Priority setting of public spending in developing countries: Do not try to do everything for everybody

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Abstract

Background: Public spending on health care in many developing countries falls short to provide a comprehensive set of essential health services, which indicates the need to target and prioritize resources. However, governments often attempt to provide free services to the whole population, and often spend resources on low-impact services. This results in an inequitable and inefficient use of resources.

Methods: This paper presents a rational approach to targeting and prioritization of public spending, with an application to Ghana. First, interventions were tested against the economic justification for public funding, to define to whom spending should be targeted. Second, resulting interventions were prioritized on the basis of medical and non-medical criteria.

Results: The step-wise approach led to a rank ordering of interventions with a specification whether public spending should be targeted at the whole population or the poor only. Disease control priorities are prevention of mother-to-child HIV/AIDS transmission and oral rehydration therapy to treat diarrhea in childhood, and public funding of these interventions is warranted for the whole population. Case-management of pneumonia in childhood is also a priority but public funding should be targeted at the poor only. Low priorities for public funding are certain interventions to control blood pressure, tobacco and alcohol abuse, be it for the whole population or the poor only.

Conclusion: Governments should not try to provide everything for everybody. This may help health systems to move towards a more equitable and efficient use of resources.

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1. Introduction

Different technical approaches have been put forward in disease control in developing countries, ranging from vertical programs such as the Global Fund for HIV/AIDS, Malaria and Tuberculosis [1], to investments in health systems [2,3]. Although solutions differ, what unites them – while there has been no explicit acknowledgement of it – is the need to target and prioritize public spending. This is especially relevant in countries where funding levels fall much short to provide a comprehensive set of essential health services [4].

However, governments choose to finance a much larger share of health services than would be narrowly
justified by economic criteria and often attempt to provide free services for the whole population. But offering free care to all typically leads to some form of rationing in which better-situated populations often have an advantage. Resources may be excessively concentrated in urban facilities serving the middle and upper classes. The poor, especially those in rural areas, are left with low-quality public services [5–7]. Benefit-incidence surveys detect persistent anti-poor bias in the distribution of public subsidy in health care in sub-Saharan Africa [8]. In addition, resources are often being spent on low impact services such as curative care of non-catastrophic illness. For example, while studies show that investing in primary health care is more effective than investing in specialized health care, allocations to primary care in Ghana have remained behind those allocated to tertiary care [9]. These inequities and inefficiencies indicate the need for a careful use of scarce public resources in health, which could be guided by a more rational approach [10–12].

Developing countries have increasing experience with explicit rationing of health care, as manifested by studies in East Africa, Northern Africa and India [13–15]. Typically, these processes are based on a combination of cost-effectiveness and burden of disease information, but recently many other criteria have also been put forward, including medical criteria (such as treatment effectiveness) and non-medical criteria (such as patient age) [16,17]. Yet, the relative importance of these criteria has not yet been determined in a way that allows a rank ordering of interventions incorporating these different considerations. In addition, research on priority setting generally assumes some form of comprehensive public funding of all health care and thereby ignores the more fundamental discussion on the criteria of state intervention per se.

In response to these shortcomings, this paper introduces a step-wise rationale approach to targeting and prioritization of public spending on interventions (Fig. 1). It combines insights from the economic justification of public funding of interventions to define who should be targeted (step 1), with empirical evidence on the prioritization of those interventions from Ghana (step 2). It thereby builds on earlier work by Musgrove [18]. It argues that, rather than achieving little in a vain attempt to provide everything for everyone, governments could provide significant health benefits to a large number of people by a better targeting (“do not always target everybody”) and prioritization (“do not always provide everything”) of its public investments. The result is a rank ordering of interventions with a specification whether public spending should be targeted at the whole population or the poor only.

![Step-wise approach to target public spending in health.](Image)
The rational approach is applied to Ghana, a country of extreme resource-scarcity. Per capita public expenditure on health in Ghana equalled US$7 per year in 2004 [19], which is less than a fifth than the required US$36 to provide a package of essential health services in a developing country [4].

2. Targeting of public spending

The first step defines to whom public funding of different interventions should be targeted, and is based on the economic justifications of public spending in the health sector [18] as derived from mainstream public economic theory [20].

Because of the presence of market failures in health care, there are some important health-related activities that the public sector must fund for, potentially, the whole population if they are to be provided at all or at socially optimal levels. These relate to public goods and externalities. Public goods are activities that the private sector will not undertake, or will undertake at sub-optimal levels, because users cannot be charged for them. Many public health interventions, such as spraying for malaria control and health information campaigns, are usually considered public goods. Externalities are effects to others than those directly receiving the services. For example, an individual who is treated successfully for a sexually transmittable disease derives benefits from that treatment, but so does the community at large as the risks of transmission to others are reduced. An individual’s willingness to pay for these services may not fully reflect the benefits they generate for society, and public support may be necessary to achieve the optimal level of STD control.

