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Letter to the Editor

Public spending on health care: how are different criteria related? a second opinion[☆]

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Abstract

A natural response to difficult questions is to increase the number of objectives one pursues in the hope that each of them separately will be easy to satisfy. This note critically evaluates this strategy as employed in a recent paper in this journal [Musgrove, Health Policy 1999;47:207–223], especially its evaluation of the role of cost-effectiveness in priority setting in the health sector. It is suggested that cost-effectiveness measures provide information of limited use, and that the tools of applied welfare economics are sufficient to guide the policy choices addressed in the paper. Students of health economics and health policy makers would do well to be exposed to these tools. © 2000 Elsevier Science Ireland Ltd. All rights reserved.

1. Introduction

A growing number of health policy analysts have advocated the use of cost-effectiveness measures for the purpose of prioritizing public interventions in health care markets. Responding to a perceived confusion over the appropriate use of cost-effectiveness, a recent article published in this journal [1] lamented that while students of health economics are introduced to a variety of criteria to justify public

[☆] All opinions in this paper are those of the author and should not be attributed to the World Bank or any of its member countries.

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intervention, they are given little guidance for making decisions when criteria are incompatible. That paper identified a number of roles for cost-effectiveness, and how it relates to other criteria. The purpose of this comment is to defend the proposition that cost effectiveness is in fact of little use, and to introduce readers to some elementary notions from public finance that are useful in guiding decisions.

2. Cost-effectiveness and priorities

Something is cost-effective if it is, on average, cheap. To construct a cost-effectiveness measure, one needs to know how much a certain action (e.g. immunization) costs, and what its effects are. The effects are not measured in terms of money, but for instance in terms of numbers of children immunized, or years of life saved, perhaps adjusted by quality of life indices. One can calculate cost-effectiveness measures in non-health sectors also, including for example the cost per pupil enrolled in school.

In making private consumption decisions, individuals obviously prefer cheaper products. But they also care about the benefits that those products deliver when deciding on how much to buy. One does not necessarily take a longer vacation in order to reduce the cost (including travel) per day of vacation — that is, to maximize the cost-effectiveness of the trip. It is imperative to have some measure of the benefits of expenditures to be able to prioritize different interventions. These benefits must be comparable to costs — if costs are measured in dollars then benefits must be too, however unpalatable this may seem. Valuing life is a dirty business, all the more reason to be explicit about it.

If people make private decisions weighing up benefits and costs properly, what role is there for public intervention? Musgrove rightly highlights efficiency and equity reasons. Efficiency reasons derive from situations where individuals, even if they do act ‘rationally’ in some sense, do not coordinate their actions well. Equity reasons revolve around the simple idea that public intervention in health care markets might lead to a more equitable distribution of well-being across individuals. However, I will discuss below why none of these rationales for public intervention turn on the cost-effectiveness of proposed government actions.

3. Interventions to improve efficiency

Three sources of private market inefficiency have been identified by economists: public goods, goods with externalities, and insurance market failures.

3.1. Public goods

Pure public goods like clean air and knowledge are under-supplied in private markets because it is difficult for providers to charge a price to consumers, and to stop people who don't pay from using the good. Of course, not all public goods

should be produced — those whose costs of production exceed the benefits to consumers are not worth providing. Thus the sense in which public goods are under-provided is that *an increase in provision would be worth more to consumers than the cost of production*. We cannot determine whether a public good is worth providing by looking at the cost side only: a full cost-benefit analysis is required.

Now, there might be two public goods that are under-provided, and the temptation is to say that the more cost-effective one should be supplied by the government. In fact, the existence of two such goods only means that the supply of both should be expanded by the government. The fallacy that some under-provided public goods are worth it and others not derives from an implicit assumption that pervades cost-effectiveness analyses, that the government has a fixed lump of money to spend. But this is clearly not true: governments decide on how much revenue to raise. It may be that the administrative and distortionary costs of raising more revenue are high, which just means that the benefits of the public goods may not be high enough to justify the total social costs of provision, but this observation does not guide us in choosing *amongst* public goods (since the tax costs will be the same for all of them).² In particular, comparing the average costs of two interventions provides no information on their relative net benefits. In any case, the number of pure public goods in the health sector is very small, so this point is somewhat moot.

3.2. Goods with externalities

Consumption of some goods which directly benefit a private decision-maker also provide benefits to others. These are termed goods with (positive) externalities, and include such things as immunizations against disease and completion of curative therapy (both of which reduce the likelihood that others will contract the illness). When an individual decides on how much of such a good to consume she weighs the private benefits against the private costs. If she does not take into account the benefits to others, she will consume too little: by consuming more, the total benefits (to her and others) would outweigh the costs (to her only), and net social benefits would increase.

