Addressing Resource Allocation Issues in Recommendations From Clinical Practice Guideline Panels: Suggestions From an American College of Chest Physicians Task Force
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Addressing Resource Allocation Issues in Recommendations From Clinical Practice Guideline Panels*

Suggestions From an American College of Chest Physicians Task Force

Gordon Guyatt, MD, MSc, FCCP; Michael Baumann, MD, MSc, FCCP; Stephen Pauker, MD; Jonathan Halperin, MD; Janet Maurer, MD, MBA, FCCP; Douglas K. Owens, MD; Anna N.A. Tosteson, ScD; Brian Carlin, MD, FCCP; David Gutterman, MD, FCCP; Martin Prins, MD; Sandra Zelman Lewis, PhD; and Holger Schünemann, MD, PhD, FCCP

Most panels that develop clinical practice guidelines are poorly equipped to address resource allocation or cost issues associated with management options. This risks neglect, arbitrariness, lack of transparency, and methodological flaws in consideration of resource allocation. We provide recommendations for guideline panels to promote greater transparency and rigor. We suggest focusing on resource allocation issues for only a limited number of recommendations and provide criteria for selecting those in which economic considerations are likely to influence the direction or strength of the recommendation. Panels should involve a health economist to assist with the systematic review and critical interpretation of relevant economic analyses. They should carefully define the intended audience and may consider issuing alternative recommendations when available resources vary widely across target clinical settings. Targeting a limited number of recommendations for the consideration of resource allocation issues, and ensuring methodologically high-quality review, will best serve guideline panels, and the health-care providers and patients they hope to assist.

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Key words: clinical practice guidelines; evidence-based recommendations; resource allocation

Abbreviations: ACCP = American College of Chest Physicians; QALY = quality-adjusted life-year

Clinical guidelines panels typically consider available management options and assess the evidence regarding the benefits, risks, and burden associated with each option. They weigh these factors, and apply value and preference judgments to arrive at recommendations for practicing clinicians.

Inevitably, issues of resource constraints or costs related to the patient management options under

*From the Department of Medicine (Dr. Guyatt), McMaster University, Hamilton, ON, Canada; the University of Mississippi Medical Center (Dr. Baumann), Jackson MS; Tufts-New England Medical Center (Dr. Pauker), Boston, MA; Mount Sinai Medical Center (Dr. Halperin), New York, NY; the Department of Veterans Affairs (Dr. Owens), Palo Alto Health Care System, Palo Alto, CA; the Departments of Medicine (Dr. Tosteson), Dartmouth Medical School, Hanover, NH; Drexel University School of Medicine (Dr. Carlin), Philadelphia, PA; the Department of Medicine (Dr. Gutterman), Medical College of Wisconsin, Milwaukee, WI; the Health and Science Policy Committee (Dr. Lewis), American College of Chest Physicians, Northbrook, IL; the Department of Clinical Epidemiology and Medical Technology Assessment (Dr. Prins), Academic Hospital Maastricht, University of Maastricht, Maastricht, the Netherlands; and the Division of Clinical Research Development and Information Translation (Dr. Schünemann), the Department of Epidemiology, Italian National Cancer Institute Regina Elena, Rome, Italy.

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Correspondence to: Gordon Guyatt, MD, MSc, FCCP, Department of Clinical Epidemiology and Biostatistics, HSC-2C12, McMaster University, 1200 Main St West, Hamilton, ON, Canada L8N 3Z5; e-mail: guyatt@mcmaster.ca
consideration either arise explicitly or hover in the background. Clinical guideline developers often struggle with these resource allocation issues. They usually lack expertise in economic evaluation, the evidence is often limited, and resource constraints may differ among the various audiences that the guidelines are addressing.

