

DISCRETE CHOICE EXPERIMENTS: A TOOL TO INCORPORATE PUBLIC PREFERENCES INTO RESOURCE ALLOCATION DECISIONS?

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Background

Scottish National Health Service (NHS) Health Boards, in common with other health care organisations, are budget constrained and cannot provide all the health care individuals in their region demand. Therefore, they must prioritise their resource use. Prioritisation requires a resource allocation process to help the organisation find the most efficient resource shifts to maximise their population's health. The public should be involved in this process for many reasons, including the individuals' right to participate; the public having different knowledge; and Health Boards accountability to their communities^{1,2}.

Many criteria contribute to the decision to change a service. Therefore, resource allocation exercises need to compare the costs and benefits of different services. In particular, a single composite measure of the benefits of a service is needed. The weighted benefit score is one such measure that scores a project against pre-defined criteria, and assigns each criterion a weight. This briefing paper reports on a study in NHS Dumfries and Galloway that uses a discrete choice experiment to derive weighted benefits scores based on public preferences for use in resource allocation decisions³.

Methods

Previous studies have suggested that discrete choice experiments can be used to estimate weighted benefits scores. Discrete choice experiments require individuals to make tradeoffs between the criteria presented, and explicitly ask respondents to make value judgements by choosing which service they would prefer and these choices reflect how real decisions are made.

Ten criteria were chosen based on the principles of care in 'Delivering for Health'⁴ and attributes used in previous NHS Dumfries and Galloway prioritisation exercises:

- **location of care:** GP's office, Local health partnership, Dumfries and Galloway Royal Infirmary, Outside Dumfries and Galloway
- **public consultation:** No consultation, At final stage, At some but not all stages, At all stages
- **use of technology:** Latest technology, Cutting-edge technology, Not latest technology
- **service availability:** Office hours only, Office hours and out-with office hours
- **patient involvement:** Patient has/ does not have opportunity to share the decision
- **management of care:** Individual health professional, Group of health professionals working as a team, Group of health professionals not working as a team
- **evidence of effectiveness:** No evidence, A number of clinical studies, At least 1 RCT, At least 3 RCTs
- **health gain:** Small gain to a small number, Large gain to a Small number or Small gain to a Large number, Large gain to a Large number
- **risk avoidance:** High risk reduced to medium, low and lower than low risk, Medium risk reduced to low and lower than low risk, Low risk reduced to lower than low risk
- **priority area:** Local, National, Local and national

Using these criteria, a discrete choice experiment containing 128 service descriptions grouped into 64 pairs of services was created. A random sample of 100 residents of Dumfries and Galloway were invited by letter to attend an NHS Dumfries and Galloway event to involve them in the region's health service decision making. Attendees were presented with the 64 pairs of service descriptions and

Figure 1: Example of a choice presented to respondents.

	Service A	Service B
Location of care	Dumfries and Galloway Royal Infirmary	Outside Dumfries and Galloway
Public consultation in decision making	No consultation	Public and Patients were consulted at the final stage
Use of latest technology	Not using the latest technology	Using the latest technology
Service Availability	Office Hours only	Office hours and out-with office hours
Patient's involvement in own care decision	No opportunity	Has the opportunity
Management of care	Care is managed by a single individual	A group of professionals working as a team
Evidence of clinical effectiveness	Clinical Studies	At least 1 RCT
Health Gain	Large Gain to a Small Number Small Gain to a Large Number	Large gain to a large number
Risk Avoidance	Reduction from a high risk to a low risk	Reduction from a medium risk to a low risk
Priority Area	National priority	Local and National Priority

Which service do you prefer?

asked, in each pair, to choose which service they would prefer. Figure 1 presents an example of one pair included in this study.

68 members of the public attended the event. After being welcomed, attendees were given a detailed introduction to the health board decision making, the criteria included in the discrete choice experiment, and how the results would be used. This information was presented in a matter of fact manner to avoid influencing attendees. Some criteria such as service availability are easily understood; others are more complicated and were explained in more detail. Attendees could ask questions at any time. In the discrete choice experiment part of the event, each pair of service descriptions was projected on to a screen at the front of the room. Attendees had time to read the choice and to choose the service they preferred. Attendees' choices were collected using an electronic voting system. We moved on to the next pair of service descriptions after all respondents had voted.

From the responses statistical analysis was used to estimate the effect of each criterion level on the probability an individual would choose one service over the other. From the discrete choice experiment responses, weighted benefit scores were calculated and used to rank development bids from across NHS Dumfries and Galloway. To do this, services in NHS Dumfries and Galloway were grouped into 11 areas: acute services, cancer, child health, heart disease/stroke/diabetes, corporate, learning disabilities, community/primary care, long term conditions, mental health, older people, and public health. A programme leader for each service area identified and submitted development

bids. For each bid, a weighted benefit score was calculated from the discrete choice experiment results. A ranking of all bids, based on weighted benefit scores was produced. The Corporate Management Team was presented with the full ranking of all bids and the 20 highest scoring bids were presented in additional detail.

Results

All criteria except risk avoidance, were significant. The most 'important' criterion levels were: a large health gain to many people; care being provided in teams; using latest or cutting-edge technology; and twenty-four hour service availability. Local priorities were given a larger weight than national priorities. Ninety-five development bids were submitted from across the 11 services areas. Acute service area bids tended to rank higher than community service or long term condition bids. The weighted benefit scores calculated from the DCE results ranged from 17 to 57 and spread of benefit scores indicated that the criteria chosen discriminated between the bids received. The ranked list of development bids provided a useful tool to inform prioritisation decisions.

Conclusions

This study used a DCE to obtain weights from the general public. The general public was capable of making tradeoffs between service criteria. DCEs can offer a theoretically valid and practical means of incorporating the views of the public in an accessible, transparent and streamlined decision-making process when healthcare organisations are prioritising their resources.

References

- ¹ Ham C. Priority setting in the NHS: Reports from six districts. *British Medical Journal* 1993;307:435-438.
- ² Wiseman V, Mooney G, Berry G, Tang KC. Involving the public in priority setting: Experiences from Australia. *Social Science and Medicine* 2003;56:1001-1012.

- ³ Watson, V. Carnon, A. Ryan, M. Cox, D. Involving the public in priority setting using discrete choice experiments: A case study in NHS Dumfries & Galloway. *Journal of Public Health* 2012;34: 253-260.
- ⁴ Scottish Executive. *Delivering for health*, 2005.