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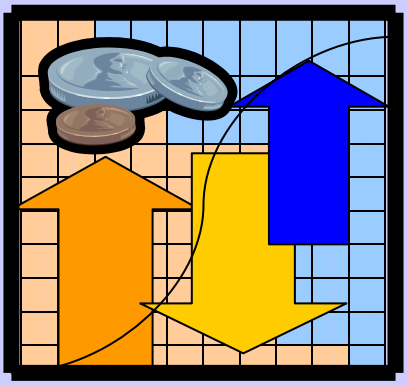

Clarifying efficiency-equity tradeoffs through explicit criteria, with a focus on developing countries

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Clarifying efficiency-equity tradeoffs through explicit criteria, with a focus on developing countries

by

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Abstract

Expenditures on health in many developing countries are being disproportionately spent on health services that have a low overall health impact, and that disproportionately benefit the rich. Without explicit consideration of priority setting, this situation is likely to remain unchanged: resource allocation is too often dictated by historical patterns, and maintains vested interests. This paper explores how prioritization between different health interventions can be rationalised by the use of clearly defined criteria. A number of key efficiency and equity criteria are examined, in particular analysing how potential tradeoffs could be incorporated into the decision making process.

Key words: Priority setting; criteria; efficiency; equity; weighting; developing countries.

1. Introduction

Expenditures on health in many developing countries are being disproportionately spent on health services that have a low overall health impact, and that disproportionately benefit the rich. Without explicit consideration of priority setting, this situation is likely to remain unchanged: resource allocation is too often dictated by historical patterns, and maintains vested interests.

A wide literature has developed on priority setting, for which Hauck *et al.* (2003) offers an excellent overview. Within this literature, a number of researchers have highlighted the likelihood of important trade-offs between efficiency and equity, including Hoedemaekers and Dekkers, 2003; Maynard, 1999; Musgrove, 1999; Nord *et al.*, 1999; Robinson, 1999; Rutten and Busschbach, 2001. This article seeks to add to the debate by showing how explicit criteria can clarify such efficiency-equity tradeoffs. The focus will be on the implications for developing countries, where the need for good resource allocation is particularly pressing, given the more restricted level of overall resources.

Priority setting has its immediate use in health financing systems. For instance, in an insurance-based system, using criteria to prioritize between different health interventions can help define a package of covered services. Other uses of these criteria include helping inform allocation decisions by governments who provide public services; while in more privately oriented systems, such criteria could guide regulation of the private health care market.

Prioritizing between health interventions, whatever the health financing system, is an important first step to approaching an optimal allocation of resources in the health sector, and using the criteria discussed in this paper can aid this prioritization process. But it is essential to stress here that this paper is primarily limited to the initial step of prioritization between health interventions. The best policies and actions to promote these priorities within different kinds of health financing systems are a further step that is beyond the scope of this paper. See, for instance, Musgrove (1999) for a discussion of what should be publicly as opposed to privately financed. The subsequent section will discuss certain important criteria that should be considered when choosing between health interventions and services in developing countries. This is followed by an illustration of how tradeoffs between efficiency and equity could be accounted for in priority setting. Selected experience in explicit prioritization of health interventions are also discussed in the text.

2. Efficiency and equity criteria to guide priorities

When determining what will be financed from a given amount of resources, the overall objective should be to ensure that it is comprised of health interventions that will maximize the benefits to society, whilst also accounting for the distribution of these benefits and other equity concerns. That is, resource allocation of health interventions should be as efficient and equitable as possible. There will be, however, occasions when a trade-off exists between these two important goals, as we shall see in this section. Table I introduces the criteria that will be discussed in this paper:

Table I: Key criteria for prioritizing between health interventions

Efficiency criteria	**Relation to specific health intervention**
Cost-effectiveness	How cost-effective is the intervention?
Further considerations: external impacts of the disease, non-health outcomes (cost-benefit analysis).	
Equity criteria	**Relation to specific health intervention**
Horizontal equity as "equal treatment for equal need"	Do all individuals with equal need have the same access to the intervention?
Vertical equity: *severe health conditions*	Does the intervention particularly benefit those with severe health conditions?
Vertical equity: *poverty reduction*	Does the intervention particularly benefit the poor?
Further considerations: rule of rescue, significant positive impact on an individual's health, equality in health over a lifetime, collective versus individual responsibility.	

2.1 Efficiency Criteria

Efficiency here is defined as maximizing the overall health level of society from a given resource constraint. That is, the perspective is limited to health and not a broader perspective that also accounts for other aspects of utility.

