

Priority setting in a Canadian surgical department: a case study using program budgeting and marginal analysis

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Introduction: A key mandate of Canadian regional health authorities is to set priorities and allocate resources within a limited funding envelope. The objective in this study was to determine how resources within a surgical program in a Canadian rural hospital might be reallocated to better meet the needs of the local community. **Methods:** Early in 2001, at the Canmore General Hospital, Canmore, Alta., an expert-panel working group, consisting of a community health service leader, operating-room nurse clinician, acute care head nurse and a general surgeon, assisted by a research assistant and 2 health economists carried out a program budgeting and marginal analysis project to assess multiple data inputs into the decision-making process and to develop recommendations for service expansion and resource release. They considered the cost and benefits of altering the mix of resources used, based on Headwaters Health Authority activity and financial data, and local expert opinion. **Results:** The primary recommendation was to implement an additional surgery day per week (38 days of major surgery and 12 days of minor surgery over a 50-week year). However, the total dollars to fund such an expansion could not be released from within the Canmore budget, and additional dollars were not forthcoming from the health region. A secondary objective of implementing an additional minor surgery day every 3 weeks was pursued and the required resources were obtained. **Conclusions:** Due to resource constraints in health care, efforts by both clinicians and administrators should be made to better spend available resources. The marginal analysis process used in this study served as a useful framework for priority setting, which is generalizable to other surgical and nonsurgical programs in Canada.

Introduction : L'établissement des priorités et l'attribution des ressources dans les limites de l'enveloppe budgétaire constituent un mandat clé des régies régionales de la santé au Canada. Cette étude visait à établir de quelle façon on pourrait réaffecter les ressources du programme chirurgical d'un hôpital rural du Canada afin de mieux répondre aux besoins de la communauté locale. **Méthodes :** Au début de 2001, à l'Hôpital général de Canmore, à Canmore (Alb.), un groupe d'experts réunissant un chef de file en santé communautaire, une infirmière clinicienne de salle d'opération, une infirmière chef en soins actifs et un chirurgien général, a entrepris un projet de budgétisation et d'analyse différentielle du programme avec l'appui d'un adjoint à la recherche et de deux économistes de la santé afin d'évaluer diverses données du processus décisionnel et de formuler des recommandations relatives à l'expansion des services et à l'attribution des ressources. Ils ont examiné le coût et les avantages de la modification de l'éventail des ressources utilisées en se fondant sur les données liées aux activités et aux finances de la régie régionale de la santé de Headwaters et sur les avis d'experts locaux. **Résultats :** La principale recommandation prévoyait l'ajout d'une journée de chirurgie par semaine (38 jours pour les interventions chirurgicales majeures et 12 jours pour les interventions chirurgicales mineures au cours d'une année de 50 semaines). Le budget de Canmore n'autorisait toutefois pas la dépense des sommes nécessaires à l'expansion des services, et des sommes supplémentaires n'étaient pas attendues de la régie régionale de la santé. On a poursuivi l'objectif secondaire, qui consistait à ajouter une journée de chirurgie mineure aux trois semaines, et les ressources requises ont été accordées. **Conclusions :** Compte tenu des contraintes au niveau des ressources en soins de santé, les cliniciens et les administrateurs doivent être tenus de faire un meilleur usage des ressources disponibles. L'analyse différentielle effectuée dans cette étude a dressé un cadre utile d'établissement des priorités qu'il serait possible de généraliser à d'autres programmes chirurgicaux et non chirurgicaux au Canada.

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Accepted for publication Sept. 24, 2002.

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Because of scarcity of health resources, decision-makers must allocate resources in such a way that the most benefit for each dollar spent is derived.¹ Often, however, knowledge of specific approaches to priority setting are limited.² As economics is simply the “study of choice,” an economic approach to setting priorities and allocating resources may well help in program planning and budgeting processes. Priority setting by all stakeholders is paramount because health regions and hospitals often are responsible for service delivery but do not have the ability to control resource use independent of clinicians.³

One such approach to priority setting used widely in regionalized contexts internationally is program budgeting and marginal analysis (PBMA). Recently, as part of a broader project evaluating the PBMA framework, a pilot study of this approach was done in the surgical services program in Canmore, Alta. The primary objective of this priority-setting exercise was to identify how surgical services could be redesigned to improve program efficiency. That is, this project set out to determine how resources might be reallocated to better meet the needs of the local community. The specific decisions made in Canmore are less important for the purposes of this paper than the description of a process or approach which is generalizable to other surgical settings where priorities have to be set within the constraint of limited resources.