In addition, policy makers may also want to publicly finance health for reasons of horizontal equity, to secure equal treatment for equal need [21]. For example, horizontal equity is achieved when all malaria patients, poor and non-poor, receive equal treatment. However, poor patients 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 subsidized, so to help equalize treatment.

In summary, public subsidies may potentially target the whole population (including the poor and the non-poor1) in case interventions constitute public goods or entail large externalities. If this is not case, public funding of interventions may still be warranted to guarantee equal access to care and should in that case be targeted to the poor. Some other interventions, for example treatment of non-communicable disease of the non-poor, should not be publicly subsidized.

Note that all criteria for public spending are well grounded in the theory of public economics, but require a subjective assessment of its importance, and hence of its need for public funding. For example, passive smoking can be considered as an externality of smoking, but its health effects may be regarded as too minor to justify public subsidy of smoking cessation interventions.

3. Prioritization of public spending

If interventions qualify for public spending – be it for the whole population or the poor only – the next question is how they should be prioritized. It is often proposed to do this on the basis of cost-effectiveness, as this would generate the largest health gains at population level for the available budget [22]. However, it is also acknowledged that cost-effectiveness is only one criterion for priority setting, and many other criteria have been proposed and debated [15–18].

- Societies may want to give preferential treatment to disadvantaged populations because they are in some moral sense more deserving of health resources than others [23]. In general, it is argued that the poor have a greater need for support than less poor sections of the community, due to their lower income and typically lower ‘stock’ of health [24].
- Societies may favor interventions that target severely ill patients on the basis of their greater need for health care, and the diminishing marginal utility of health: an improvement in health from a severe health condition is then valued more highly by individuals than the same size improvement in health for a less severe condition [25].
- For an equal total effect size, societies may favor interventions with a large health impact on a few

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1 In this paper, we refer to horizontal equity as guaranteeing equal access for poor and non-poor people, although it may also refer to guarantee equal access for people in, e.g. remote versus central areas.
individuals compared to those but with a small health impact on many individuals since the former has a greater capacity to reduce health inequalities [26].
- Societies may also have age-preferences because of ethical considerations (“disadvantage the old because they have had their fair innings”) or economic considerations (“advantage the adults because they are more productive”) [27].
- Societies may favor interventions with a relatively low overall budget impact because of affordability considerations.

It is suggested that interventions should be prioritized by taking into account the relevant criteria and their relative importance [15–17].

4. Application of the step-wise approach to Ghana

As a starting point for the application of the step-wise approach to Ghana, we considered the interventions as put forward in the World Health Report 2002 ‘Reducing risks, promoting healthy life’ [28] which reflect strategies to reduce risks and address an important part of the burden of disease in Ghana (Table 1). To answer the question which of these interventions should be publicly financed and for whom, the two steps are discussed in turn.

In the first step, interventions were tested against the justification criteria for public spending. Table 1 lists the interventions and indicates the presence of market failures that prevent the provision of these interventions at socially optimal levels. If interventions entail large externalities or are public goods, the table indicates that public subsidies may target the whole population. For example, population-based interventions such as fortification and law enforcement programs qualify for public spending for the whole population because they constitute public goods, and would not be provided without public funding. Other interventions, e.g. in HIV/AIDS and water and sanitation programs, also qualify to be subsidized for the whole population because they entail externalities in the sense they interrupt disease transmission. A range of other interventions, mainly individual-based and clinical services do not entail market failures but may nevertheless be candidate for public spending if society wishes to subsidize these services for the poor to ensure equal access. The result is a typology of interventions eligible for public funding targeting the whole population or only the poor.

In the second step, we prioritized the interventions on the basis of medical and non-medical criteria through a discrete choice experiment (DCE). In a DCE, respondents choose their preferred option from sets of hypothetical interventions, each consisting of a bundle of criteria that describe the intervention in question, with each criterion varying over a range of levels. The criteria are constant in each scenario, but the levels that describe each criterion may vary across interventions. Analysis of the options chosen by respondents in each set reveals the extent to which each criterion is important to the decision at hand [29]. The DCE included a number of criteria that were selected on the basis of a literature review and discussions with policy makers in Ghana, and were referred to above: ‘cost-effectiveness’, ‘poverty reduction’, ‘severity of disease’, ‘age of target group’, ‘budget impact’ and ‘individual health effect’. All criteria had two levels. An example of a pair of interventions is given in Fig. 2, and 12 pairs of interventions were included in the survey.