COST-EFFECTIVENESS

As an initial step, one might be tempted to inspect immediately a country's health problems as measured, for instance, by the loss of life years or disability-adjusted life years, DALYs (Murray, 1994), and then give preference to those health services that address these health problems in decreasing magnitude of loss. However, in doing so, one may well prefer health services that involve very high costs (Bobadilla *et al.*, 1994). In applying this preference ordering, for instance, to the resource constraint of a package of health services, the result is likely to be a package of services that is not very efficient. Therefore, it is preferable to relate costs to health gains, as we can then see in greater clarity what level of investment (cost) is required by different or even competing health services in order to secure an additional DALY (i.e. as a measure of effectiveness). This refers to *cost-effectiveness* as a criterion for the selection of health services.

Cost effectiveness is an instrumental tool concerned with allocative efficiency *within* the health sector. Specifically, given a fixed budget, a package of services comprised of only the most cost-effective interventions would ensure the maximum possible health benefit for the population concerned. Indeed, numerous examples in the literature on cost-effectiveness demonstrate how important this criterion can be;

showing considerable life years gained if resources are reallocated from cost-ineffective to cost-effective interventions (see, for instance, Tengs, 1997).

This significant potential of cost-effectiveness analyses (CEAs) to improve efficiency in terms of health gains has inspired a number of attempts to establish basic or essential packages of health services in developing countries. Cost-effectiveness has also played an important role in strategic prioritization decisions in high-income countries, and even in establishing cost-effectiveness "league tables" (Drummond and Torrance, 1993).

Cost-effectiveness in practice

Whilst using CEAs can improve efficiency, it is important to note that the analyses have generally substantive informational requirements. Thus in practice policy makers, particularly in developing countries, may want to make use of CEAs already undertaken in other settings as well as their own. But CEAs are, to a certain degree, context-specific, with the consequence that they are not always generalisable across different settings. This context-specificity of CEAs, coupled with a number of methodological issues and broader theoretical concerns of CEA, need to be carefully addressed if cost-effectiveness is to be an accurate criteria for improving the efficiency of health intervention prioritization.

Perhaps the most important methodological issue is the choice of comparison programme. Existing cost effectiveness studies generally use the status quo as the comparison programme against potential interventions. That is, they use the existing mix of interventions in that particular setting (such as a particular national health system, or at a more decentralized level). But in doing so, this renders the estimated cost effectiveness ratio (the principle measure of the cost-effectiveness of an intervention) inappropriate for settings with a different existing mix of interventions, and importantly it "ignores the question of whether current interventions themselves are cost-effective" (Hutubessy *et al.*, 2002: 3). The World Health Organization (WHO) generalised CEA approach provides a solution to this problem, by using a common reference point of zero intervention, thus making estimated CE ratios more generalisable across settings (Murray *et al.*, 2000). Indeed, this approach has been recently developed and applied to selected health interventions in the WHO-CHOICE project (see the boxed text below).

Other variations in the methodology used for CEAs can affect a CEA's generalisability, especially the choice of discount rate, the method of estimating utility values for health states and the range of costs and consequences considered (Drummond and Torrance, 1993). If any of these vary markedly across interventions considered for a basic package, cost-effectiveness estimates will not be comparable. However, most CEAs consider a number of discount rates and a range of costs and consequences in sensitivity analysis. Further, meta-analyses provide a more generalised result for any specific intervention, by combining the results of different cost effectiveness studies into a single measure of the cost-effectiveness of that particular intervention.

As well as methodological variation, differences across settings can affect the generalisability of results (Drummond and McGuire, 2001), such as differences in basic demography and the epidemiology of disease. For instance, the use of impregnated mosquito nets may only be cost-effective if the prevalence of malaria in that setting is high and if there is a high proportion of young children. On the cost

side, differences in economic conditions - such as variations in the relative and/or absolute price of drugs - can affect the costs and thus cost-effectiveness of an intervention. Inadequate health infrastructure and human resources, and variations in clinical practice can also affect generalisability. For instance, if important diagnostic facilities are either unavailable or there are long waiting times for use of such facilities, then certain treatments may be undertaken without a precise diagnosis, effecting the cost-effectiveness of such interventions. And even alternative incentive mechanisms can be important. For instance, certain fee-for-service provider payment systems are likely to lead to a higher number of drugs prescribed and at an earlier stage than under a capitation system, which could result in such drugs being used in inappropriate circumstances and thus affect the overall cost-effectiveness of the health programme. Further, political and cultural impediments, such as resistance to the provision of free condoms, can affect the effectiveness of a programme, at least in the short run.

