Ethics and economics: does programme budgeting and marginal analysis contribute to fair priority setting?

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J Health Serv Res Policy Vol 11 No 1 January 2006

Objective: Limited resources mean that decision-makers must set priorities among competing opportunities. Programme budgeting and marginal analysis (PBMA) is an economic approach that focuses on optimizing benefits with available resources. Accountability for reasonableness (A4R) is an ethics approach that focuses on ensuring fair priority-setting processes. PBMA and A4R have been used separately to provide decision-makers with advice about how to set priorities within limited resources. The goals of this research were to use the A4R framework to evaluate the fairness of using PBMA for priority setting and to assess how A4R might make PBMA fairer.

Methods: Qualitative case studies to describe priority setting using PBMA in the Calgary Health Region (Alberta, Canada) evaluated using A4R as a conceptual framework.

Results: The use of PBMA for priority setting was fairer than previous priority setting because of its emphasis on explicit rational decision-making. However, there were opportunities to improve the process, particularly by collecting data related to the decision criteria, by developing a communication plan to engage internal and external stakeholders about priority-setting, and by providing a formal mechanism to review priority-setting decisions and resolve disputes.

Conclusions: There is potential for combining A4R and PBMA in a more comprehensive approach to priority setting, which uses a fair priority-setting process to reach decisions aimed at achieving optimal benefits with available resources.

Introduction

Every health system faces significant resource allocation challenges. Priorities must be set among competing opportunities because demand for health care exceeds available resources. While resource allocation may typically be viewed as a managerial activity, it is important for managers and clinicians to work together on this challenging task. Two priority-setting frame-works that have been used internationally to guide decision-making about scarce resources are programme budgeting and marginal analysis (PBMA) and accountability for reasonableness (A4R). PBMA, from the economics tradition, focuses on making trade-off decisions to maximize health and non-health benefits with available resources (Box 1). A4R, from the democratic deliberation tradition, focuses on ensuring fairness in how allocation decisions are made (Box 2).

PBMA and A4R have been used separately in the past to guide decision-making about scarce resources. Experience shows, however, that decision-makers find both beneficial outcomes and fair processes to be important considerations in priority-setting. It may be possible to combine PBMA and A4R in a more comprehensive approach that employs a fair priority-setting process to reach decisions aimed at optimizing benefits with available resources. Although A4R has been used to evaluate priority setting at national levels, there has been no such equivalent work at the level of regions/districts or primary care organizations and only limited work in health maintenance organizations and
Box 1  Programme budgeting and marginal analysis (PBMA)

PBMA is an economic approach to priority setting. The ‘economics’ refers to the concepts of opportunity cost (i.e. the benefit lost by not investing in the next best alternative use of available resources) and the margin (i.e. the next unit of cost and the next unit of benefit). Together, these concepts suggest that decision-makers should re-allocate resources at the margin to get the best overall benefit within available resources. The approach has been used over the last three decades in various health care contexts, both within and across programme areas, to aid decision-makers in operational planning and resource allocation activity.\textsuperscript{1,2,3}\textsuperscript{2} With PBMA, a multi-disciplinary advisory panel identifies areas for clinical service growth and, in order to fund these clinical service growth areas, areas for operational efficiency improvement and clinical service reduction. Resources released through efficiency improvements and clinical service reductions can be shifted directly into service growth areas to meet organizational objectives. PBMA provides a practical set of steps to move decision-makers through this prioritization process. It also provides a ‘way of thinking’ about economics: that is, unless opportunity cost and the margin are considered, ‘benefit’ (however defined) will unlikely be maximized for the given resources.\textsuperscript{4} PBMA is based on the same economic principles as cost-effectiveness analysis and other economic frameworks, which have been applied in health care resource allocation. However, due to its pragmatic nature, PBMA may prove to be more useful to decision-makers in addressing the complexities of priority setting in health care organizations and within changing health care environments.\textsuperscript{5}

Box 2  Accountability for reasonableness (A4R)

A4R is an ethical approach to priority setting that seeks to ensure fairness in how priority-setting decisions are made.\textsuperscript{6} Fairness is a key ethical goal of priority setting, but it is often difficult to reach agreement on what priority-setting decisions should be made to achieve fairness, i.e. fair priority-setting outcomes. It is more likely that agreement can be reached on how priority setting decisions should made, i.e. fair priority-setting processes. From the point of view of A4R, to improve priority setting is to improve the fairness of priority-setting processes. Theoretically grounded in justice theories emphasizing democratic deliberation, A4R specifies four conditions of a fair priority-setting process:

\textbf{Relevance}: Decisions should be made on the basis of reasons (i.e. evidence, principles, values, arguments) that ‘fair-minded’ stakeholders can agree are relevant under the circumstances.