The simplest way for a government to induce individuals to consume more is to lower the costs they face, typically by subsidizing the price of the good (e.g. offering free tuberculosis drugs) or by reducing complementary costs such as those associated with travel and waiting. Whatever mechanism is chosen, the size of the net subsidy should be equal to the size of the *benefits* the individual confers on others through her actions. Estimating these external benefits can be tricky, but there is certainly no need to do any calculations on the cost side, including calculations of cost-effectiveness.

Musgrove suggests that if the externality is large we should ‘ask whether the private demand for the service is sufficient to assure realization of (nearly) all the

² Musgrove supports the use of cost-effectiveness in choosing amongst public goods by reference to Hammer [2]. This citation however is amongst the clearer expositions of the limitations of the approach.

potential social benefit.³ What he seems to have in mind here is a situation where subsidizing the good will not increase its supply and consumption. The most likely case of this is a situation in which the supply of the good is fixed. But in this case (where the cost of additional supply is very high — this is what fixed supply means) it is not socially beneficial to increase consumption. The cost is so high that even though total benefits are larger than private benefits, at the margin they are smaller than the extra cost of production. The only effect of a subsidy then is to transfer wealth to the consumer, but not to increase the benefits of others. This may or may not be desirable on equity grounds, but it has no impact on efficiency, nor on the irrelevance of cost-effectiveness.

3.3. Insurance market failure

Many medical needs are uncertain, and individuals seem to prefer to reduce the risk they are exposed to from these sources. Such risk reduction can often be achieved through formal or informal insurance markets. However, for various reasons mainly associated with asymmetric information, insurance markets sometimes do not work efficiently.³ The absence of well functioning insurance markets is most obvious, and most costly, when the risks faced are large and of relatively low probability. Thus, insurance against catastrophic costs (which we assume are incurred with low probability) is likely to be most highly valued by consumers. If insurance policies to cover these risks are absent, there is good reason for public intervention, as Musgrove recommends.

It is important to acknowledge however that it is not necessarily desirable to insure against all large costs. Indeed, ‘ideal’ insurance is about spreading financial risk, but not about subsidizing the price of medical care (at the margin). For example, suppose there is a small chance that an individual living in a poor country will lose a leg. One response to such an event is to send the person to a rich country to have a virtually fully functioning prosthesis constructed and fitted, returning her to more or less full health. The cost of this procedure is very likely to be catastrophic, especially considering the individual’s income. Should this cost be insured against? The simple answer is that, if the benefit to the individual is greater than the cost (independent of who pays for the medical intervention), then it should be covered. If it is not however, the cost of treatment should not be insured against. The individual should still be insured against the loss of welfare associated with her injury, but this is smaller than the cost of treatment.⁴

³ See Jack [3] chapter 5 for a review of health insurance market failures.

⁴ There is a link here with the use of privately borne cost-of-illness measures that are sometimes used to estimate the benefit of reducing disease. The one difference is that such measures are nearly always lower bounds on actual benefits: in the case of uncertain future illness, an insured individual who chooses an expensive treatment cannot be inferred to receive benefits at least as large as the costs, exactly because she is not incurring them herself.

Clearly then it is not entirely accurate to say that ‘costs matter in themselves’ (Musgrove [1]). What matters is the relationship of costs to benefits in determining whether a medical intervention with a large cost should be covered. Similarly, cost-effectiveness, or average cost, does not provide the necessary information for deciding if it is ‘worth’ insuring against a particular medical intervention.

4. Equity

Notions of equity used by health policy analysts include equality of health outcomes, equality of access to health care, and equality of treatment, amongst others. Implementing each of these notions is difficult, especially when one asks if and how goals of equality of education, sanitation, food quality, exposure to physical abuse, and any other aspect of life should be treated concurrently. Taking a health equity perspective, Musgrove examines how concerns over horizontal equity, vertical equity, and poverty gel with cost-effectiveness.

4.1. Horizontal equity

The notion that people in similar situations should be treated similarly has some intuitive appeal in terms of fairness. It can be interpreted as a judgement that a move from a vertically equitable (indeed, equal) situation to a vertically inequitable one, as would happen when two similarly placed individuals are treated differently, is undesirable. The simple observation that providing the same cheap (i.e. cost-effective) intervention to similarly placed individuals can be interpreted as treating them equally of course tells us nothing about which intervention we should in fact prefer. This depends, as above, on the benefits of the interventions.^{5,6}

4.2. Vertical equity

A natural interpretation of vertical equity in health might be that individuals with greater needs should be provided more health care. In fact, however, this is really an efficiency argument for the allocation of resources, since having greater ‘need’ is another way of saying that the benefits of care are large. Then the rule of directing resources to those with greater health needs is equivalent to one directing them to those for whom the net benefits of intervention are greatest.