Two more fundamental theoretical objections levelled against cost-effectiveness analysis are that many interventions have non-constant marginal costs, or they are not easily divisible (violating the assumptions made in CEAs), thus making questions of scale potentially important. For instance, the cost-effectiveness of including opthalmological services in a community based health insurance package will depend on the number of persons requiring treatment, as the cost of treating one to twenty patients per week would be approximately the same price. However, for prioritization of health intervention decisions at the national level, the target population is likely to be large enough to ensure that fixed costs do not significantly affect the estimated CE ratios, and changes in the scale are unlikely to be so small as to cause problems of indivisibility.

These issues demonstrate that whilst the criterion of cost-effectiveness can have a major impact on improving efficiency, it is not a precise tool. Thus it is recommended that broad categories of cost effectiveness (such as very cost effective, cost effective and not cost effective) be used, rather than attempting to distinguish interventions with minimal differences in cost-effectiveness. Indeed, this was the approach taken in the 2002 World Health Report (WHO, 2002). This is especially important because other factors such as external impacts (spillovers) of a disease and non-health outcomes may also affect efficiency considerations. These are discussed further below.

Further considerations

EXTERNAL IMPACTS (SPILL-OVER) OF A DISEASE

There may be benefits of treatment and disease control that go beyond the direct impact on the treated individual. That is, there may be a divergence between the private impact on that individual, and the overall impact on society: a spill-over effect. TB treatment is a case in point: left to the private market, TB treatment would probably be provided below the optimum, as external beneficial impacts on individuals other than the treated individual would not be taken into account. Ideally, CEAs should incorporate such external impacts in the measure of effectiveness.

NON-HEALTH OUTCOMES

Whilst CEA can be adapted to incorporate external impacts, in its typical form of a health effect (such as DALYs) being the effectiveness measure, it is by definition limited to valuing only health outcomes. This is most limiting if the policy-maker is in the position to decide how much to allocate to the health sector relative to other demands on the nation's resources. For that purpose, cost-benefit analysis (CBA) – where health effects are transformed into monetary values – and related methods would be necessary to determine whether the amount of funds allocated to the health sector should be increased (or decreased) relative to alternative uses of funds.

And whilst the scope of this paper is limited to addressing criteria for priority setting *within* the health sector, non-health outcomes can still be important. For instance, if two health interventions have the same cost effectiveness ratio but one gives much greater productivity gains, then that intervention might be preferred, all else being equal. Other potentially important non-health outcomes could be associated with decreases in criminality (as with certain mental health interventions) or gains in time (as with health infrastructure investments). CEA cannot formally account for such factors, whereas CBA and related methods can. However, it is important to note here that CBA is often seen as being less acceptable to decision-makers in the health sector, because it explicitly places a monetary value on health. Further, it has been much less widely applied to health interventions, which limits its practical usefulness. Still, the policy-maker may be compelled to also consider non-health outcomes such as productivity when trying to prioritize between interventions. For an in-depth discussion of the relative virtues of CEA and CBA, the reader is referred elsewhere (Garber, 2000; Kenkel, 1997).

WHO-CHOICE

The WHO-CHOICE project provides cost-effectiveness estimates for an increasing number of health interventions for 17 world sub-regions, chosen on the basis of similar epidemiological profiles and health systems to help ensure better generalisability of results across settings (WHO, 2002; Hutubessy *et al*., 2003). In this way, it is seen as a response to context specific country analyses on the one hand (which lack generalisability), and global sectoral cost-effectiveness studies, such as the World Development Report 1993 (WDR, 1993), on the other hand (which can only give very general guidelines on the cost-effectiveness of different interventions).

As well as grouping countries in sub-regions on the basis of similar epidemiological profiles and health systems, WHO-CHOICE ensures better generalisability of results through its use of the methodology of the WHO generalised CEA approach. External impacts and non-health outcomes are incorporated, although only to a limited extent. The former is modelled by analysing how interventions can alter the risk of developing diseases other than the primary disease for which the intervention is intended. For non-health outcomes, time gains from improved access to water and sanitation are reported, although they are not directly incorporated into the effectiveness measure (WHO, 2002).

Efficiency criteria summary

Using cost-effectiveness as a criterion helps ensure that interventions are prioritized in a way that maximizes health gains from a given resource constraint. This optimizes efficiency as defined in this paper. However, context specificity, variations in methodology between CEA studies mean that cost effectiveness estimates are not precise. External impacts and non-health outcomes may also be important. Thus, as mentioned earlier, it is recommended to limit the use of cost-effectiveness as a criterion to define broad categories of cost effectiveness, rather than precise lists of interventions.