In March 2005, a task force convened by the American College of Chest Physicians (ACCP) met to consider how guideline panels should deal with the dilemmas of incorporating resource allocation considerations in guideline recommendations regarding optimal patient management. Prior to this meeting, the task force, which included academics experienced in evidence-based guideline development, health economics, and decision analysis, reviewed a series of draft documents addressing the salient issues. This article represents the results of the group's deliberations, and provides guidance for clinical guideline developers considering resource allocation issues related to their recommendations about optimal patient management (Table 1).

### Table 1—Recommendations

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<tr>
<th>Recommendation</th>
<th>Details</th>
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<tr>
<td>1.</td>
<td>Guideline panels should be explicit about the extent to which they consider resource allocation issues in their recommendations</td>
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<td>2.</td>
<td>Panels should consider resource allocation issues for a subset of recommendations in keeping with the amount of funding available for this task</td>
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<tr>
<td>3.</td>
<td>Panels should place a premium on doing a good job with each recommendation in which they consider resource issues and compromise, if necessary, on the number of such recommendations</td>
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<td>4.</td>
<td>Panels should consider resource allocation issues when it is plausible that they will influence the direction or strength of a recommendation</td>
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<tr>
<td>5.</td>
<td>Panels should conduct a systematic search for economic analyses and should consider the findings in generating each recommendation for which the panel decides to consider resource allocation issues</td>
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<tr>
<td>6.</td>
<td>Panels should apply clear and consistent criteria to the interpretation of economic analyses</td>
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<td>7.</td>
<td>Panels considering resource allocation issues should specify the target audience explicitly</td>
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<td>8.</td>
<td>Panels should explicitly address in the recommendation whether resource allocation issues differ substantially across the target audience and, if necessary, offer differing recommendations across segments of the target audience</td>
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<tr>
<td>9.</td>
<td>Panels should include one or more members with expertise in economic evaluation and should mandate those members to lead the group in consideration of resource allocation issues</td>
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### Resource Allocation vs Costs

Whereas the issue we are addressing is often labeled “cost,” this can be misleading. First, the designation may lead guideline panels to focus on the cost of an intervention itself, rather than on the often-important downstream differences in resource consumption. Second, panel members may not always be aware that costs are merely a convenient way of summarizing the resources devoted to alternative management strategies. The real issue is whether resources might be more productively allocated elsewhere (ie, the issue of “opportunity cost”). Finally, while resource requirements may be similar in two environments, their costs may be very different. For instance, the annual cost of clopidogrel for 100 patients might equal the salary of one nurse in the United States, but the salaries of three nurses in Poland.

Confronting these issues, panel members can decide whether to restrict the framework of alternatives to a specific area (ie, the alternative allocation of resources within a hospital cardiology department or an entire hospital), more broadly (ie, the health-care system as a whole), or to the entire domain of public expenditures (ie, allocating resources to building missiles or to a particular health-care intervention). Whatever choice they make, their initial focus should be on the resources consumed, and subsequently on the costs associated with that resource consumption that are specific to a particular setting or jurisdiction.

### Approaches to Resource Allocation Issues That the Task Force Rejected

#### Consider Only Patient-Important Benefits, Risks, and Burden, and Omit Consideration of Resource Allocation Issues

While simple, transparent, and consistent with some views of what constitutes “best practice,” omitting resource allocation issues is not realistic in the current health-care economic environment. Constrained resources are a universal concern, and it is worthwhile for guideline developers to consider the economic consequences of their recommendations. Guideline panels that ignore costs may make recommendations that startle even clinicians dealing with well-insured populations in the United States. Furthermore, guideline panels interested in influencing the policies of insurers, health-care corporations, and governments must consider resource allocation issues.

#### Do Not Have Explicit Rules for Considering Resource Allocation Issues

While avoiding the expenditure of time and money, the lack of explicit rules will create inconsis-
tency. Without explicit rules, guideline developers will often restrict themselves to considering intervention-related costs in environments with which they are familiar and will fail to carefully consider alternative applications of resources. Furthermore, the process by which guideline developers will apply resource allocation issues will lack transparency, and the underlying criteria will likely be idiosyncratic to the circumstances of local practice.