Background

Canmore, a rural community of approximately 11 000 people, is set in the foothills of the Rocky Mountains, about 110 km west of Calgary. The Canmore Service Area is 1 of 6 communities on the outskirts of Calgary that together make up the Headwaters Health Authority, 1 of 17 regional health authorities in Alberta. Canmore has an 18-bed hospital that expanded its surgical

program in mid-1999 and recruited a general surgeon. This resulted in a large increase in the number of surgical procedures being performed at the hospital, to the point where waiting lists were starting to increase and surgical capacity was thought to be insufficient. The underlying reason for the increase may have been that the community was underserved before recruitment of the new surgeon, which was a key issue examined in this study.

To address the increased load on the surgical program, the Canmore community health service leader expressed an interest in using the PBMA approach to examine the provision of surgical services in Canmore. In the 2000/01 fiscal year, before the PBMA case study began, the surgical theatre was operating 2 days a week, and approximately 700 procedures were carried out. In that same year, the surgical program had a budget of about Can\$500 000, which accounted for 9% of acute care expenses and 7.4% of total health region expenditure in the Canmore Service Area (not including physician reimbursement, which is not funded through the health region). Although PBMA has been applied in surgical services in Britain and Australia,^{4,5} it had not previously been used in a Canadian surgical program.

What is program budgeting and marginal analysis?

PBMA assists decision-makers in directing resources so that the impact of health care on the health needs of the local population is maximized,⁶ and it has been used in over 60 health authorities internationally.² The approach relies on 2 fundamental economic principles: opportunity cost and marginal analysis. Opportunity costs are the foregone benefits of the next best alternative use of a given set of resources. By allocating resources to one option, some benefit will be lost because resources were not allocated to the foregone option.

As such, one of the primary goals of priority setting is to maximize the benefits and minimize the opportunity costs of a given set of resources. Marginal analysis has to do with change; in shifting resources from one area to another, examining the marginal costs and benefits provides insight into whether the changes should take place.

The PBMA framework asks 5 main questions about resource use:

1. What is the total amount of resources available?
2. How are these resources currently spent relative to priorities and activity?
3. What is the “wish list” of services that are the main candidates for receiving more resources (and what are the costs and benefits of these expansions)?
4. Can any existing services be provided as effectively but with fewer resources, allowing some of the items on the wish list to be implemented?
5. Are there services that should receive fewer resources because they are less effective per dollar spent than something on the wish list?

The first 2 questions make up the program budgeting part of PBMA, which calls for a map of service activity or expenditure to be developed. Marginal analysis, relating to questions 3–5, then enables managers and clinicians to identify areas for expansion and, to fund potential expansion items, areas for contraction. If evidence and local expert opinion support reallocation between the investment and disinvestment lists, recommendations for service redesign can be made. In this way, PBMA provides a means through which health gain can be maximized for the available resources. This process should be used on an ongoing basis both within and across programs to ensure the mix of services provided is optimal. The logic of this type of approach is that it is possible to improve surgical outcomes within the given budget.

Methods

A standard approach to PBMA was followed in the surgical program in Canmore, based on the 5 questions outlined. That is, the scope of the exercise was defined and information on activity and resource use, in the form of a program budget, was compiled. Following this, an expert panel was formed to examine whether resources were being used so as to best meet the needs of the local population. The panel consisted of 4 members, including the community health service leader, the operating-room nurse clinician, the acute care head nurse and a general surgeon, and was assisted by a part-time research assistant and 2 health economists from the University of Calgary. The panel met 4 times, for 2 hours each, early in 2001.

Following discussion of the existing set of surgical services and supporting evidence from the literature, including service delivery options, the panel derived an expansion wish list and sought to identify areas for resource release to fund the potential expansion. One-on-one meetings with panel members were utilized to supplement initial ideas for expansion and to aid in identifying areas for potential resource release. Finally, recommendations for potential changes to the provision of services were made.

As specific evidence to inform local decisions was not always available, the panel was required to pragmatically weigh costs and benefits of the options for service delivery, thereby avoiding decision-making paralysis when specific data or evidence was lacking. For example, data on the number of procedures and surgical expenditure was available, but a formal needs assessment pertaining to surgery in Canmore had not been conducted. Thus, the panel had to make an assessment without all desired information, just as is often the case in making a decision to maintain the status quo.