2.2 Equity criteria

Prioritizing interventions solely on the basis of efficiency criteria is unlikely to optimize the welfare of society, because of people's concerns for equity and the potential tradeoffs between efficiency and equity. In this section, we introduce horizontal and vertical equity criteria, highlighting likely tradeoffs with efficiency. The horizontal and vertical equity criteria given in this section are evaluated in terms of their ability to promote:

- *Reduced inequalities in health status between individuals*, under the constraint of there being no "levelling-down" of any individual's health to reduce inequalities. This is consistent with egalitarianism (Williams and Cookson, 2000).
- *Favouring of the most disadvantaged*. This is consistent with Rawls' theory of justice, utilitarianism under conditions of diminishing marginal utility, Sen's theory of equalising people's capabilities, and Dworkin's combination of the no-envy principle with the principle that justice requires compensating people for their disabilities (Williams and Cookson, 2000).

HORIZONTAL EQUITY

A frequent interpretation of equity is equal treatment for equal need, or *horizontal equity*. Here, equal need is interpreted as equal need in terms of illness and initial health status (for a discussion of the alternative definitions of need, see Wagstaff and van Doorslaer, 2000). For example, horizontal equity is achieved when all patients whose health status deteriorates because of a severe malaria episode effectively receive equal treatment in order to restore their health status. Another example is when all women in need of emergency obstetric care receive equal treatment for this need.

Yet, for a number of reasons, notably differential financial and geographic accessibility to health care, this is unlikely to be the case. In the case of a severe malaria episode, poorer individuals may not be able to afford the treatment if out-of-pocket payments are required. Thus horizontal equity considerations strongly indicate that fees for the poor should be subsidised, so to help equalise treatment. In the case of emergency obstetric care, women living in remote rural areas may not have sufficient access if hospitals offering this service are only available in urban areas,

because of high travel costs. In this case, outreach services to such rural areas may thus be preferable to only providing hospital-based obstetric care, even if it is a less efficient option, again because it helps equalise treatment for an equal need. In both cases, inequalities in health are reduced, and this is often by benefiting in particular disadvantaged groups.

However, the horizontal equity criterion, whilst important, is not sufficient in addressing inequalities in health and favouring the most disadvantaged. Most importantly, it gives little guidance on how to define priorities when various population groups show different needs, and thus is less useful in comparing health interventions for different illnesses. Thus horizontal equity is complemented with *vertical equity* considerations (literally, unequal treatment for unequal need), which typically aids decisions on how to deal with the needs of different population groups.

VERTICAL EQUITY

In this paper, we focus on two important vertical equity criteria: severe health conditions and poverty reduction. These criteria deal with two of the main broad groups with greater needs: the sickest and the poorest.

(I) SEVERE HEALTH CONDITIONS

It may well be desirable on equity grounds to reorder priorities in preference of interventions combating severe health conditions, that is, conditions having a large burden of ill health on an individual. Individuals suffering from such conditions have a greater need for health care, since they have a worse health status. Such interventions, though, are not always particularly cost effective, as certain severe health conditions can be expensive to treat, and because treatment may not always be able to ensure a full recovery to perfect health. This is the case with palliative care, as well as more complicated procedures such as transplantations and heart surgery. In contrast, certain interventions may be cost effective but are treating less severe health conditions.

Justification of giving preference to interventions that target severe health conditions, even if they are not cost effective, can be made in terms of favouring the most disadvantaged in terms of health: for instance, with a diminishing marginal utility of health, an improvement in health from a severe health condition is valued more highly by individuals than the same size improvement in health for a less severe condition. Indeed, empirical findings have suggested that people seem to tolerate lower levels of cost-efficiency for those interventions for individuals with a higher burden of illness (Nord *et al.*, 1999). It can also be justified in certain cases in reducing inequalities in health. This would be the case for interventions that enable full or near full health recovery, although not for interventions that only give slight improvements in an individual's health status.

(II) POVERTY REDUCTION

Whilst the criterion of horizontal equity does stress that one should ensure that the poor receive equal treatment for equal need, policy makers may want to go further and

give preferential treatment to the poor. This is because they have in general a greater need for support than the non-poor, due to their lower (income, and probably health) starting point (McIntyre and Gilson, 2000). Such preferential treatment is, as with the criterion of severe health conditions, justified in terms of favouring the disadvantaged (although this time the disadvantaged are defined here in terms of wealth and income). Inequalities in health may well also be reduced, if the poor have on average lower health status than the non-poor.

Thus greater priority should be given to interventions that particularly benefit the poor, such as nutritional services. This may still be the case for treatment of interventions that are not even particularly cost effective, such as more advanced treatment of trypanosomiasis (sleeping sickness), a disease which is often most prevalent amongst the poor (treatment of all patients with eflornithine had an estimated incremental cost of $166.8 per DALY gained in the early-1990s, as compared with $8 per DALY gained for using solely melarsoprol as the treatment. See Politi *et al.*, 1995, for further details).