Formally Consider Resource Allocation Issues for Every Recommendation

At one extreme, this option involves a typically constituted clinical guideline panel considering resource allocation issues as they apply to each recommendation. While its uniformity has some appeal, an approach that asks traditional panels to include resource allocation considerations in each decision risks unsophisticated, flawed, and not very credible recommendations. Conventional panels, lacking expertise in economic analysis, run the risk of focusing on short-term costs, neglecting the downstream impact of interventions on resource consumption, and being misled by flawed or arbitrarily chosen economic analyses.\(^1\)

At the other extreme, one could involve a health economist in the development of every recommendation, complete a systematic review of all pertinent cost-effectiveness analyses, and conduct additional such analyses when necessary. Few, if any, guideline panels have sufficient resources to implement such an approach. Further, information supporting reliable decisions would often be unavailable; as a result, even sophisticated analyses could degenerate into guesswork.

Recommended Approach: Targeted Consideration of Resource Allocation Issues

Panels developing clinical guidelines must typically deal with an array of issues. For instance, the Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy: Evidence-Based Guidelines (subsequently referred to as the ACCP thrombosis guidelines) includes >500 recommendations. For some issues, there is a minimal differential in cost between alternatives; for others, the cost differential is considerable. For some recommendations, the benefits of a particular intervention far outweigh the risks and burdens; for others, the benefits, risks, and burdens are finely balanced. For some, resource use varies widely across clinical settings; for others, resource use is similar across settings. For some recommendations, information on resource use is scanty, while for others information is extensive. This variability provides an opportunity for panels to consider resource allocation issues for only a limited number of recommendations.

Why Did the Task Force Choose This Approach?

The approach that the task force suggests is transparent, avoids the burden of considering resource allocation decisions for all recommendations, and provides flexibility for different guideline panels and credibility to policy-making bodies. The approach does, however, present challenges. Developing reproducible criteria for the consideration of resource allocation issues presents difficulties. The approach risks omitting resource allocation issues for recommendations for which these issues are important. While these limitations are to some extent unavoidable, our discussion will offer suggestions on ways that guideline panels can minimize their adverse impact.

Who Is the Target Audience for the Guideline?

Costs, available resources, and opportunity costs differ radically between and sometimes within clinical settings, compromising the generalizability of economic analyses. Wider guideline dissemination magnifies the resulting problem. The ACCP thrombosis guidelines, for instance, are widely available, and are influential in both wealthier and poorer countries in Europe and South America. The explicit consideration of costs will, therefore, either require a series of recommendations for different environments or mandate that guideline developers specify the environments to which the guidelines pertain. Thus, any guideline that considers resource allocation issues must explicitly state its audience and must consider variability across clinical settings. This may result in different recommendations across subgroups within the target audience.

What Are Possible Criteria for Applying Resource Allocation Considerations?

Impact on the Recommendation

The ultimate criterion for considering resource allocation issues is that they might affect the direction of the recommendation (ie, “do it” or “do not do it”) or the strength of a recommendation (ie, weak or strong). When a particular recommendation would
be unaffected by resource considerations, investigating resource consumption is unnecessary. For instance, given its low cost and large benefit relative to the risk and burden, conducting an economic analysis addressing the administration of aspirin after myocardial infarction would be foolish. For many recommendations in which the decision is not so clear, panels are likely to find challenges in deciding when an economic analysis might affect recommendations. The following criteria may be helpful.