Following the completion of the PBMA exercise, a follow-up survey was conducted with members of the expert panel. The purpose of this semistructured interview was to examine the PBMA process in some detail and determine if further use of PBMA in other jurisdictions was warranted. Results from the follow-up survey are reported after presentation of those from the PBMA exercise itself.

Results

Generation of the wish list

After a review of the current budget for the surgical department, the expert panel first identified areas for expansion of the surgical program. Although many variations for adding surgical time were considered, the panel centred on expanding the existing program rather than increasing its scope. The panel decided that the addition of both major and minor surgical days were required in Canmore to meet existing needs. The delineation between major and minor surgical days was based primarily on the resources required for the procedures that could be booked for those designated days. Major surgical days would involve procedures that required an anesthetist and the full complement of staff for operating and recovery rooms. Minor surgical days would involve procedures that could be done with use of local anesthesia administered by the surgeon, and staffing for minor surgical days would require a single registered nurse to assist the surgeon.

As no formal needs assessment was conducted, the specific mix of required days put forth for the wish list was based on the expert opinion of the panel, which was derived from past experience and knowledge, surgical booking trends (including increasing waiting times and number of after-hours urgent cases), referral patterns and resources available on site at the Canmore Hospital. Costs were

based on the existing hospital data costing system and included all nursing time, equipment, other staff and overhead. The derivations only included the impact on the surgical program; impact on the general ward due to overnight stays was not factored in. The primary assumption made in developing the scenario was that the program would run 50 weeks of the year. Further, the budgets assumed that the portion of revenue-generating patients would remain constant to existing levels (i.e., 22% of patients will come from outside the health region and thus be eligible for revenue generation). The resulting wish list included 38 days per year for major procedures at a cost of Can\$5450/d and 12 days for minor procedures at a cost of Can\$1700/d, for a gross cost of Can\$ 227 500/yr. This expense would be offset by revenue from an estimated 42 out-of-region patients of Can\$20 900/yr. Thus, the estimated net cost would be Can\$206 600 annually.

Of course, it is important to examine a potential change in service provision not only in terms of the resource impact but also with respect to the likely benefits or outcomes to be obtained. The expert panel held that a number of benefits would be gained if a third surgical day per week was scheduled in Canmore. First, the current schedule provides a limited amount of time for nurses to maintain their skills in the operating room and a third day would help address this issue. Second, a minor procedure day could also improve the efficiency of the existing surgical days. Minor procedures were being added on to the existing surgical days, but this is not efficient since minor procedures require fewer nurses than major procedures. Third, and most importantly for the community, patients would receive enhanced service with a third surgical day in Canmore. At the time of the exercise, there was a waiting list of about 6 weeks for general surgical procedures. An additional day would

accommodate an estimated 5 patients, so roughly 225 patients per year would benefit from the program expansion.

Resource release

The PBMA approach attempts to fund program expansions via improved efficiency and resource releases from other programs. Since it is difficult to solicit reductions in the group setting, individual meetings were set up with the panel members to gather ideas for release items. Table 1 lists all the ideas presented but does not imply that all were practical and would be implemented. The key at this stage was to brainstorm areas for potential resource release.

Given the initial wish list and release items, a number of scenarios were generated to assess the impact of changing the resource mix in the surgical services program. Although several scenarios were reviewed, the option deemed to be most realistic would require an expense of \$183 490 after resources releases were accounted for (Table 2). Next, the group discussed options for releasing additional resources from elsewhere in the Canmore budget to cover the net expenditure but ultimately

decided that this amount of money could not be found. Importantly, as the surgical program was already operating at a significant deficit, over \$100 000 had already been released from other programs to cover this shortfall during fiscal year 2000/01. Thus, the panel was severely restricted in finding further releases within the Canmore Service Area. To fund a surgical expansion, significant releases would have had to be made in areas such as community services or long-term care. Ultimately, each member discarded additional potential resource release options because the benefits to the community from such services were deemed to be too great. In terms of the PBMA process, the panel decided that removing resources from existing programs to fund an additional surgical day would not result in a net improvement in patient outcomes for the community as a whole. In other words, the opportunity cost of the proposed program was greater than the opportunity cost of existing programs.