The criterion of poverty reduction is especially relevant in developing countries where there are insufficient methods of wealth transfer from non-poor to poor, and an appropriately designed package of services could therefore compensate for the lack of alternative transfer mechanisms. It is worth noting here, though, that many cost-effective interventions are also likely to target the poor, as many diseases afflicting the poor can be combated by cheap and effective primary health care measures.

Further considerations

Whilst horizontal equity and the vertical equity criteria of severe health conditions and poverty reduction capture to a large extent concerns with inequalities in health and favouring the most disadvantaged, policy makers may still be concerned with other equity considerations in prioritization decisions, including:

RULE OF RESCUE

The principle of the rule of rescue is that society and each individual has the ethical duty to do everything possible to help those in immediate life-threatening distress, irrespective of how costly or how small the benefit is (Hauck *et al.*, 2003). Note, though, that it is equivalent to giving first preference to *the most* severe health conditions, notably emergency care for life-threatening illnesses.

SIGNIFICANT POSITIVE IMPACT ON AN INDIVIDUAL'S HEALTH

There may be certain cost effective interventions that are highly cost effective because they entail a low cost but at the same time generate only a small health gain. Such interventions do little to reduce inequalities in health, and so a policy maker might decide to give greater priority to those interventions that have a significant positive impact on an individual's health, even if they are not particularly cost effective. Note, though, that for such interventions to have a significant health impact, they will be combating (at least relatively) severe health conditions.

EQUALITY IN HEALTH OVER A LIFETIME

One can also look at reducing inequalities in health over the perspective of a lifetime, in that everyone should be entitled to some normal length of healthy life, or "fair innings" (Williams, 1997. See also Daniels, 1985). The implication of this is to favour interventions that target those less likely to reach this fair innings, notably the young, the permanently disabled and the poor. Favouring the latter two groups is consistent with the implications of the severe health conditions and poverty reduction criteria respectively. Favouring the young, though, is not directly suggested by these vertical equity criteria or by horizontal equity as defined. However, interventions favouring the young will most probably be cost effective (since the number of life years gained is likely to be high). The criterion does suggest, though, that the age-weights inherent in DALYs are not appropriate, since they place more weight on working age individuals than those less than the working age.

COLLECTIVE VERSUS INDIVIDUAL RESPONSIBILITY

Horizontal equity, severe health conditions, poverty reduction and the other equity considerations discussed result in giving priority to interventions that favour the most disadvantaged and/or reduce inequalities in health. However, society might decide that these equity concerns should be qualified for illnesses that are the result of voluntary behaviours. Thus if an individual is seen by society as being directly and uniquely responsible for his/her illness, then related interventions should receive lower priority. That is, the issue is whether particular illnesses are a collective or an individual responsibility (as discussed, for instance, in Van de Gritten and Kasdorp, 1999). One example may be smoking, with society deciding, for instance, to let the patient contribute significantly to the cost of the treatment for cancers caused by smoking.

Equity criteria summary

The focus of this equity criteria discussion has been on horizontal equity and two criteria of vertical equity: severe health conditions and poverty reduction. These criteria result in prioritization of interventions that favour the disadvantaged and/or reduce inequalities in health. Other criteria that either addressed different equity concerns or had a degree of overlap with horizontal equity, severe health conditions or poverty reduction were also highlighted. By considering equity as well as efficiency criteria, policy makers will come much closer to satisfying the important values of their societies than by considering efficiency alone. An example of how one could incorporate both equity and efficiency criteria in prioritization decisions, is the subject of the next section.

3. Reflecting differences in the relative importance of efficiency and equity criteria: an illustration

To be able to incorporate the efficiency and equity considerations discussed in the last section in prioritizing between health interventions, the relative importance of these criteria needs to be ascertained. In this section, we give an example of how one could reflect differences in the relative weights given to different criteria, and how this can

effect prioritization decisions. We focus in particular on the criteria of cost effectiveness, severe health conditions and poverty reduction.

In this illustration, we take five interventions for different health problems in a low-income country context:

1. Treatment of multi-drug resistant tuberculosis (TB).
2. Quinine for complicated malaria cases.
3. Oral rehydration therapy (ORT) for minor diarrhoeal ailments.
4. Inpatient care for acute schizophrenia.
5. Manipulation and plastering for simple fractures.

