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Developing a Value Framework: The Need to Reflect the Opportunity Costs of Funding Decisions

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ABSTRACT

A growing number of health care systems internationally use formal economic evaluation methods to support health care funding decisions. Recently, a range of organizations have been advocating forms of analysis that have been termed "value frameworks." There has also been a push for analytical methods to reflect a fuller range of benefits of interventions through multicriteria decision analysis. A key principle that is invariably neglected in current and proposed frameworks is the need to reflect evidence on the opportunity costs that health systems face when making funding decisions. The mechanisms by which opportunity costs are realized vary depending on the system's financial arrangements, but they always mean that a decision to fund a specific intervention for a particular patient group has the potential to impose costs on others in terms of forgone benefits. These opportunity costs are rarely explicitly reflected in analysis to support decisions, but recent developments to quantify benefits forgone make more appropriate analyses feasible. Opportunity costs also need to be reflected in decisions if a broader range of attributes of benefit is considered, and opportunity costs are a key consideration in determining the appropriate level of total expenditure in a system. The principles by which opportunity costs can be reflected in analysis are illustrated in this article by using the example of the proposed methods for value-based pricing in the United Kingdom.

Keywords: opportunity costs, QALYs, value-based pricing, value frameworks.

Introduction

All health care systems face choices about the scale of health expenditure and how resources should be spent, but these choices manifest themselves in different ways. Some systems, such as the UK National Health Service (NHS), are publicly funded and so the resources available for health care are choices, made by government, mediated through a social democratic process. In other systems, which have a substantial privately funded component, these choices are mediated in a number of ways: by clinicians and patients choosing interventions at the point of care, insurers constructing and pricing benefits packages, and citizens choosing between alternative packages offering different benefits and costs.

In all cases, judgments about whether health expenditure is too low or too high require some assessment of the amount of benefit that a health care system presently delivers with more or less resources, that is, a "supply-side" evidence-based assessment of opportunity costs given actual levels of expenditure. Whether the current levels of expenditure are considered appropriate requires a comparison of these opportunity costs (the supply side) with a view of what the social value of the benefits of health care relative to other consumption opportunities ought to be (the demand side).

An assessment of opportunity costs is also important when considering how these resources should be spent. For example, whether a new technology ought to be approved for use in a publicly funded system or added to a benefits package in a privately funded one, a common assessment is needed: whether the improvement in benefits that the new technology offers exceeds the improvement that would have been possible if the additional resources required had, instead, been made available for other health care activities. This assessment is required whether the additional costs of the technology would be accommodated from existing commitments or whether additional health care resources would be made available to fund them.

Internationally, various health systems have established arrangements to provide analysis to support funding decisions, particularly relating to new technologies. Some countries (e.g., United Kingdom, Canada, and Australia) make economic evaluation an explicit part of their recommended analytical methods [1–3]. Although this can be broadly defined as a formal assessment of the incremental costs and benefits of new interventions, there remains variation in recommended methods and their implementation. Some countries, such as the United States, have rejected this approach, but the challenge of how to provide evidence and analysis to guide inescapable funding decisions

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remains. New approaches, including multicriteria decision analysis (MCDA), have been advocated to fill the vacuum to replace more "standard" methods [4]. Several organizations, mainly in the United States [5], have proposed "value frameworks" to bring together information on a range of benefits, disbenefits, and costs, either to inform individual decisions by patients and clinicians or to guide population-level decisions on coverage and pricing for new interventions.

The analytical frameworks that are presently used internationally to support population-level funding decisions, as well as those proposed as adjuncts or alternatives to conventional methods, currently ignore the key consideration of an empirical assessment of opportunity costs. The National Institute for Health and Care Excellence (NICE) in the United Kingdom is one organization that accepts the importance of opportunity cost in principle and seeks to reflect this (in part at least) in its cost-effectiveness threshold [1], but has been criticized for not basing this on empirical evidence [6]. This article argues that, without such an empirical assessment, there is inadequate support for funding decisions and for establishing an appropriate level of overall expenditure.

