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OPINION ARTICLE

Why cost-effectiveness thresholds for global health donors differ from thresholds for Ministries of Health (and why it matters) [version 1; peer review: 1 approved with reservations]

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Abstract

Healthcare cost-effectiveness analysis is increasingly used to inform priority-setting in low- and middle-income countries and by global health donors. As part of such analyses, cost-effectiveness thresholds are commonly used to determine what is, or is not, cost-effective. Recent years have seen a shift in best practice from a rule-of-thumb 1x or 3x per capita GDP threshold towards using thresholds that, in theory, reflect the opportunity cost of new investments within a given country. In this paper, we observe that international donors face both different resource constraints and opportunity costs compared to national decision makers. Hence, their perspective on cost-effectiveness thresholds must be different. We discuss the potential implications of distinguishing between national and donor thresholds and outline broad options for how to approach setting a donor-perspective threshold. Further work is needed to clarify healthcare cost-effectiveness threshold theory in the context of international aid and to develop practical policy frameworks for implementation.

Keywords

Global health, health financing, aid, priority-setting, cost-effectiveness, threshold

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Any reports and responses or comments on the article can be found at the end of the article.

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Introduction

To maximise population health for the resources available, and accelerate progress towards universal health coverage, health systems must make use of evidence to identify which interventions and services to prioritise for investment. Indeed, the last two decades have seen increasing use of evidence-informed priority setting to guide resource allocation decisions in many low- and middle-income countries (LMICs). In 2014, the World Health Assembly Resolution WHA67.23 urged countries to consider the use of Health Technology Assessment (HTA) to inform a range of resource allocation decisions from coverage of medicines in formularies to inclusions in benefits packages.[1] The use of formal priority setting processes and methods has intensified in the past decade.[2] A *cost-effectiveness threshold* is a decision-rule that can be used alongside a cost-effectiveness analysis (CEA) to determine whether an intervention's incremental cost-effectiveness ratio (ICER) - that is, the ratio of the additional costs and benefits of an intervention, compared to the next-best alternative – indicates that it would constitute an efficient (i.e., cost-effective) use of scarce resources in a given context. Cost-effectiveness thresholds have gained greater prominence in academic and policy circles in recent years; however, the use of such thresholds is still nascent in many LMICs, in some cases due to the lack of formal processes and institutions to guide coverage decisions.[3]

This push for the use of CEA and cost-effectiveness thresholds at the national level stands in contrast to methods applied by donors to inform the allocation of Development Assistance for Health (DAH). In recent years, annual DAH has stabilised at around $40bn ($54bn in 2020 including Covid) and represents about a quarter of health spending in low-income countries.[4,5] While some DAH supports research, advocacy, or other activities, the vast majority supports service delivery.[4] While many donors have adopted Value for Money (VfM) frameworks[6] or other forms of assessments, such as cash benchmarking,[7] to our knowledge, few rely substantially on CEA to prioritise their funding allocation to programmes or between countries. The use of explicit decision thresholds by donors is even rarer; with the exception of foundations from the effective altruism movement (i.e., Givewell[8] and Open Philanthropy[9]), we have found none. When such methods are applied, they typically do not consider investments from national decision-makers, which can create issues of fragmentation, lack of alignment with national priorities, displacement of national funds, and duplication of investments.[10]

There is much debate over what cost-effectiveness thresholds are meant to represent.[11–13] For country thresholds, an emerging consensus is that the threshold should: i) reflect national resource availability, and ii) in application, be equal to the opportunity cost of alternative marginal healthcare spending.[12–14] Two papers from Woods *et al.,*[15] and Ochalek *et al.,*[16] provide initial estimates of national thresholds for 182 countries based on this "supply-side" perspective. Some health economists have suggested that donors should align with national cost-effectiveness thresholds.[17]

In this piece, we outline the case for distinguishing between donor and national cost-effectiveness thresholds, both in terms of the theoretical basis for the threshold and the potential benefits of clearer separation. We seek to build on and complement existing conversations on the use of cost-effectiveness thresholds in LMICs.[14–21]