These are compared in terms of how they rate in terms of cost effectiveness, severe health conditions and poverty reduction. Note that because horizontal equity in this paper is defined as when there is equal treatment for equal need (see the precise definition used in section 2.1) it does not effect priority decisions between these five interventions. However, it retains its relevance here in secondary analysis of differential treatment amongst population groups *within* any one of these interventions. For example, it cannot help prioritize between treatment for multi-drug resistant TB and treatments for other illnesses, but it can highlight horizontal inequities if some of these TB-infected patients do not receive appropriate treatment whilst others do.

The first step is to determine how each of these interventions scores in terms of the efficiency and equity criteria used. The number of categories in this example for cost effectiveness (very cost effective, cost effective and not cost effective) and severe health condition (very severe, severe and not severe) is three. Two categories are specified for poverty reduction (a positive or neutral effect). Note that the scores given in the table are only for illustrative purposes, although they are based on broad evidence (for instance, WHO-CHOICE estimates of cost effectiveness):

Table II: Comparison of interventions for different health problems

Intervention:	Score for criteria of:		
	COST EFFECTIVENESS	**SEVERE HEALTH CONDITIONS**	**POVERTY REDUCTION**
Treatment of multi-drug resistant TB	Cost effective	Very severe	Positive
Quinine for complicated malaria cases	Very cost effective	Very severe	Positive
ORT for minor diarrhoeal ailments	Very cost effective	Not severe	Positive
Inpatient care for acute schizophrenia	Not cost effective	Severe	Neutral
Manipulation / plastering for simple fractures	Very cost effective	Not severe	Neutral

It is assumed here that: maximum (1) and minimum (0) scores are equivalent across different criteria. Thus, for example, "very cost effective" (for cost effectiveness), "very severe" (for severe health condition) and "positive" (for poverty reduction) all achieve a maximum score of 1. Secondly, it is assumed that category intervals are linear. Thus, for example, the difference between "very cost effective" and "cost effective" is identical to that between "cost effective" and "not cost effective".

We continue by defining the prioritization score of a health intervention A, PRS_A, as:

1. $PRS_A = \alpha$ [Equity] + (1-α) [Efficiency]

where the efficiency score is measured here in terms of its cost effectiveness, and equity is further defined as:

2. Equity = β [severe health conditions] + (1-β) [poverty reduction]

This combines both the general weighting given to these efficiency and equity criteria (through the parameters **α** and **β**), and the score of a particular intervention in terms of each of these criteria.

Using this simple framework, we can explore the effect of different weighting options. It is important to note, though, that the weights attached are purely illustrative, as are how each intervention scores in each of the criteria. Here, we reflect three particular weighting possibilities:

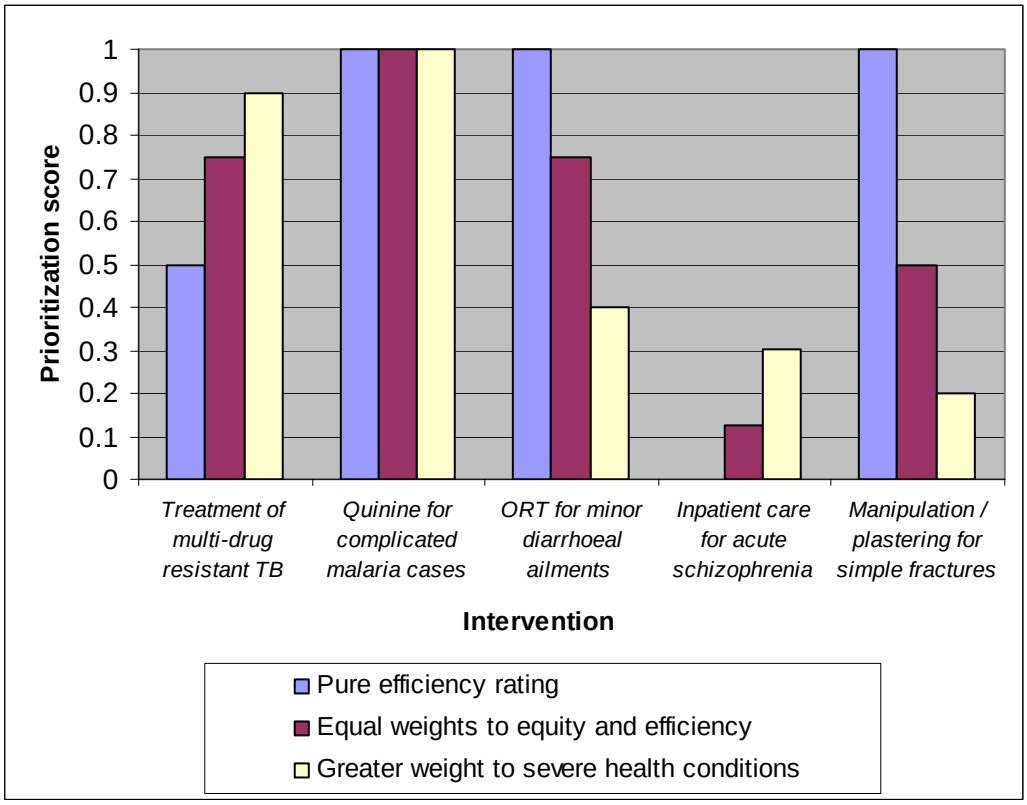
Pure efficiency rating. Here, only the efficiency criterion of cost effectiveness is considered, thus COST EFFECTIVENESS = 100%, SEVERE HEALTH CONDITIONS = 0%, POVERTY REDUCTION = 0%. This is reflected by setting $\alpha = 0$.