Dealing with the constraints

As additional resources could not be identified from elsewhere in the Canmore Service Area budget, and re-

sources were not immediately forthcoming from the health region, the expert panel decided to propose a secondary option for surgical services. This proposal was for the addition of 1 minor surgical day every 3 weeks. This minor surgical day, as presented in Table 3, provides 4 hours of operating-room time that can accommodate only minor procedures. In terms of benefits, this proposal offers additional patient access, but the scope of the program is quite small. If a minor procedure takes 1 hour on average, the program would allow 68 minor procedures to be performed. These could therefore be removed from regular surgical days, which would improve efficiency on these days and potentially allow more patients to receive major surgery. Overall, with this proposal, patient access and the efficiency of existing surgical days would both be improved. The total impact of this option is estimated to cost about \$8900 (Table 4). Coupled with reduced maintenance, sterilization and overtime savings, implementing the additional minor day as outlined would result in a small financial savings.

Table 1

Resource-Release Items Suggested by Panel Members to Provide Revenue to Implement the Wish List for Surgical Expansion at Canmore Hospital, Alta.	
Item no.	Description
1	Streamline the preassessment clinic, thereby eliminating the need to add hours to this clinic when an additional day of surgery is considered; a potential saving of \$225/d of additional surgery could be realized.
2	A cheaper method of sterilization could be used in endoscopy, resulting in an overall savings of about \$5000/yr in reduced supply costs.
3	Maintenance costs associated with item 2 would result in a further savings of \$5000/yr because the cheaper cleaning solution would not harm the endoscopy equipment to the same extent.
4	Overtime and callback rates could be reduced (with the addition of a third day of surgery per week). Urgent cases added at the end of days are done at overtime rates, but with an additional surgical day, the need for overbooking and the resulting overtime could be reduced by 30%, and callbacks could be reduced by 10%, resulting in savings of about \$16 000.
5	One less nurse in the operating room. In practice, due to union contract details, this would be difficult to accomplish.
6	Reduce the number of days the operating room is open to 45 weeks, representing a 10% reduction in expenses, based on a 50-week surgical year.

Table 2

Interim Scenario for Funding Desired Expansion of Surgical Services in Canmore, Alta.	
Resource releases	Expense, Can\$
Cheaper sterilization	5 000
Reduced maintenance	5 000
Reduced overtime	7 028
Reduced callbacks	6 082
Total releases	23 110

Table 3

Incremental Cost for 1 Day of Minor Surgery	
Item	Amount, Can\$
Salary for 1 registered nurse*	200
Health records/transcription	100
Housekeeping	25
Supplies	200
Total	525
*-5 h with restocking	

Panel recommendations

The first recommendation was that opportunities to proceed with an additional full surgical day per week should continue to be examined. As this option could not be implemented within the current budget unless significant cutbacks were made in other programs, the panel chose to proceed with the option outlined in Table 4. However, the panel members strongly emphasized that in their opinion this was an interim measure because a minor surgery day would not address the most pressing surgical needs in Canmore. They expressed a clear desire to add a full surgical day per week, and this option remains the primary goal to be pursued in the future. The panel also felt that the program should be formally evaluated after implementation of the expansion.

Follow-up survey

The expert panel members were unified in their opinion that overall the PBMA framework was a valuable tool in the priority-setting process in the Canmore surgical services program. They reported that the approach allowed objective consideration of issues at hand, increased communication among parties and enabled panel members to have a better understanding of the economic realities being faced in the Headwaters Health Authority. They

also believed that the time demands required to complete the process were reasonable and that it fostered an evidence-based approach to decision-making. Specifically, although the primary goal of funding an additional full day of major surgery was not met, each panel member stated that the recommendation to fund an additional full day of minor surgery every 3 weeks might not have been recognized as a viable opportunity had the PBMA process not been followed.

As in many of these types of exercises, the panel felt restricted to some degree in attempting to identify resource releases, as some reasonable releases were targeted outside the surgery budget, and some panel members did not feel they had the authority to reallocate resources from other programs. Further, they recognized that the process as a whole was limited because a lack of certain surgical services in Canmore did not necessarily mean that the needs of Canmore residents would not be met, owing to Canmore's geographic proximity to Calgary. The broader issue raised here is whether PBMA exercises can be conducted in isolation, within specific health authorities, or whether such activity should span political and geographic barriers.