Why cost-effectiveness thresholds for global health donors differ from thresholds for Ministries of Health

In short, we argue that donors and national decision-makers should adopt different cost-effectiveness thresholds from one another because they have different decision perspectives, shaped by the following two factors:

i) **Different resource constraints.** At the country level, the purpose of DAH is to alleviate local resource constraints and increase the fiscal space for health. The broad aim of DAH is to support the provision of health services that otherwise would not be possible. If the (possibly hypothetical) national cost-effectiveness threshold is aligned with national resources, then an (equally hypothetical) donor threshold should be higher, reflecting the additional resources introduced.

ii) **Different opportunity costs due to the global nature of DAH.** Unlike national institutions, which must prioritise their investments within a single country, global health donors may choose between support for health services across many countries. Therefore, a donor's opportunity cost of investing in intervention A in country X is not only intervention B in country X, but also intervention C in country Y. For example, while investing in Covid vaccines for the over 60's in Kenya may represent good value compared with alternative investments in Kenya, it may be more cost-effective to support the roll out of bed nets in Malawi.

Why does this matter?

The lack of clarity around differences in donor and national cost-effectiveness thresholds is indicative of the lack of clarity in the decision perspectives and the roles that different actors have in funding healthcare in LMICs. Despite global health

financing being a multi-billion-dollar sector where rhetoric on evidence-informed priority-setting is commonplace, many donors lack a clear framework for prioritisation. Collaboration between donors and national institutions in countries which receive DAH is often complex, political, and constantly negotiated for both donors and countries. The result is a fragmented system of financial support that impedes national health leaders in their work to develop an efficient and effective health system.[22]

The application of separate cost-effectiveness thresholds that reflect the perspective of decision-makers and donors can help to clarify the roles and responsibilities of national vs international funders of health services in LMICs; in other words, it would create a structure for who-should-fund-what. National institutions could design and fund a cohesive core package of the most-cost-effective services up to their national thresholds and "invite" donors to support a top-up package of the next-most-cost-effective services (see Figure 1). The role of DAH would therefore be *auxiliary*: donors would fund interventions *above* the national threshold, up to their own threshold (we will discuss what this would look like below). In other words, the national cost-effectiveness threshold would represent a *ceiling* for a national payers and a *floor* for donors, below which they would not seek to fund activities in that country.

This approach could address some of the greatest challenges in global health financing.[10] First, it could focus national resources towards funding a core package of the most essential services, which could ensure that funding for the provision of key services is not affected by aid volatility. Second, fragmentation of health financing[23,24] (and resulting duplication) could be reduced by a clearer separation of funding responsibilities. Further, the application of separate cost-effectiveness thresholds can avoid displacement of domestic resources by aid. Greater prioritisation of health interventions from a national perspective could be achieved, especially in designing a core package of most essential services – which can maximise the impact of overall health funding, rather than of funding streams operating in silos. The approach would also empower national institutions to set their own priorities, rather than needing to work within the complex and fragmented financing space created by ad hoc donor support. At present, a significant share of health prioritisation is *de facto* done in donor headquarters and does not necessarily reflect national priorities; which is especially important in countries where the share of DAH in total health expenditure is high. Moreover, in this framework, as domestic finances increase, so might the national health budget and national cost-effectiveness threshold, and health aid is naturally crowded out. Conversely, transition from aid or the ending of specific aid programmes does not disrupt the provision of the most-cost-effective services.