The DCE survey was administered during a workshop in Ghana, including 30 health policy makers or people otherwise involved in decision making in health. The results were analyzed using a random effects logistic regression model. Four criteria had significant impact on the choice of intervention (as indicated by its regression coefficients) with its sign in the expected direction. Interventions that are cost-effective, reduce poverty, target severe disease, or target the young have a higher probability of being chosen than others.

![Fig. 2. Example of pair of interventions in discrete choice experiment.](image-url)
Table 1
Targeting and priority setting of public spending

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Targeting of public spending (step 1)</th>
<th>Priority setting of public spending (step 2), composite league table</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Presence</td>
<td>Type</td>
</tr>
<tr>
<td>HIV/AIDS: prevention of mother to child transmission</td>
<td>Yes</td>
<td>Externalities</td>
</tr>
<tr>
<td>Childhood undernutrition: case management of pneumonia</td>
<td>No</td>
<td>–</td>
</tr>
<tr>
<td>Childhood undernutrition: oral rehydration therapy for diarrhoea</td>
<td>Yes</td>
<td>Externalities</td>
</tr>
<tr>
<td>Childhood undernutrition: vitamin A fortification of staple food</td>
<td>Yes</td>
<td>Public good</td>
</tr>
<tr>
<td>Childhood undernutrition: vitamin A supplementation</td>
<td>No</td>
<td>–</td>
</tr>
<tr>
<td>Childhood undernutrition: zinc fortification of staple food</td>
<td>Yes</td>
<td>Public good</td>
</tr>
<tr>
<td>Childhood undernutrition: zinc supplementation</td>
<td>No</td>
<td>–</td>
</tr>
<tr>
<td>Disinfection at point of use</td>
<td>Yes</td>
<td>Externalities</td>
</tr>
<tr>
<td>Improved water supply and sanitation, low technologies</td>
<td>Yes</td>
<td>Public good/Externalities</td>
</tr>
<tr>
<td>HIV/AIDS: mass media campaigns</td>
<td>Yes</td>
<td>Public good/Externalities</td>
</tr>
<tr>
<td>HIV/AIDS: voluntary counseling and testing</td>
<td>Yes</td>
<td>Externalities</td>
</tr>
<tr>
<td>Iron deficiency: iron supplementation</td>
<td>No</td>
<td>–</td>
</tr>
<tr>
<td>Childhood undernutrition: improved complementary feeding</td>
<td>No</td>
<td>–</td>
</tr>
<tr>
<td>Improved water supply and sanitation, high technologies</td>
<td>Yes</td>
<td>Public good/Externalities</td>
</tr>
<tr>
<td>Smoking: brief advice to stop smoking</td>
<td>No</td>
<td>–</td>
</tr>
<tr>
<td>Alcohol abuse: complete advertising ban</td>
<td>Yes</td>
<td>Public good</td>
</tr>
<tr>
<td>Tobacco: excise tax</td>
<td>Yes</td>
<td>Public good</td>
</tr>
<tr>
<td>Tobacco: comprehensive advertisement banning</td>
<td>Yes</td>
<td>Public good</td>
</tr>
<tr>
<td>Safe practice: decreased reuse of injection equipment w/o sterilization</td>
<td>Yes</td>
<td>Public good/Externalities</td>
</tr>
<tr>
<td>Safe practice: decreased unnecessary use of injections</td>
<td>Yes</td>
<td>Public good/Externalities</td>
</tr>
<tr>
<td>HIV/AIDS: antiretroviral drugs</td>
<td>Yes</td>
<td>Externalities</td>
</tr>
<tr>
<td>Alcohol: brief advice to stop drinking</td>
<td>No</td>
<td>–</td>
</tr>
<tr>
<td>Alcohol: reduced sale hours</td>
<td>Yes</td>
<td>Public good</td>
</tr>
<tr>
<td>Cholesterol: population-wide health education through mass media</td>
<td>Yes</td>
<td>Public good</td>
</tr>
<tr>
<td>Cholesterol: individual-based treatment and education.</td>
<td>No</td>
<td>–</td>
</tr>
<tr>
<td>Blood pressure: population wide salt reductions.</td>
<td>Yes</td>
<td>Public good</td>
</tr>
<tr>
<td>Smoking: nicotine replacement therapy</td>
<td>No</td>
<td>–</td>
</tr>
<tr>
<td>Tobacco: clean indoor air law enforcement</td>
<td>Yes</td>
<td>Public good</td>
</tr>
<tr>
<td>Tobacco: nicotine replacement therapy</td>
<td>No</td>
<td>–</td>
</tr>
<tr>
<td>Alcohol: drink drive legislation and enforcement</td>
<td>Yes</td>
<td>Public good</td>
</tr>
<tr>
<td>Alcohol: excise taxes</td>
<td>Yes</td>
<td>Public good</td>
</tr>
<tr>
<td>Blood pressure: individual-based hypertension treatment and education</td>
<td>No</td>
<td>–</td>
</tr>
</tbody>
</table>

* The presence of catastrophic costs is also a justification criterion for public spending, but is not included in the table. It could apply to, e.g., antiretroviral drugs in HIV/AIDS control.

