Independent observer
of the Global Fund

Quantifying the Global Fund's Contribution to Saving Lives:

Methodological and Policy Issues

By David McCoy and Nele Jensen

1 November 2012

P.O. Box 66869–00800, Nairobi, Kenya

TEL +254 (0) 774 135 984 **EMAIL** info@aidspan.org

www.aidspan.org

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Preface

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Authors and acknowledgements

David McCoy is a public health physician and senior clinical lecturer at Queen Mary University London. He was formally Research Director for Aidspan. Nele Jensen is a trained physician and is currently completing a Masters Degree in Philosophy, Politics and Economics of Health at University College London. While this paper was commissioned by Aidspan, the authors take sole responsibility for the final content, views and opinions expressed in this paper.

The authors wish to thank Daniel Low-Beer from the Global Fund for his patient and helpful explanations, comments and corrections in reviewing several drafts of the paper; Mary Mahy from UNAIDS for explaining the latest developments related to the Spectrum model; and Katharina Kranzer, Rashida Ferrand, Kalpana Sabapathy, Roly Gosling and Kate Macintyre for their views, comments and suggestions. Aidspan thanks the UK Department for International Development (DFID), the Ford Foundation, GIZ Backup Initiative, The Monument Trust, Norad and Hivos for the support they have provided for 2012–2015 operations.

1. Introduction

The Global Fund estimates that, with its support, 8.7 million lives have been saved between 2002 and the middle of 2012. This is the estimated impact of the Global Fund's support to the provision of three services: anti-retroviral therapy (ART) for HIV/AIDS, directly observed TB treatment, short course (DOTS), and the expanded distribution of insecticide-treated mosquito nets (ITNs). According to the Global Fund's 2012 Results Report, since 2002, Global Fund–supported programmes have treated 3.6 million people with ART and 9.3 million new cases of smear-positive tuberculosis, and distributed over 270 million ITNs.[1] These reported results, together with the assumed (but unreported) treatment of more than eight million smear negative TB patients form the basis for the Global Fund's estimation of lives saved.

Assessing impact is good practice for any organisation, but especially so for one that is itself a performance-based funder and that was set up explicitly to promote a new form of health aid that would be more measurable and business-like. Being able to quantify the saving of so many lives is even more important as donor funding for health may be waning.

Most agencies describe their value and impact in quantifiable terms. For example, the GAVI Alliance claims to have prevented more than 5.5 million deaths between 2000 and 2011.[2] According to the World Bank, lending by the International Development Association has provided more than 68 million people with a basic package of health, nutrition and population services, immunized 343 million children, and given antiretroviral therapies to 1.5 million people with HIV.[3] And the US President's Emergency Plan for AIDS Relief (PEPFAR) reports that the US government has "directly supported life-saving ART for more than 4.5 million men, women and children worldwide as of March 2011."[4]

This paper critically examines the Global Fund's approach to estimating lives saved. The next section describes, evaluates and critiques the methodology used by the Global Fund to estimate the number of lives saved through ART, DOTS and ITNs, and discusses the approach used to attribute results and impact to Global Fund–supported programmes. Section 3 discusses various policy-related implications of using only three selective interventions to estimate the number of lives saved, particularly in relation to broader challenges of health systems development. Section 4 summarises selected key issues drawn from the analysis and proposes certain recommendations. The paper also describes the Global Fund's intent to invest more effort and resources in developing a more direct and empirical evaluation of performance in a selection of high priority countries.

2. Methodology for calculating lives saved

2.1 Modelling the number of lives saved from measures of ART, DOTS and ITN coverage

The number of lives saved is derived from a modelling exercise that estimates the cumulative impact of ART, DOTS and ITNs. The methodologies of the modelling exercise have been developed by experts in epidemiology and health impact measurement, and are used not only by the Global Fund but also by the World Health Organisation (including the STOP TB and Global Malaria Programme departments) and UNAIDS.

The modelling exercise works by comparing the estimated effects of current service delivery scenarios on mortality against a hypothetical "no treatment, no intervention" scenario. The difference in the number of deaths that would occur under these two scenarios is interpreted as the number of lives saved. Calculations are based on (a) estimates of the effectiveness of ART, DOTS and ITNs in reducing mortality; (b) population-based mortality rates and their causes; and (c) data on the number of individuals alive on ART, the number of individuals treated with DOTS and the number of ITNs distributed. The number of lives saved is calculated separately for each of the three interventions and then added together. However, the 2012 Results Report did not publish the number of lives saved for each intervention separately. Only a single aggregated figure was reported.

For ART results, the estimated number of lives saved is calculated using an epidemiological modelling package (Spectrum) recommended and used by UNAIDS. It employs demographic and HIV prevalence data and numbers of people on ART to predict trends in the epidemic based on the presence and hypothetical absence of ART for each country.[5] [6] [7] [8] The model takes into account the effects of ART on reduced HIV transmission, and assumes that all ART is correctly provided to people in need of such treatment. Survival rates on ART have been derived from analyses of various cohort studies of people on treatment contained within established databases, including the International Epidemiologic Database to Evaluate AIDS. The model is regularly updated to take into account new research and the latest evidence on the clinical progression of the disease under treatment.