Magnitude of Cost Differential

Resource allocation considerations may be crucial when intervention-associated costs are high and downstream savings do not substantially reduce the resulting differential. This criterion presents an obvious challenge. When is the likely cost differential across alternatives great enough to warrant consideration of resource allocation issues? One might approach this issue by setting a dollar value per patient (eg, intervention-associated costs are >$100,000 per patient for the first year of treatment; or the total incremental costs of the intervention are >$100,000 per patient). This is explicit, but arbitrary and inflexible. Further, it ignores the frequency with which the intervention will be implemented. Moderately priced interventions that are frequently applied will result in a greater cost burden than higher priced interventions that are infrequently applied. Estimates of the impact on the system costs of applying the intervention widely may provide a better guide to addressing cost issues.

Another approach is to set a threshold value for the cost of an intervention per quality-adjusted life-year (QALY) gained. When existing economic analyses suggest that the intervention is extremely cost-effective (whatever the intervention-associated costs), considering resource allocation issues is unlikely to change the recommendation. Authors have suggested criteria for judging cost-effectiveness. One particular criterion proposes that interventions that cost >$100,000 per QALY are, in general, unaffordable, while interventions that cost <$20,000 per QALY represent good value. These thresholds apply only to upper income countries. In poor countries, $20,000 per QALY gained may be prohibitive. Thus, the choice of a threshold will vary depending on who is making the resource allocation decisions. A final way of defining a high-cost intervention would be the panel’s hypothesis that members of the target audience for the guideline are likely to resist or experience reluctance in implementing a recommendation on the basis of high costs.

Availability of Strong Evidence

The availability of high-quality resource consumption and cost data will vary widely across recommendations. When adequate cost-effectiveness analyses are available, and come to similar conclusions, the work of the guideline panel to summarize the evidence regarding resource allocation issues is largely completed. Furthermore, such strong evidence may permit confidence in the ultimate recommendation. When this work has not been done, and resource utilization data are difficult to obtain, the work of the panel will increase and confidence in the conclusions will decrease.

Variability Across Clinical Settings

Consideration of resource allocation is more attractive when cost experience is similar across the target audiences. For instance, low-dose aspirin is very inexpensive in all clinical settings, and its cost-effectiveness is therefore high across the world. Interventions that require large capital expenditures for technology may be feasible in the United States but out of the question in countries in which the resources available for health interventions are severely limited.

Small or Uncertain Incremental Benefit

Recommendations for which benefits vs risks and burdens are closely balanced represent attractive targets for economic analysis because resource allocation is more likely to tip the balance. Providing inhaled steroids to those patients with severe asthma, or antithrombotic therapy to patients who have experienced a fractured hip, yields large benefits in relation to the downsides, and those recommendations would therefore be less suitable candidates for consideration of resource allocation. On the other hand, the tradeoff between increased short-term mortality and longer term functional benefit when clinicians administer thrombolysis to individuals 3 to 6 h after a stroke is less clear, possibly mandating consideration of resource allocation implications.

Incremental Difference Across Entire Population

Even in the presence of a large cost differential, investing time and energy in considering cost issues in a patient with a rare disease may be a poor use of the resources of the panel. Indeed, this criterion may prove to be definitive. Even if other criteria are met, a panel may reasonably conclude that a very small target population for the recommendation precludes spending the limited energy of a panel on economic issues.
Requirements for a Systematic Search and Evaluation of Cost-Effectiveness Data

The task force encourages guideline developers to use formal economic analyses when considering resource allocation issues. Economic analyses, properly performed, make explicit the tradeoffs between health benefits and resource use, identify the key factors that influence cost effectiveness, and provide a method for comparing the efficiency of resource investments across different diseases.

Cost-effectiveness analyses, however, may be biased, particularly if the funding source has a vested interest in the outcome. Since most cost-effectiveness analyses are based on an array of assumptions, bias may be difficult to detect.

Formal consideration of cost-effectiveness studies will involve substantial work, particularly if one takes the methodologically optimal approach and conducts a systematic search for economic analyses. Guideline developers may feel they are in foreign territory considering economic analyses, and this may make them uncomfortable. Further, significant methodological flaws exist in many studies assessing clinical interventions and incorporating cost analyses.¹

Nevertheless, formal cost-effectiveness analyses that address resource allocation issues rigorously may be very informative and will stimulate thoughtful discussion among the panel.⁵⁻⁷ Indeed, without the availability of formal economic analyses when considering the resource allocation implications of guidelines, the deliberations of the guideline panel are likely to be highly speculative.