Another issue raised by the panel in follow-up was the limitation, in terms of both reliability and validity, of the data on which decisions were being based. However, the panel did recognize that this was the same information on which decisions outside the PBMA framework were based. Finally, there was an indication that a structured follow-up process should exist to assist in the implementation of the panel's recommendations. The entire panel recommended the use of PBMA for future priority setting applications in the health region, and that resources should be earmarked from the region for further explicit priority-setting activity as conducted in this case study.

Discussion

This PBMA pilot project was initiated with the primary objective of applying an economic framework within which recommendations for resource neutral changes in the delivery of surgical services in Canmore could be put forth to improve overall patient benefit. As a result, this study was conducted both as a research project and an aid to decision-makers challenged with maximizing needs met from a service with limited resources. Whereas concerns over data in a PBMA process are common,⁷ it must be remembered that with or without PBMA, the same data concerns exist. PBMA happens to magnify this issue as decisions are being made in a more explicit and open manner than is often the case.

Despite some limitations, the results do demonstrate that PBMA can be used as an effective framework to assist decision-makers in achieving the stated objective. In fact, the framework is generalizable to other contexts in which decisions must be made about what services to fund and what not to fund.⁸ Literature searches in standard economic and medical databases identified few papers that set out an explicit approach for setting priorities in Canadian surgical departments (i.e., as distinct from waiting-list prioritization systems)⁹ and none that attempt to genuinely reallocate resources as opposed to simply ranking top service growth areas. No matter how many resources are available in total, choices must be made about what and what not to fund. The PBMA process provides a tangible way to address the dilemma of scarcity.

The heart of the PBMA approach involves identifying marginal dollars that could be better used elsewhere and implementing funding shifts that reflect these margins of benefit.¹⁰ In fact, one of the strengths of the PBMA process is that it makes explicit the costs and potential benefits of *changes* in service delivery.¹¹ The

Table 4

Budget Impact of Revised Proposal for Surgical Expansion at Canmore, Alta.

Item	Amount, Can\$
Cost of 17 additional minor surgery days	8925
Cheaper sterilization savings	5000
Reduced maintenance savings	5000
Reduced overtime savings	1000
Total savings	2075

key to the marginal analysis rests with an expert panel working group, which ideally has representation from all the major stakeholders involved; local data and evidence from the literature are combined, and judgements are made on aspects for which there is no evidence. As with most priority-setting activity, a challenge is in obtaining objective and reasonable solutions, particularly when group decision-making processes are invoked. In the end, with PBMA the panel is required to make comparative judgements on marginal costs and benefits of proposed treatment options, and to develop recommendations for changes that improve benefits (or need met) for the given population.¹²

In a study such as this, factors in addition to economics clearly play a role in the decision-making process. Although the focus of this paper was in reporting how the costs and benefits of the reviewed options were weighed, organizational and political processes did have an impact on the final recommendations. For example, it may be that broader representation on the expert panel from other service areas within Canmore would have been useful. This was not done since the health services leader, who was on the panel, has authority over the entire Canmore budget and thus can shift resources from one area to another. That said, without specific representation from other areas, taking resources from elsewhere to put into surgery would have raised some concern. The issue is one of authority of the expert panel. Ultimately, panel decisions for reallocation become political, even if the best evidence or expert opinion would support recommended changes. In future exercises, broader representation would be favoured, enabling decisions to be made both within a program such as surgery, and noting the integrated structure of the health authority between specific programs or services.

This study has several limitations.

First, the scope of the project was perhaps too narrow to allow meaningful resource reallocations. An even broader question is whether the Canmore Service Area has enough resources, relative to other service areas within this health authority, to meet existing needs. Although this question cannot be answered with the current study, having broader health authority representation on the panel may be useful and was in fact the model used effectively in other case studies in this health authority. Further, there is sometimes a need to look beyond one's own health authority; this is particularly relevant for a rural surgical program. The lessons learned here are the need for careful consideration of panel participants and the need to closely weigh out the scope of a particular priority-setting exercise.

Second, it is recognized in the literature that the values of the expert panel members in a PBMA exercise will have an impact on the direction of the discussion and results.¹³ Every decision made in a health authority is based, to some degree, on the personal values of the individuals involved. What PBMA allows is peer review, through a consensus decision-making process. In addition, recommendations from the panel must be based on explicit rationale. In this case, both the recommendations and underlying rationale were delivered to the health authority in the form of a written report. Values are a part of priority setting,¹⁴ and a process like PBMA has the potential to be biased by the individuals taking part in the exercise. However, this can be minimized with careful selection of the expert panel, and speaks to the issue of broad panel representation. This could even be extended to include members of the public directly on the panel, although this has not been tested with PBMA to date.