⁵ There are some cases where horizontal equity may not be desirable. The usual example from social choice theory is the case of two people in a life-boat with enough food for only one to survive. Any horizontally equitable treatment of the two will see both die, but an inequitable treatment allows one to live.

⁶ To sensibly invoke horizontal equity considerations, even abstracting from problems like that of the previous footnote, one must always start with two individuals in identical situations. Musgrove’s example in his Fig. 2 considers two individuals in different circumstances, so it is difficult to know how to interpret it.

Discussions of vertical equity are doomed to circularity and confusion unless one uses the general well-being of individuals to rank them, instead of health specific notions of need or burden of disease. At the simplest level, this means accounting not only for the effects of interventions on the health status of individuals with different disease burdens, but also for the costs, and by whom they are borne.

The easiest way to see this is by considering Musgrove's example illustrated in his Fig. 3. The idea is that people are afflicted by various diseases, which impose a range of burdens (say in terms of years of healthy life lost). Assuming the individuals are otherwise identical (i.e. they have the same money incomes, etc.) then those with the higher disease burdens can be considered worse off than those with the smaller burdens. Thus, there is a vertical distribution of well-being in the population, and if we are concerned with vertical equity, we wish to redistribute well-being from those who have more of it to those with less.

A straightforward way to do this is to just take money (or any other transferable resource) from those with small burdens and give it to those with high burdens. But suppose we are constrained to redistribute through the provision of medical care (financed, say, by a uniform tax on individuals). Then the fact that the interventions for the diseases have different cost-effectiveness measures means that one unit of health (e.g. a year of life) cannot be transferred from a person with one disease to one with another. Denying a unit of health to an individual with a highly cost-effective intervention allows somewhat less than one unit of health to be delivered to an individual with a less cost-effective intervention. However, this has no impact on the direction of desired redistribution — funds should be spent on the individuals with the highest disease burden (i.e. those who have the lowest well-being).

The only implication of diseases having interventions with different cost-effectiveness measures is that restricting the means of redistributing well-being to the provision of medical care is inefficient. Badly-off individuals would be made better off if they were given the money instead of the same-cost medical care, precisely when medical care is not very productive. But this is a familiar result from undergraduate microeconomics — cash transfers are more efficient than transfers in kind.⁷ Again, measuring the cost-effectiveness of alternative interventions provides no guidance for judging the vertical equity properties of policies.

5. Summing up

The classic trade-off in economics is that between efficiency and equity: in a second-best world, transferring resources from Peter to Paul reduces the incentives of both to create wealth.⁸ There are also trade-offs between different sources of

⁷ One reason in-kind transfers might be preferred is their targeting properties. If the government offers a dollar to all those claiming to have an illness, the number who claim it will be higher than if it offers free medical treatment for the disease.

⁸ Peter creates less because some of what he makes is taken away, and Paul creates less if he knows his transfer will be reduced as a consequence.

inefficiency: subsidizing consumption of a good with a positive externality requires revenue, and if a country's tax system is highly distortionary then implementing a subsidy large enough to fully correct the externality may be undesirable. Nowhere however, does the average cost or cost-effectiveness of provision of a good or service (including health) enter the prioritization process.

When deciding on the desirability of public intervention, a sequential decision tree (such as that used by Musgrove) does not seem necessary in most cases — that is, it does not matter in which order the analyst examines the potential efficiency and distributional impacts of government policy. For example, consider an uncertain, rare, and contagious disease with expensive treatment. If an insurance market does not exist for the treatment, then the government might intervene to correct the market failure (perhaps, but not necessarily, through public insurance). In addition, because the disease is contagious, even if an individual is insured against the costs of treatment, (s)he may consume less than the socially optimal treatment. Treatment costs should then be subsidized to correct the externality. Conversely, subsidizing the good to correct the externality alone would leave the individual exposed to some risk, so reforming the insurance market to improve the allocation of risk would continue to be warranted.

In making equity judgements regarding specific health interventions, the primary issue is the incidence of *net* benefits (including the financing costs) stemming from the provision (or subsidization) of a particular health good. It is important to be explicit about the comparison being made however: relative to the status quo, a pro-poor health intervention may have a positive effect on equity, but there may be other interventions (for example the provision of local public goods like sewers in poor neighborhoods) that improve the lot of the poor even more. The average costs or cost effectiveness of these alternative interventions may vary widely, but they are not necessarily correlated with the size or distribution of net benefits accruing to individuals.

References

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