Equal weights to efficiency and equity. Further assuming that severe health conditions and poverty reduction are given equal weights, this gives an overall weighting of: COST EFFECTIVENESS = 50%, SEVERE HEALTH CONDITIONS = 25%, POVERTY REDUCTION = 25%. This is reflected by setting $\alpha = 0.5$ and $\beta = 0.5$.

Greater weight to severe health conditions. Further assuming that cost effectiveness and poverty reduction are given equal weights, this could give an overall weighting of: COST EFFECTIVENESS = 20%, SEVERE HEALTH CONDITIONS = 60%, POVERTY REDUCTION = 20%. This is reflected by setting $\alpha = 0.8$ and $\beta = 0.75$.

The implications of these different weighting of efficiency and equity criteria on prioritization decisions are illustrated in figure 1 below:

Figure 1: Impact of different weights for equity and efficiency criteria on prioritization decisions



This example shows the importance of appropriately accounting for both equity and efficiency concerns in prioritization decisions. For instance, whilst treatment of multi-drug resistant TB is only ranked fourth out of the five interventions under pure efficiency considerations, it is given a much higher priority if the policymaker is concerned with the equity criteria of severe health conditions and poverty reduction. Similarly, inpatient care for acute schizophrenia is given more relative importance if the policymaker is particularly concerned with combating severe health conditions.

Whilst this example is purely illustrative, it does show how one can use criteria to guide the priority-setting process. In particular, it enables the policymaker to clearly see the implications of tradeoffs between efficiency and different equity concerns on prioritization decisions. Indeed, if other efficiency and equity criteria are considered important, these can be included, although care should be taken in the different weighting options to reflect overlap between criteria. For instance, if the user wanted to add the equity criteria of the *rule of rescue*, it is evident that all treatments for severe health conditions would score highly on this criterion as well.

No matter how differences in the relative importance of equity and efficiency criteria are incorporated, it is crucial that they reflect the preferences of the individuals affected by such prioritization decisions (see, for instance, Martin and Singer, 2003; and Milton and Donaldson, 2003, on how this could be done). The next section describes experiences of explicit prioritization in a range of settings.

4. Selected experiences of explicit prioritization of health interventions

4.1 Developing countries: basic or essential packages of health services

In 1993, the World Development Report (WDR) specified a basic package of care for low and middle income countries (WDR, 1993). The report focused on services that were highly cost-effective and that also dealt with major threats to health at the population level. The specified package cost $12 and $22 per person per year for low and middle income countries respectively (US dollars, 1994 prices). Both packages contained public health measures as well as personal clinical services. According to their estimates, between 10-18% of the adult disease burden, and between 21-28% of the child disease burden would be eliminated if these minimum packages were applied (see Bobadilla *et al.*, 1994, for further details).

The more recent Commission on Macroeconomics and Health (CMH) 2002 added the criteria of poverty reduction to cost-effectiveness, for those interventions that deal with major threats to health at the population level. These were used to propose an essential set of interventions geared to developing countries (CMH, 2002. Although these criteria were used, they were only *explicitly* stated in an earlier draft of the CMH paper). This basic package corresponded to an average of $38 per person per year in 2007, and $42 per person per year in 2015 (US dollars, 2002 prices), although the estimates should be understood as minima, and are only supposed to cover the major communicable diseases, including HIV/AIDS, maternal and perinatal conditions and micro nutrient deficiencies (see CMH, 2002, for further details).

In both of these specified basic packages, it was noted that quite a number of developing countries would not be able to meet the costs of the basic packages without further significant increases in donor support, as well as adjustments in the allocation of domestic public revenues.