Opportunity Costs

Key Principles

Whenever funding decisions are taken by health care systems, opportunity costs are inevitably incurred. In systems in which demand-side decisions regarding overall levels of expenditure are taken by the government, supply-side decisions are required regarding, for example, whether to devote additional funding to a new intervention that is more costly than standard care for a particular patient group. Here, the relevant opportunity costs are incurred as a result of interventions for other patients being displaced to release financial resources for the new intervention, resulting in forgone benefits. There is often no explicit consideration of which services might need to be displaced to generate the funds to pay for the new intervention. For example, when the technology appraisal program at NICE recommends a new, more costly, technology, it does not offer any guidance to the NHS regarding which interventions should be removed, delayed, or downscaled to generate the necessary funding.

Evidence and analysis to guide this type of decision require empirical evidence on the relationship between changes in overall health system expenditure and changes in the relevant measure of benefit. This estimate of the system's marginal productivity is the best measure of what is given up as financial resources are drawn away from other services. It also provides a means of estimating the benefits generated as a result of funding a new intervention that costs less than standard care. The demand-side decision of whether to increase total expenditure also needs to be informed by an empirical estimate of opportunity cost. Some information about how individuals are willing to forgo consumption for gains in health (willingness to pay) may inform this decision [7] although this is problematic [8], but knowledge of the benefits the system would generate with higher or lower expenditure provides key information to inform decisions about overall expenditure.

Some health care systems operate under different financial arrangements. In the United States, for example, it may be possible for an insurer to draw on additional resources through, for example, higher insurance premiums from patients or their employers. Here, decisions about whether to fund a specific new intervention may be taken in the knowledge that additional resources will be made available without displacement of other health care services. In effect, demand- and supply-side decisions are being taken simultaneously: whether to fund a specific intervention and whether to make additional financial resources available to the system. In systems with these characteristics, however, opportunity costs remain entirely relevant to the analyses that inform these decisions. Unless the system has funded every intervention offering a marginal benefit over the appropriate standard of care for everyone, which would seem unlikely, there will be other options for the use of the additional funding that could generate benefits, and these represent opportunity costs that should be taken into account.

Again, these opportunity costs are appropriately estimated in terms of how the system translates changes in resources into changes in benefits. This would inevitably reflect the system's current levels of productivity, which may be negatively affected by waste and inefficiency. Opportunity cost estimates can, therefore, change if inefficiencies are addressed; they can also vary over time in the face of changes in prices. In some systems, estimates would also need to reflect the impact of decisions to fund more expensive interventions on the costs patients incur through, for example, co-payments and deductibles and on levels of insurance premiums [8]. Externalizing costs in this way can be expected to influence patients' access and adherence to health care and to result in negative health effects, which are opportunity costs of funding decisions.

By being explicit about opportunity costs, the concept of value (or cost-effectiveness) is brought together with that of affordability. To say that an intervention is cost-effective but not affordable must mean that the criteria used to judge cost-effectiveness do not reflect the scale and value of the opportunity costs. Fully reflecting these requires an assessment of the profile of the total incremental cost in each period, how the opportunity costs of marginal changes in health expenditure are likely to evolve over this time profile, and an appropriate discount rate to apply to opportunity costs occurring in each period. In addition, some assessment of how the expected health opportunity cost is likely to vary with the scale of the total incremental cost in each period (i.e., the effect of nonmarginal expenditure) is also required [9].

Reflecting Opportunity Costs Analytically

The analytical requirements for reflecting opportunity costs are illustrated in the subparts of Figure 1, each of which shows a new intervention compared with standard care, with the latter located at the origin. The new intervention is more costly but also generates 2000 units of additional benefits in the relevant patient population. Opportunity costs are represented in terms of the diagonal dotted line through the origin, and here each additional $20,000 of cost for the new technology imposes 1 unit of forgone benefit. This can be seen as the benefits associated with either interventions displaced when $20,000 is imposed on the system or not funding other potential options with that $20,000.

The additional cost of the new intervention shown in Figure 1A is $20 million, which represents $10,000 per additional unit of benefit generated by the new intervention compared with existing care, which is less than the opportunity cost ($20,000 per unit of benefit). This shows that, at this additional cost, the intervention offers a positive net benefit of 1000 units of benefit: it generates 2000 units in indicated patients but it incurs 1000 units as opportunity costs because of its $20 million additional cost. The new intervention shown in Figure 1B imposes a higher additional cost of $40 million, perhaps because of a higher price. The opportunity costs imposed on other patients are, therefore, greater (2000 units [$40 million/20,000]), generating a zero net benefit. The additional cost of the new intervention shown in Figure 1C is higher still—$80 million. Consequently, opportunity costs are now 3000 units of benefit ($60 million/$20,000), the net