Beyond reforms to within-country resource allocation, clearer frameworks for evidence informed prioritisation could help donors equitably and effectively prioritise investments *between* countries. A clear donor cost-effectiveness threshold would promote the concentration of funding from global health donors in the programmes and contexts in which the
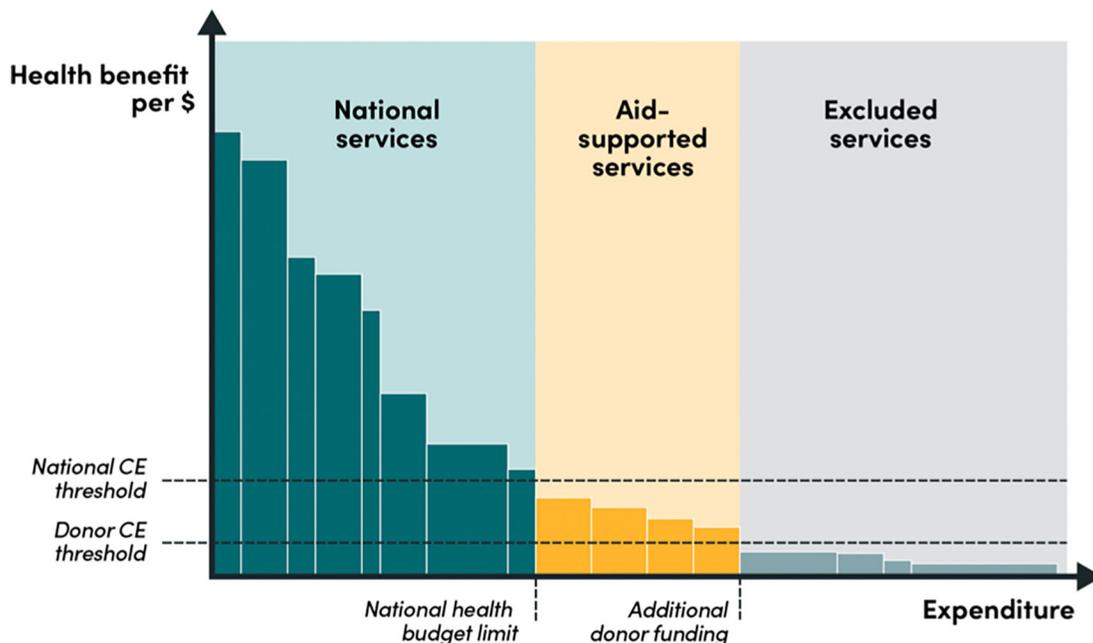

Figure 1. National and donor cost-effectiveness thresholds using the bookshelf metaphor.

greatest health gains can be made with the resources available. This approach is consistent with the ethical position that all health gains should be valued equally, regardless of where occur and how they are produced.

Options for setting thresholds

How might cost-effectiveness thresholds be set to reflect those two decision perspectives?

For national thresholds, methodological approaches to setting a threshold have been discussed extensively elsewhere.[14,25] In 1993, the World Bank suggested income-group-specific thresholds of US$50-200 per disability-adjusted life-year (DALY) averted.[26] These were superseded by the World Health Organisation's Choosing Interventions that are Cost-Effective (WHO-CHOICE) programme, which suggested that interventions with an ICER below 3x or 1x gross domestic product (GDP) per capita could be considered "cost-effective" or "highly cost-effective", respectively.[21] The use of WHO-CHOICE thresholds is now being discouraged because they appear to be too high and do not adequately reflect the resource limitations of LMICs. Indeed WHO health economists note they were never intended to be used in the way they often were.[12,27] Recently, health economists have sought to clarify the theory underpinning thresholds, as we discussed in the introduction, linking it to resource availability and local opportunity costs; with a set of estimates produced for LMICs in two papers.[15,16] It is worth noting that only few countries have defined an explicit cost-effectiveness threshold – for example, the UK and Thailand do, while Austria and Kenya do not.[28]

In contrast, there is almost no literature discussing what a cost-effectiveness threshold could look like from a donor perspective. Drake (2014) outlines a case for a minimum DALY value to guide donor prioritisation.[18] Morton *et al.,* (2017) describe an approach towards subsidising and crowding-in services which are just cost-ineffective from a national perspective, but does not address donor-perspective thresholds.[19] GiveWell uses a benchmark that charity programmes should be expected to provide value at least 10 time greater than cash transfers[29] and Open Philanthropy require a 1000 fold expected return on investment for their (generally higher risk and upstream) investments.[9]