\textbf{Publicity}: Decisions and their rationales should be made available to stakeholders.

\textbf{Revision and appeals}: There should be opportunities to revisit and revise decisions in light of further evidence or arguments, and there should be a mechanism for challenge and dispute resolution.

\textbf{Enforcement}: There is a voluntary or regulatory mechanism for ensuring that the other three conditions are met.\textsuperscript{6}

A4R has been used to evaluate priority setting in various health care settings, including disease management organizations, clinical programmes and hospitals.\textsuperscript{5–10} It has been found to provide valuable practical guidance to health care decision-makers about how to improve the fairness of actual priority setting in health care organizations and to enhance public accountability for priority setting.\textsuperscript{6,11–14}

hospitals.\textsuperscript{6,8,12,15,16} Given the key role of meso-level health care organizations in allocating resources, this is a significant gap, which is increasingly of concern to policymakers. In the UK, for example, reliance on national level priority setting (such as by the National Institute of Clinical Excellence) has been criticized for not employing at the local level ‘a comprehensive framework for health care prioritization, underpinned by an explicit set of ethical and rational values to allow the relative costs and benefits of different areas of National Health Service spending to be comparatively assessed in an informed way.’\textsuperscript{16} Our aims were to use the A4R framework to evaluate the fairness of using PBMA for priority setting in a Canadian health authority,\textsuperscript{17} and to assess how A4R might make PBMA fairer.

Methods

Design

A qualitative case-study method was used to describe the use of PBMA in the budget-planning process in the Calgary Health Region. PBMA had been introduced in the region through a participatory action research project to help decision-makers address an anticipated deficit in the 2002/03 budget.\textsuperscript{17} As part of the project, the process was evaluated using A4R as a conceptual framework.\textsuperscript{13}

Setting

The Calgary Health Region is a fully integrated, academic health authority spanning a complete range of clinical services from acute tertiary care to community health services and health promotion. It has a total annual operating budget of approximately CAN$1.5B and a catchment area of about 1.5 million people in southern Alberta. All clinical services are administered through one of seven portfolios (e.g. medicine, surgery, pediatrics), each of which is overseen by an Executive Director/Medical Director pair. The directors comprise the senior management team of the Region and report directly to the Chief Operating Officer and the Chief Medical Officer, who, along with five other vice-presidents and the Chief Executive Officer, comprise the Executive level of the organisation who report to the Board of Directors.

Sample

We sampled key priority-setting documents and people, using a combination of convenience sampling (documents that were available) and purposive sampling (selection of participants to reflect a range of perspectives across senior health authority decision-makers including senior managers, physician leaders and other clinicians). A focus group was held with the core working group of eight senior managers. In
addition, one-on-one semi-structured interviews were held with a further eight senior decision-makers, including directors, vice-presidents and physician leaders.18

Data collection and analysis

The data-set consisted of three sources: key documents including the annual business plan and documents used to support previous priority-setting; observation of senior management team priority setting meetings (Oct 2001-Apr 2002); and interviews and a focus group with key informants. Data were analysed using a modified thematic analysis: first, the data were coded inductively by constant comparison with emerging concepts and themes, and then similar themes were organized under overarching themes, which were the four conditions of A4R.19

Research ethics

The project received Conjoint Scientific and Ethical approval from the University of Calgary in August, 2001. Decision-makers participating in the interviews and focus group provided written informed consent.

Results

Description of priority setting in the Calgary health region

The goal of priority setting was for the senior management team to recommend resource re-allocations based on trade-offs of clinical service growth with efficiency improvements and clinical service reductions. These recommendations would inform the Executive Team’s 2002/03 budget-planning process.

Each of the seven portfolios developed a list of clinical service growth options (e.g. doing more hip surgeries or expanding immunization targets) and a list of efficiency improvements (e.g. using generic drugs or contracting out food services) and clinical service reductions (e.g. closing beds or reducing programme operating hours). A standard business case template was used to collate information on service growth and service reduction options proposed by each portfolio. The business case contained information on the costs, benefits, risks and longer-term outcomes of investing or disinvesting in certain areas. To facilitate ranking of clinical service growth and reduction options, five decision criteria were developed by a working group of the Senior Management Team following limited public consultation (Box 3). These criteria were intended to capture key objectives of the health region.