Country specific basic or essential packages have been specified in a number of developing countries, such as in Bangladesh, Cambodia, Colombia, Eritrea, Ethiopia, Ghana, India, Indonesia, Kenya, Mauritania, Tanzania, Turkey, Uganda and Zambia (Liu, 2003). However, not all of these countries have actually implemented such packages. Tarimo, 1997, gave examples for the low to mid-income countries of Bangladesh, Zambia, Mexico and Colombia. Specific basic packages were evident, with the focus being on rural or developing populations and the most common disease areas, and not on specific health interventions.

4.2 Developed countries: exclusions, highest priorities

Perhaps the most well known attempt to establish a package of care based on criteria was the Oregon Medicaid plan. It began as a list of interventions prioritised entirely by cost-effectiveness ratios, although this was quickly abandoned because of criticism of the list. Revisions based on public consultation, research evidence, the Commission's own judgement and even the federal government's involvement to ensure no discrimination against disabled people have since been incorporated (Ham, 1997), showing that prioritization on cost effectiveness alone did not fully reflect societal preferences. Indeed, even the general concept of excluding health services has

often appeared deeply unpopular, as shown by a European survey on rationing in health care (Mossialos and King, 1999).

A similar but less politically sensitive use of such criteria is to help set co-payment schedules for social health insurance packages of services. This was the case, for instance, in the Federation of Bosnia and Herzegovina, where priorities to different population groups or types of interventions were reflected in variations in the co-payment rates (between 10-95%). Vulnerable groups and preventing high degrees of disability were given particular priority (Hrbac *et al.*, 2000). This shows how the use of criteria can be a useful tool for the management or purchase of services, and can impact on the structure of demand for health care. This latter approach is most common in systems that create an explicit insurance mechanism and/or separate financing from provision.

In Norway, the Lönning Commission created a list based primarily on how severe the health condition was, defining different levels of importance. These were: 1. 'life-saving' and essential, 2. 'treatments in less severe situations where withholding them would be harmful', 3. 'treatments for chronic disorders with a proven benefit', and 4. 'treatments with unclear benefits that can be marginally effective.' A fifth no-priority level was used to exclude services that are of no proven value or aren't needed (Calltorp, 1999). It should be noted, though, that the report has been criticised, in particular for the openness of interpretation of severity of disease (Holm *et al.*, 1998). The Swedish Priorities Commission also created a list based primarily on how severe the health condition was, but which also incorporated the ethical platform principles of human dignity; need and solidarity; and cost-efficiency. The latter, though, was only in comparisons of methods for treating the same disease (Calltorp, 1999).

In the Netherlands, the Dunning Committee suggested four important criteria, which should be considered in a step-by-step way. These were known as the four "sieves": 1. necessity, 2. effectiveness, 3. efficiency (based on cost-effectiveness), and 4. individual payment (based on individual responsibility) (Ham, 1997). Other prominent examples of using criteria in priority setting decisions include: New Zealand's Core Services Committee focused on broad notions of efficiency and preference to certain population groups (Ham, 1997); the UK's National Institute of Clinical Excellence (NICE) incorporated cost effectiveness and clinical criteria to guide decisions on new technologies and treatment methods (Horton, 1999); the US Preventive Services Task Force used cost effectiveness and estimates of the clinically preventable burden (Coffield *et al.*, 2001); and in Australia cost-effectiveness was used for the reimbursement of pharmaceuticals (Drummond *et al.*, 1997).

5. Conclusions

Important tradeoffs between efficiency and equity can be made more explicit by using clearly specified criteria that reflect both these concerns. By doing so, the implications of placing more or less weight on efficiency and certain equity concerns (such as on interventions combating severe health conditions or that help in poverty reduction) can be discussed in an open, more rational manner. It is important that prioritizing between health interventions is not viewed as a technical solution, since the relative importance of different efficiency and equity criteria is inherently normative. Still,

applying such criteria can help ensure that priority setting decisions clearly account for any tradeoffs between efficiency and equity that exist.

However, a number of important points remain unresolved and should be the focus of any future related research. Whilst the criteria given in this paper clarify some of the most important equity and efficiency concerns, they are not exhaustive. For instance, no criteria have been suggested for situations of rationing between individuals of identical need. And although the vertical equity criteria addressed differential treatment for unequal need, it focused mostly on only two disadvantaged groups (the sickest and the poorest). Furthermore, whilst it was demonstrated how criteria can be weighted to reflect differences in their relative importance, there is no suggestion on what these weights should be. It is believed that the determination of such weights should ultimately be the result of empirical investigations.

Nevertheless, this paper has shown that the priority setting process can be rationalised by using and combining both efficiency and equity criteria. This can perhaps contribute to redressing current imbalances of health expenditures in developing countries, so that limited resources for health are used more appropriately.

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