Fortunately, some limitations of cost-effectiveness analyses can be ameliorated, and in the next section we suggest strategies for so doing. We advocate the careful selection of recommendations for resource allocation considerations, conducting a systematic search for economic analyses of the relevant questions, and meticulously appraising those analyses (Table 1).

Approaches to Evaluation of Economic Analyses

Economic analyses include cost-minimization (ie, what costs less), cost-benefit (costs and benefits both valued in dollars), cost-effectiveness (ie, incremental cost and incremental benefits in “natural units” such as additional dollars for each additional stroke avoided), and cost-utility (ie, incremental cost for each QALY). Having a checklist of methodological and other issues to consider facilitates the use of cost-effectiveness analyses. Below, we provide a sample checklist, based on sources that readers can access to learn more.²⁻³⁻⁵⁻⁸

- Who funded the analysis, and what bias might this create?
- Do the investigators present both resource consumption and unit cost information that contribute to cost estimates?
- What viewpoint did the analysis take, and in particular was it a societal viewpoint (including costs to patients)? Who pays the cost and who reaps the benefits of cost savings?
- What is the time horizon in which the costs and benefits are considered, and is the time horizon appropriate?
- Have all reasonable management options, optimally administered, been considered?
- Have the investigators conducted a series of systematic reviews examining the impact of all options on all outcomes?
- What is the strength of evidence linking options to outcomes?
- Do the values and preferences reflect the underlying preferences of patients, providers, or other parties?
- Have the investigators considered all relevant subgroups for whom incremental costs and benefits may differ substantially?
- Have the investigators considered the timing of costs and consequences, and, if so, what discounting methodologies have they used?
- Have the investigators conducted sensitivity analyses in areas of uncertainty?

Since unit costs differ widely across clinical settings, the guideline panel should focus less on costs, and more on the difference in resources consumed in alternative management strategies and the nature of those resources.⁹

Measurement of Preferences

The measurement of preferences involves ascertaining, for example, how patients or society views the relative importance of avoiding adverse outcomes such as stroke, bleeding, or symptoms such as pain or dyspnea. Preference measurement is essential to some cost-effectiveness analyses, particularly cost-utility analyses. The measurement of preferences may also be helpful in resolving tradeoffs between the risks and the burdens and benefits in the absence of resource allocation considerations, which is a key issue in determining the direction and strength of any recommendation.¹⁰ Furthermore, one of the key tools of cost-effectiveness studies, decision analysis, may help to elucidate decisions that do not depend on cost considerations. The relative merits of various approaches to the measurement of preferences, such as standard gamble,¹¹
time tradeoff,\textsuperscript{11} feeling thermometer,\textsuperscript{12} probability tradeoff,\textsuperscript{13} and multiattribute utility models,\textsuperscript{14} and a discussion of whether patient or societal preferences are better suited to economic analysis are beyond the scope of this document.

**IN Volvement of Health Economists**

Panels without expertise in resource allocation issues will find it difficult to perform a thoughtful and sophisticated job of incorporating these considerations. Therefore, guideline panels that are committed to addressing resource allocation issues should include at least one member with expertise in economic analysis; that is, a health economist or individual with equivalent training and experience. Members with this expertise should lead the group in considering resource allocation issues.

**Conclusion**

Health-care systems everywhere face resource constraints. Guideline panels, to be most helpful to clinicians, health-care administrators, and health policymakers, must consider resource allocation implications in their recommendations. In doing so, they should be selective, consider their target audience, and recruit the expert help that will allow them to be thorough and methodologically rigorous.

**References**

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