Options from all portfolios were collected and distributed to the senior management team prior to a two-day planning retreat. At the retreat, the top 20 clinical service growth options across the region were identified and ranked by votes. The total monetary value of these options was approximately CAN$20M. Efficiency improvement options offered ‘savings’ of about $45M. However, as there was a large deficit ($29M) in the region, the majority of resources released through efficiency improvements were allocated to address the deficit. The remaining funds (about CAN$16M) were allocated directly towards growth areas. An additional CAN$1M was released through clinical service reductions.

The list of recommendations, including efficiency improvements and resource re-allocations, were communicated to middle managers, other clinical staff within the portfolios, and a physician oversight committee for validation. Feedback to senior managers from these groups resulted in the revision of some recommendations. Final recommendations were presented to the Executive and the Board of Directors. Resource re-allocation decisions were implemented in the 02/03 budget year.

Evaluation of priority setting in the Calgary health region

Relevance

Decision criteria were developed by the senior management team to assist with evaluating and ranking clinical service growth and reduction options. Having explicit decision criteria was a significant step forward compared with previous planning processes in the region. However, because stakeholders had not been consulted in defining the criteria, it is unclear that they would have agreed that these criteria were relevant under the circumstances. Decision-makers also perceived the criteria to be limited by the fact that they did not include any strategic considerations, particularly related to the organization’s mission, vision and goals. One participant commented:

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Box 3 Criteria used in the Calgary Health Region’s priority-setting process

<table>
<thead>
<tr>
<th>Access/capacity</th>
<th>improve access for pressure areas</th>
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<tbody>
<tr>
<td>Appropriateness</td>
<td>enables shifts of services to more appropriate, lower cost settings</td>
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<tr>
<td>Sustainability/cost-effectiveness</td>
<td>supports short- and long-term sustainability</td>
</tr>
<tr>
<td>System integration</td>
<td>assists in avoiding tangible costs</td>
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<tr>
<td>Clinical/population health effectiveness</td>
<td>reduces service fragmentation</td>
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<tr>
<td></td>
<td>supports best use of elements of the health system</td>
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<tr>
<td></td>
<td>supports focused care for service populations</td>
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<td></td>
<td>improves clinical effectiveness</td>
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</tbody>
</table>
Programme budgeting and marginal analysis

[Priority setting] needs to be grounded in the vision, the mission, the purpose of the organisation. ... If you don't do that, then, if you don't keep focusing that, you keep asking the question and what part of the strategy does this piece of work go towards. Then you don't end up going in the direction you need to be going.

Many decision-makers also commented on the fact that the criteria did not take into consideration the limited degrees of freedom within which they could set priorities. There were a number of givens in the decision-making context (e.g. obligated or mandated services, ministry directives) that were perceived to be relevant to setting priorities. It was felt that these limiting factors should be acknowledged explicitly and upfront:

We need to be explicit that some things... things that are given, you just have to identify them as such. Like, if it's a given, then don't go through the charade and I think we just have to acknowledge that there are some things that might not be open to debate. They need to be identified so that they are kept in line.

A business case template was used to collect extensive data and information from each portfolio. Decision-makers found this to be very useful; however, the template had not been designed to collect data specifically related to the decision criteria:

[The criteria] weren't built into the actual data collection tools we had. We actually never collected information on these criteria, so it was just a guess or a feel.

Even with the available information, decision-makers found that they lacked specific knowledge of each other's portfolios and more time for deliberation, and discussion was needed to optimize understanding and to ensure that reasons for growth or reduction in services were clearly articulated before making decisions:

We gave people an opportunity to identify the reasons why they wanted their initiatives put forward. But we didn’t provide sufficient time for those reasons to be put together. I don’t really think I had a true grasp of the issues.

An open, simple vote was used to make decisions. Some members of the senior management team expressed confidence in the voting procedure and its results:

I look at that array of things and what my marks decide, I’m quite happy that I know where my stuff sits and I can sleep at night when I go home.... And I guess I’m trusting that 13 or more other minds got the same view.