On the basis of these results, we computed a composite index that represents the relative priority of the set of interventions as a function of their characteristics. We mapped the characteristics of the interventions on the levels of the various criteria, and considered the regression coefficients of the particular levels of all criteria from the DCE survey as weights. We then computed a composite index score as the sum of the weights of all criteria levels of an intervention. A rank ordering of all intervention on the basis of this composite index results in a composite league table (Table 1). It shows that the interventions with the highest priority
are prevention of HIV/AIDS transmission from mother to child, and those that treat pneumonia and diarrhea in childhood. Low priority interventions are certain interventions to control blood pressure, tobacco and alcohol abuse. More detail on the DCE survey and the derivation of the composite league table is provided elsewhere [30].

Combining the results of the two analytical steps leads to an interesting typology of interventions. Disease control priorities are prevention of mother-to-child HIV/AIDS transmission and oral rehydration therapy to treat diarrhea in childhood, and public funding of these interventions is warranted for the whole population. Case-management of pneumonia in childhood is also a priority but public funding should be targeted at the poor only. Low priorities for public funding are certain interventions to control blood pressure, tobacco and alcohol abuse, be it for the whole population or the poor only.

5. Discussion

Public spending in developing countries falls short to provide free services for the whole population and the public sector should limit itself to its core tasks. A rational approach as presented in this paper may help governments to achieve best value for their money and from international initiatives such as the Global Fund for HIV/AIDS, Malaria and Tuberculosis. The approach rank orders interventions and specifies whether public spending should be targeted at the whole population or only the poor. This underpins the notion that the public sector should not try to do everything for everybody. This may inform decisions on the choice of interventions when more resources become available, but also to the reallocation of resources within the existing budget [31].

The approach outlined in this paper is hierarchic: a policy maker should first ask whether public funding is justified and to whom and should subsequently rank order the intervention to set priorities. The hierarchy is essential: only because an intervention is cost-effective, it does not necessarily mean that public funding should target the whole population. An example here is case management of pneumonia which is cost-effective but where public funding should be targeted at the poor only. In the absence of a justification to intervene, such services should not be subsidized for the non-poor.

The approach uses two different notions of equity: horizontal equity is defined as a justification criterion for public spending, whereas vertical equity is used in the weighing procedure to prioritize interventions. In other words, poverty may be a reason to intervene to ensure that the poor receive equal treatment for equal need (horizontal equity), and policy makers may want to go further and give preferential treatment to the poor (vertical equity).

Another important rationale for public intervention in health financing, but not included in the two-step approach, relates to the cost of interventions. Some services carry catastrophic costs that cannot be paid by someone who is non-poor, without it making him or her poor, e.g. the cost of antiretroviral treatment in HIV/AIDS. This is often regarded as a reason for public finance but is really a reason for insurance, which can take the form of private or public insurance [18]. However, insurance schemes usually cover a minority of the population in many poor countries, and if insurance is not feasible, public financing of such health services is warranted.

The results of this study are not directly generalizable to other settings, e.g. other countries: the criteria that have been identified as being relevant to priority setting in Ghana may not be relevant to other countries, policy makers in other countries may attach different weights to those criteria, and interventions may have different characteristics in different countries, e.g. in terms of cost-effectiveness, or their ability to reduce poverty. However, the methodological approach is generalizable, and has, e.g. now also been used to guide priority setting in Nepal. The study led to the inclusion of similar criteria as in the present study, but the criteria ‘age of target group’ and ‘health effects’ were found to be more important than ‘cost-effectiveness’ [32].

This study may not lead to direct policy recommendations in Ghana. First, the research is explorative and the interventions considered only establish a small part of those potentially applicable to disease control in Ghana. Second, the research should be embedded in the policy and planning process, e.g. relate to a financial budgeting analysis, to assess the feasibility of implementing the priority interventions. Third, we recognize that a rational approach to priority setting
may only have limited impact on the eventual choice of interventions, and that past spending patterns or pressure of political interests groups influence the way resources are allocated in practice [10–12]. Nevertheless, we believe this information is generally welcomed by policy makers and provide practical suggestions on ways in which the public spending in health care could be better employed.

In conclusion, this paper has proposed a potentially useful rationale approach to public spending by arguing that governments should not try to provide everything for everybody. This may help health systems to move towards a more equitable and efficient use of resources.

References