In attempting to set a threshold from a donor perspective, a first question is whether global health donors would all follow a single cost-effectiveness threshold or develop their own, agency-specific threshold. It is tempting to view each donor as having its own decision perspective and institutional mandate and therefore its own threshold. Use of numerous donor-specific thresholds could retain the advantage of improving the efficiency of each donor's allocation between contexts, but the key challenges to coordination with national institutions and other donors would remain. To realise the benefits of improved donor harmonisation outlined in the section above, a shared donor threshold is necessary. This could be a joint threshold agreed between donors at a country level forum, such as a Sector Wide Approach (SWAp), which would facilitate the benefits of country level harmonisation but would lose the benefits of between-country resource allocation. A generalised global threshold would be required to achieve both within- and between-country benefits.

In broad terms, how could a global health donor threshold be set?

Option 1: Notional. Many countries and organisations use CEA to guide healthcare prioritisation without formally defining a cost-effectiveness threshold. One option is for donors to use the theoretical possibility of a separate cost-effectiveness threshold to shape policy and the clarify roles with regards to national decision-makers, without quantifying the threshold itself.

Option 2: Supply-side. Supply-side estimation means linking the threshold to the resources available and what they currently achieve in health production, at the margin. That is, a new investment opportunity should be more cost-effective than the next-best alternative that additional funding could support instead. If a cost-effectiveness threshold should reflect the payer's opportunity costs, then a donor's threshold should reflect opportunity costs at the global level, and should therefore be the same across all countries in which the donor may consider investing. It may also be possible to use statistical analysis analogous to the techniques used for estimating healthcare opportunity cost at the country level for domestic finances[30] to estimate the opportunity cost of marginal health aid globally.

Option 3: Demand-side. In contrast to the resource-linked supply-side approach, a demand-side route to setting a donor-perspective threshold could mean defining an aspirational benchmark that relevant stakeholders agree on. For example, participants in a World Health Assembly could support an aspirational declaration that all countries should be able to provide services that produce health for $X per DALY averted. That is, a minimum DALY value above which services should be considered worthy of investment, regardless of affordability to the national healthcare provider. Such an approach bridges the philosophical position of right-to-health advocates and technical optimisation approaches of health economists by effectively establishing a minimum value on health and therefore a right to services that can produce health for this minimum standard. The drawback of the aspirational target is that it may allow sub-optimal allocation decisions if

the demand-side aspiration is radically different from the supply-side reality. However, an important advantage of such a threshold is that it would function not only as an optimisation tool, but an advocacy goal.

Conclusions

In this article, we have argued that cost-effectiveness threshold(s) for global health donors should differ from thresholds for national institutions because they have different decision perspectives, budgets, and opportunity costs. We then explored some of the potential benefits of distinguishing explicitly between donor and national thresholds and briefly outlined the options for setting those thresholds. We acknowledge that the approach we propose will entail a major shift in the way donors operate by explicitly moving from maximising the impact/cost-effectiveness of their own investments, towards playing a supporting role to national decision-makers. There are also practical challenges in the application of this framework, including the absence of a set national threshold (or 'threshold thinking'), lack of country processes and institutions to prioritise interventions and develop a core package of essential services, and the lack of cost-effectiveness evidence. Despite these challenges, developing an improved framework for priority setting in countries where aid constitutes a substantial share of health financing could yield numerous and substantial benefits for the strengthening of health systems in those countries. For this reason, we call for further work to: i) advance methodological theory for national and donor collaboration on resource allocation, and ii) explore the political economy of such reforms.

Data availability

No data are associated with this article.

Acknowledgements

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This opinion article aims to provide a neat and tidy solution to the problem of how donors should prioritise their funding for health both within and across countries.

The authors start with the assumption that donors should apply a different threshold than that which should be applied by national decision makers allocating government resources for health. The latter, we agree, should reflect the marginal productivity of the healthcare system. Where there is less agreement is around whether donors should use a separate threshold at all and, if they must, what that threshold should be based upon.