Other decision-makers were less confident about the voting procedure. Concerns were raised about biases (e.g. being permitted to vote for one’s own portfolio item) and the uneven distribution of votes across members of the senior management team. Non-operational members voted individually but pairs of directors were obliged to vote together.

Publicity

The budget planning process did not include a formal communication plan to inform and engage internal and external stakeholders about the process. There was a general expectation that portfolio directors would keep their managers and physicians up to date on the progress of the exercise. While some directors maintained communication with staff, others did not. The senior management team met formally with the heads of the regional clinical department to present and discuss an initial listing of options, but there was no formal communication of decisions and rationales to other internal or external constituencies. One individual commented:

I don’t think our staff have any clue how we prioritized or the fact that we have prioritized.

Some decision-makers felt, however, that the PBMA allowed the region to respond better to public queries about the outcomes of priority setting:

I think the decisions will inevitably be public... The decisions will be publicly evident and the rationale should also be publicly evident. People can certainly write and expect a full response on why they think we’re not investing enough money in, you know, chronic pain, for example. There is the opportunity for the public here.

Revision and appeals

Budget planning did not include a formal mechanism to review (or appeal) decisions. Decisions were validated through the voting procedure and through consultation with managers and physicians, but there were limited opportunities to revisit decisions once they had been made.

We had an opportunity to talk about it as we were presenting, but as it got to the 10th, 11th, 12th item, we weren’t doing any talking. We just wanted to get through it. And then we voted and then if you wanted to challenge the vote, well, it was too bad because the votes were over.

The senior management team recognized that the exigencies of corporate decision-making meant that the lists of growth and reduction options were not fixed. With changes in the political environment and as new information arose, priorities would change, often within a single budget cycle:

This isn’t a closed box. During the course of the year, political things will change; additional things will change. There will be the opportunity on a daily basis to point out where things have changed and get it reconsidered. That’s just the way we do business.

However, concerns were raised about how adjustments to priority listing were made ‘behind the scenes’ by the Executive Team:

Some of the time it was for Board optics, some of the time for Executive optics. Lots of reasons why it was happening. But it wasn’t comfortable because it wasn’t as transparent as some of the other things that we were doing.
**Table 1** Opportunities for improvement in Calgary Health Region’s priority-setting process

<table>
<thead>
<tr>
<th>Condition of A4R</th>
<th>Opportunity for improvement</th>
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<tbody>
<tr>
<td>Relevance</td>
<td>• Engage stakeholders in the development of priority-setting criteria</td>
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<td></td>
<td>• Include strategic considerations among decision criteria</td>
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<td></td>
<td>• Identify ‘givens’ explicitly and upfront</td>
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<td></td>
<td>• Collect data related to the decision criteria</td>
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<tr>
<td></td>
<td>• Allow more time for deliberation and discussion</td>
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<td></td>
<td>• Reconsider voting procedure to ensure decision-makers’ confidence</td>
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<tr>
<td>Publicity</td>
<td>• Publicize the decision and its rationale</td>
</tr>
<tr>
<td>Revision and appeals</td>
<td>• Develop a formal communication plan to engage internal and external stakeholders</td>
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<td></td>
<td>• Provide formal mechanisms to review decisions and to resolve disputes as the health care environment changes or as new data/information emerges</td>
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<tr>
<td>Enforcement</td>
<td>• Engage stakeholders in the development of priority-setting criteria</td>
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</tr>
<tr>
<td></td>
<td>• Ensure strong executive leadership to enforce conformity with fair priority setting</td>
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<tr>
<td></td>
<td>• Develop explicit mechanisms to respond to ‘gaming’ behaviour</td>
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</table>

A4R, accountability for reasonableness

**Enforcement**

Although the publicity and revision conditions were not enforced in the budget-planning process, the use of PBMA was perceived by decision-makers to enforce the relevance condition by creating a greater discipline around making explicit, rational decisions compared with past priority-setting initiatives. Concerns were raised, however, about the attempt by some programmes to game the budget planning process by submitting unrealistic clinical service reduction options or by lobbying members of the senior management team, the executive team, or the board:

The organization needs to reinforce some support in the process and not allow the end-runs by the folks that think that they can … you know there’s a message for senior management too. ‘Stick with the process even though it may be rough at times’, and they might have to tell one of their best friends to take a hike.

