appendix 1). The first of these, assigning weights on a scale from 1 to n, has a number of limitations. Firstly, there is no recognition of the need to make trade-offs between the criteria. Given this, it is possible that such a weighting exercise will result in high weightings being assigned to all criteria. Secondly, it is not clear whether such an approach indicates strength of preference i.e. if one dimension is assigned a weight of 1 and another 5, does this mean that the latter is five times as important as the former? Ideally, an instrument for weighting criteria should indicate not just the order of the weighting, but also the strength of preference for each criterion. Also, it has been shown that asking individuals to value dimensions of benefit individually will lead to different results to those arising from establishing weightings for the same dimensions when they are defined as a package. [15-18] These limitations may be overcome by the adoption of either a discrete choice experiment or the allocation of points method.^d Future work should explore this.

^d See Farrar et al [19] for an example of applying discrete choice experiments within a priority setting framework.

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Appendix 1 Summary of criteria used and priority setting scoring systems.

Area	Criteria	Priority setting scoring system	Involvement of public views?
England: City and Hackney	Robustness or the extent to which the proposal can be implemented (0-3) Promotion of equity (0-1) Evidence of effectiveness or cost effectiveness (0-2) Collaboration or integration with primary care (0-3) Prioritised by the community health council (0-1) Prioritised by local GP's (0-1) Other possible or more appropriate sources of funding (0-5).	A two stage scoring system was used whereby firstly the proposals were ranked according to which responded greatest to local needs. They were then scored further using the criteria (possible scores shown in brackets). Weights were determined by the Director of Public Health in consultation with purchasing team managers and members of the health authority (not stated how weights were determined). Proposals ranked by multiplying the score by the weights.	✓
England: Southampton	Health gain Equity Local access Personal responsibility Choice	Weights ascertained using an allocation of points exercise - 100 points to the allocate across 5 criteria. Proposals then scored according to amount of health gain expected (score of 1-3) and whether or not other criteria were met (score of 0 or 1). Each of the proposals was then ranked by multiplying each criteria's weight by the associated score, and summing.	?

Scotland: Argyll and Clyde	<p>Potential health gain Prevention of ill health Quality of life Equity of access Addressing health status inequalities at population level Expressed demand, appropriateness Strength of evidence Known priorities Additional cost per person receiving the intervention</p>	<p>Scoring and weighting in a single stage. Each criterion is allocated a range of possible scores. For example, criterion A may be allocated a maximum score of 10 and a minimum score of -5, compared to criterion B which has a range from 5 to -5. By definition, criterion A is more important than B.</p> <p>Health proposals are then scored for each criterion according to this range, and a total score estimated for each proposal.</p>	✗
Scotland: Ayrshire and Arran	<p>Health gain Effectiveness Equity public preference flexibility value for money</p>	<p>Each of the criteria is firstly scored out of 10 and then multiplied by its relative importance (weighting) which are decided upon by executive and non-executive directors of the health board.</p> <p>The weights are determined by an allocation of points method. Respondents are given 60 points to allocate across the six criteria.</p> <p>Each of the proposals are then ranked by multiplying the score by the weight and summing.</p>	✓
Scotland: Greater Glasgow	<p>Size of health gain quality of evidence to support change fit with local and national priorities enhance service quality (other than health gain) facilitate provision in primary care.</p> <p>Recommended scores ranging from 0 to 10 were assigned to possible levels for each of the criteria</p>	<p>As above, each of the criteria are scored out of 10 and then multiplied by their weighting which was agreed upon by a collaboration of health board directors and health economists.</p> <p>The weights are determined by an allocation of points method. Respondents are given 100 points to allocate across the 5 criteria.</p> <p>Each of the proposals are then ranked by multiplying the score by the weight and summing.</p>	✗

New Zealand	<p>Essential:</p> <ul style="list-style-type: none"> - the health issue has a significant impact on the current and future health status of the population - the health issue promotes population based methods to protect/prevent health <p>High weighting:</p> <ul style="list-style-type: none"> - the health issue will reduce inequalities in health status - it promotes the best health gain for the resources required <p>Medium weighting:</p> <ul style="list-style-type: none"> - there is public support for the health issue 	<p>Using these criteria members of the Public Health Commission assessed the health proposals though there is no mention of quantitative values assigned to each of the criteria.</p>	✓
Scotland: Aberdeen Royal Hospitals Trust	<p>Level of evidence of clinical effectiveness Size of health gain Contribution to professional development Contribution to education, training and research Strategy area</p>	<p>Consultants working within the hospital trust were given a choice based questionnaire, and the weights for the criteria were indirectly estimated.</p> <p>Clinical directorates were then asked to score their proposed clinical service developments according to how well they performed on each of the criteria.</p> <p>These scores were multiplied by the weights, and a total score estimated for each proposal.</p>	✗
Scotland: Dumfries and Galloway	<p>Evidence of effectiveness Value for money Health gain or maintenance Equity Matching a national priority or board priority Public preferences</p>	<p>Proposals are first scored according to each criterion on a 1 – 5 scale.</p> <p>Each criterion is given a weight between 1 and 10.</p> <p>Each of the proposals are then ranked by multiplying the score by the weight and summing.</p>	✓
The Netherlands	<p>Is the care necessary from the community point of view? If so, has it been demonstrated to be effective? Is it also efficient, using such methods as QALYs?</p>	<p>Proposals had to pass through each of the criteria before they could be implemented.</p>	✓

	Can it still be left to individual responsibility?		
Oregon	<p>Value to society:</p> <ul style="list-style-type: none"> - prevention, benefits many, impact on society, quality of life, personal responsibility, cost effectiveness, community compassion, mental health and chemical dependency. <p>Value to an individual needing the service:</p> <ul style="list-style-type: none"> - prevention, quality of life, ability to function, length of life, mental health and chemical dependency, equity, effectiveness of treatment, personal choice community compassion. <p>Essential to basic health care:</p> <ul style="list-style-type: none"> - prevention, benefits many, quality of life, cost effectiveness, impact on society. 	<p>Commissioners divided 100 points between the three main criteria – value to society, value to an individual needing the service and essential to a health care package.</p> <p>Seventeen proposals were then scored against these three criteria on a scale of 1 to 10.</p> <p>The weights are multiplied by the rating score to derive a total score for each proposal,</p>	✓?