The authors rightly point out that the opportunity cost of investing in intervention A in country X is not only intervention B in country X, but also intervention C in country Y. One way to consider this is using the net health effect of the intervention within each country and across countries. (See Claxton, K. P., Ochalek, J. M., Revill, P., Rollinger, A. & Walker, D., Informing Decisions in Global Health: Cost Per DALY Thresholds and Health Opportunity Costs, Nov 2016, 4 p. Centre for Health Economics, University of York). Net health effects for each country are a function of the cost to the country (or the cost savings), health impacts and an estimate of health opportunity cost to the country of government expenditure on health. Summing these across countries gives the global net health impact. Once this is known, the donor can select what they regard as the best (based not just the net health effects but also on their distribution across countries).

It may be helpful to distinguish between general budget support and off-budget support. Where funding is provided in the form of general budget support, it effectively becomes part of the government pool. Therefore, the opportunity cost of such general budget support is most closely the opportunity cost of government expenditure on health. There is no reason for a separate threshold, and donors should consider the marginal productivity of expenditure on health within the country when considering general budget support. Ceteris paribus, an expansion of the

budget would result in an increase in the marginal productivity of the healthcare system.

Where donors are providing off-budget support, given that one possibility is to give the money for the intervention to countries (on budget), donors need to consider if their off-budget project performs better or, if not, whether there are good reasons to fund it nonetheless.

Where donors are providing off-budget support and have an exogenously fixed budget, then a supply side approach might be reasonable. This requires two things: an estimate of a "donor ICER" and an estimate of what is displaced from among existing donor-funded healthcare when the donor funds a new intervention. Where the latter is unknown, a reasonable approach would be to rank by donor ICER. Calculating a "donor ICER" requires first calculating the global net health effects. Then calculating a "donor ICER" from the cost to the donor and the global net health.

Where donors are providing off-budget support and have an endogenous budget, they may choose to expand their budget to continue to fund interventions until the donor's willingness to pay for health is exhausted. Ideally, funding decisions would be taken in order of most to least cost-effective. This better aligns with the objective of health maximisation than the demand-side approach described by the authors in Option 3. Donors taking a demand side approach as described in Option 3 may fund healthcare that would be highly cost-ineffective for the country to fund. The problem with this is that donor funding can negatively impact on the efficiency of systems and sustainability of interventions through "the duplication of services, dilution and distortion of limited human and financial resources, and weak coordination between levels of care" (Barr, A., Garrett, L., Marten, R. *et al.* Health sector fragmentation: three examples from Sierra Leone. *Global Health* **15**, 8 (2019). https://doi.org/10.1186/s12992-018-0447-5). A better advocacy tool might be to illustrate the extent of possible health gains by funding healthcare closer to the margin of what is generated by the healthcare system as illustrated in Figure 1, where spending the money required to fund aid-supported services would generate more health than spending the same money to fund excluded services.

While the authors are right that focusing national resources towards funding a core package of the most essential services would help to ensure that those services are not subject to aid volatility, a caveat to the proposal for aid supported services to be those which are just cost-ineffective for the country rather than those which are cost-effective for the country, is that many countries are not able to deliver the healthcare interventions they do provide to the full population in need of them. Adding additional services may only further detract from this ability by further diluting human resource capacity etc. Donors might instead consider spending their resources to ensure that the essential services included in the core package are accessible to everyone who requires them.

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Is the topic of the opinion article discussed accurately in the context of the current literature?

Yes

Are all factual statements correct and adequately supported by citations?
Yes

Are arguments sufficiently supported by evidence from the published literature?
Partly

Are the conclusions drawn balanced and justified on the basis of the presented arguments?
Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Application of economic evaluation principles and methods to inform priority setting in healthcare, particularly in low- and middle-income countries.

We confirm that we have read this submission and believe that we have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however we have significant reservations, as outlined above.

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