**Discussion**

This study is innovative in a number of ways. It is the first time that A4R has been used to evaluate the use of PBMA in priority setting. To our knowledge, it is also the first time that A4R has been used to evaluate priority setting in a health authority. More generally, this study sheds light on how the PBMA and A4R approaches, and their respective underlying disciplines, might combine to provide decision-makers with a more comprehensive approach to priority setting under scarce resources.

The senior management team confirmed the importance of fairness as a goal of priority setting. Because it emphasized explicit rational decision-making, they perceived the PBMA-based budgeting process to be fairer than previous iterations of budget planning in the region, which had been based primarily on historical and political decision-making. Our evaluation using A4R suggests that the actual fairness of budget planning could be improved. Suggestions for improvements are highlighted in Table 1. If decision-makers in the region were to incorporate these improvements into the budgeting process, particularly in relation to enhanced stakeholder engagement, they would have a more comprehensive priority-setting approach that used a fair process to reach decisions aimed at achieving optimal benefits with available resources.

Previous research using A4R to evaluate priority setting in other health care settings (hospitals, clinical programmes, disease management organizations, drug benefit plans) identified a number of lessons about how to enhance fairness.6,8,14,20–21 Our analysis in the Calgary Health Region highlights four new lessons, particularly related to operational planning:

1. The strategic directions of the organization provide relevant reasons for priority-setting decisions. Greater explicitness about these givens would enhance the transparency of the process. Although not discussed explicitly by the decision-makers in this study, other political pressures may constrain priority-setting decision-making. Transparency about these pressures may be more difficult to achieve, for example, when the Ministry of Health expects decision-makers to keep priority setting ‘under the radar’ or to not ‘make noise’ for government. These are tactical considerations, which may require judicious timing in the release of decisions. However, they also underscore the need for more not less transparency to ensure public accountability across levels in the health system.

2. Decision-makers confront different givens in priority setting. In this study, givens refer specifically to services that are mandated through contractual agreement or legislated by the provincial government. These may also contribute relevant reasons for priority-setting decisions. Greater explicitness about these givens would enhance the transparency of the process. Although not discussed explicitly by the decision-makers in this study, other political pressures may constrain priority-setting decision-making. Transparency about these pressures may be more difficult to achieve, for example, when the Ministry of Health expects decision-makers to keep priority setting ‘under the radar’ or to not ‘make noise’ for government. These are tactical considerations, which may require judicious timing in the release of decisions. However, they also underscore the need for more not less transparency to ensure public accountability across levels in the health system.

3. Priority setting is iterative. With changes in the health care environment, priorities change. This suggests the need for iterative review of decisions to respond to changes as new information emerges over the budget year.

4. Although some stakeholders may attempt to game the priority-setting process, fairness can be enforced by strong executive leadership to ensure conformity with fair process.
Our approach using A4R is based on the notion that fair priority setting requires a normative grounding in procedural justice to establish the legitimacy of decisions. One limitation of our study is that it leaves unanswered whether substantive justice is achievable using PBMA. Are the ‘right’ benefits optimized? Has a just distribution of resources been achieved? Also, it did not examine the ethical values implied in the economics of such a process. Although there is no consensus on what evaluative framework could be used to answer the substantive justice question, priority setting that engages stakeholders constructively around determining the relevant reasons for decisions stands a good chance of approximating substantive justice in the eyes of stakeholders. Another limitation of our study is its generalizability. It is likely, however, that many decision-makers have had the same experiences as Calgary Health Region and some of the lessons learned in this case study will be helpful to their organizations.

Acknowledgements

The views expressed are those of the authors and do not necessarily reflect those of the supporting groups. Dr Gibson was supported by a Canadian Health Services Research Foundation post-doctoral fellowship. Dr Mitton was supported by a Canadian Health Services Research Foundation post-doctoral fellowship. He is an ESRC/EPSRC Advanced Institute of Management Research (AIM) International Fellow (UK) and is supported by the Canadian Priority Setting Research Network. Dr Martin is supported by an Ontario Ministry of Health and Long-Term Care Career Scientist Award. Dr Donaldson is an ESRC/EPSRC AIM Public Services Fellow. Dr Singer is supported by a Canadian Institutes for Health Research Distinguished Investigator award. We would like to thank the Senior Management Team of the Calgary Health Region for participation in this study, San Patten for assistance in data collection and analysis, and two anonymous peer reviewers for valuable feedback and comments on the manuscript.

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