Third, with respect to the cost derivation, as the perspective of the exercise was from the surgical program, the impact on the general ward of

overnight stays was not calculated. This resulted in an underestimation of the true cost of the proposed major surgery days and would have required careful further analysis had that option been selected. A strength of PBMA is in acquiring rough cost estimates on which planning decisions can be based.¹¹ When the recommendations are put into operation, however, more detailed analysis is required to ensure accuracy of the estimates being used.

Conclusions

The PBMA process was effective in aiding a priority-setting exercise in the Canmore surgical services program. Concrete recommendations resulted from the priority-setting exercise, and, although the ultimate goal of adding a third surgical day was not possible within the fiscal constraints, the group identified an opportunity to add a minor surgical day funded by releases from within the surgical program. PBMA appears relevant for both managers and clinicians when decisions must be made about how best to use limited resources. This is especially important for surgery, where such scarcity and unmet need are highlighted by long waiting lists. The basic question posed by PBMA is whether more need can be met within existing resources, which is a critical issue for longer term sustainability both in surgery and other health services. PBMA is not simply a cost-benefit exercise. Results from the process are driven by input from the expert panel and therefore represent the values of the panel. The priority-setting framework applied here in surgery could be used in other hospital based and regionalized contexts in Alberta and elsewhere.

Competing interests: None declared.

Acknowledgements: The authors would like to thank Mr. Dwight Nelson, past CEO of the Headwaters Health Authority, for his support of this work and to acknowledge the assistance of Kris Aksomitis and Francesco

Mosaico. We would also like to acknowledge the Canadian Health Services Research Foundation and the Alberta Heritage Foundation for Medical Research for funding this project.

References

1. Auld P, Donaldson C, Mitton C, Shackley P. Economic evaluation. In: Detels R, Holland W, McEwan J, Omenn G, editors. *Oxford textbook of public health*. 4th ed. Oxford: Oxford University Press; 2001.
2. Mitton C, Donaldson C. Twenty-five years of program budgeting and marginal analysis in the health sector, 1974-99. *J Health Serv Res Policy* 2001;6(4):239-48.
3. Donaldson C, Mitton C, Currie G. *Managing medicare: the pre-requisite to spending or reform*. The Health Papers No. 157. Toronto: CD Howe Institute; 2002.
4. Scott S. *Programme budgeting marginal analysis exercise for general surgery*. Paisley (Scotland): Argyll & Clyde NHS Board; 1996.
5. Peacock S. *An evaluation of program budgeting and marginal analysis applied in South Australian hospitals*. Melbourne: Center for Health Program Evaluation, Monash University; 1998.
6. Scott A, Currie N, Donaldson C. Evaluating innovation in general practice: a pragmatic framework using programme budgeting and marginal analysis. *Fam Pract* 1998;15(3):216-22.
7. Twaddle S, Walker A. Programme budgeting and marginal analysis: application within programmes to assist purchasing in Greater Glasgow Health Board. *Health Policy* 1995;33:91-105.
8. Madden L, Hussey R, Mooney G, Church E. Public health and economics in tandem: programme budgeting, marginal analysis and priority setting in practice. *Health Policy* 1995;33:161-8.
9. Ali J, Hogan T, Blanchard RJ. Establishing goals and priorities in a surgery department. *Med Teach* 1992;14(4):363-9.
10. Mitton C, Donaldson C, Dean S, West B. Program budgeting and marginal analysis: a priority-setting framework for Canadian regional health authorities. *Health Manage Forum* 2000;13(4):24-31.
11. Mooney G, Russell E, Weir R. *Choices for health care: a practical introduction to the economics of health provision*. London: Macmillan; 1986.
12. Cohen D. Messages from Mid Glamorgan: a multi-programme experiment with marginal analysis. *Health Policy* 1995;33:147-55.
13. Cohen D. Marginal analysis in practice: an alternative to needs assessment for contracting health care. *BMJ* 1994;309:781-5.
14. Ham C, Coulter A. Explicit and implicit rationing: taking responsibility and avoiding blame for health care choices. *J Health Serv Res Policy* 2001;6(3):163-9.



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