Until early 2011, the model assumed a standard survival rate of 86% at 12 months and 90% for each subsequent year for both adults and children on treatment; under the no-treatment scenario, it assumed a survival rate of 50% at 12 months and 0% at 24 months from the point of needing to start treatment. Since then, the model has become much more sophisticated with the development of region-specific on-treatment survival rates that are further differentiated to take into account CD4 count, age, sex and duration of treatment.[9] Survival rates in the no- treatment scenario are also now adjusted for age and sex. However, for children, an undifferentiated on-treatment survival rate is used: 85% for the first year and 93% for each subsequent year.[10]

The number of lives saved by DOTS is modelled on the assumption that every case of DOTS treatment saves on average 0.33 lives compared to a no-treatment scenario. This figure has been derived from estimates of TB case fatality rates from various published reports and systematic reviews, and from treatment outcome data reported by national TB programmes.[11] [12] [13] [14] [15] [16] [17] This estimated mortality impact is used to cover all TB patients on DOTS treatment, whether they are HIV-positive or -negative, smear-positive or -negative, and whether or not they had extra-pulmonary TB. Up to 2012, many Global Fund-supported TB programmes only reported on the number of new *smear-positive* TB patients. As a result, to derive the number of all TB patients who were treated (including smear-negative and extra-pulmonary TB cases) it was assumed that 52% of all new TB cases would be smear-positive.[18]

The number of lives saved by long lasting ITNs is calculated for countries with stable endemic *falciparum* malaria. (This covers a number of countries in sub-Saharan Africa and Papua New Guinea.)[19] Lives saved by ITNs in other countries are not included because of the lack of evidence on mortality effect in lower-endemic areas, even though the Global Fund invests in ITNs in a number of these countries. The model is also only applied to mortality in children aged less than five years because the evidence on mortality effects is less well documented in other age groups.

The model assumes that each ITN lasted for 1.5 years up to 2008, and for 3.0 years from 2009 onwards; and that each ITN distributed to a household results in 0.73 children under five years sleeping under that ITN.[20] The assumed impact of ITNs on mortality is based on a systematic review of five randomly controlled trials of ITNs in which child mortality was measured as an outcome.[21] The review concluded that ITNs contributed to a 17% reduction in "all-cause" mortality among children under five years compared to a scenario where no nets were used at all. The deaths averted are calculated on the basis of each country's average all-cause under-five mortality rate in 2009.

As can be seen from this brief description, the Global Fund's estimation of the number of lives saved is based on a number of significant assumptions and generalisations. Most notably, the effectiveness of the three interventions is assumed and then generalised across different countries and settings. In reality, there will be considerable variation in the effectiveness of ART, DOTS and ITNs. Indeed, the estimated effectiveness of ART, DOTS and ITNs used in the model are themselves derived from different research studies that have produced divergent measures of effectiveness. For example, a meta-analysis (based on 19 studies) of the TB case fatality ratio (CFR) for DOTS-treated HIV-negative patients calculated a pooled CFR of 3.5%, but with a 95% confidence interval ranging from 2.5% to 7.2%; while for HIV-positive TB patients, the pooled CFR was 18.8% and the 95% confidence interval ranged from 14.8% to 22.8%.[22]

While the model uses a more differentiated approach for ART (using region-specific survival rates which also account for factors such as age, sex and CD4 count), the effectiveness of ITNs and DOTS is assumed to be same across all countries and settings. Even in the case of ART, the model assumes a universal standard of clinical quality, although there is evidence suggesting that early high mortality rates depend not only on the quality of care delivered by programmes but also by the quality of preceding health care.[23]

In the case of ART, because of the chronic and non-curable nature of the disease, reliable measures of the numbers of patients "lost to follow-up" (LFU) are especially important. When patients are lost to follow-up, assumptions have to be made about their outcomes. However, data on treatment retention are not well recorded. In 2008, for example, only 17 out of 47 countries in sub-Saharan Africa reported data on treatment retention at 24 months.[24] Also, despite the fact that the WHO has recommended a standardised definition of LFU, the operational definition of LFU varies across and within countries.

In addition, the model includes many assumptions about the clinical and epidemiological characteristics of patients and communities. For example, for a large proportion of the people treated with ART, the modelling exercise relies on assumptions about their CD4 count on initiating therapy because CD4 counts are not routinely conducted in many parts of the world. Similarly, the model assumes that the contribution of malaria to all-cause child mortality is the same across all populations living in countries with stable endemic *falciparum* malaria; while the relative numbers of smear-positive, smear-negative and extra-pulmonary TB patients are also assumed and then generalised.

Assumptions and generalisations are unavoidable due to the lack of empirical and country-specific data. Because of this, the estimated number of lives saved computed through the modelling exercise is unavoidably imprecise. One way of highlighting the degree of imprecision is to calculate uncertainty ranges around the estimated number of lives saved. In fact, in a previously published peer-reviewed paper on the number of lives saved by Global Fund supported programmes between 2003 and 2007 (using a similar modelling exercise to the one described earlier), uncertainty ranges were calculated.[25] In the case of lives saved from ART, the 95% uncertainty range was from 619,000 to 774,000 lives, while for DOTS it was 1.09 to 2.17 million lives, and for ITNs it was 27,000 to 232,000. But, surprisingly, no uncertainty ranges were published in the Global Fund's 2012 Results Report.

While uncertainty and imprecision is to be expected from a modelling exercise, it is important to avoid any bias in the model that may lead to either an under-estimation or over-estimation of the number of lives saved. In this instance, some aspects of the model appear to under-estimate the impact of ART, DOTS and ITNs on mortality reduction, while others do the opposite.

Aspects of the model that under-estimate the number of lives saved comprise the non-inclusion of the effects of ART on reducing the vertical spread of HIV; the non-inclusion of patients treated for multi-drug-resistant TB (although this accounts for only 0.7% of all cases of TB treated through Global Fund–supported programmes); the non-estimation of the effect of ITNs on reducing mortality in children over the age of five and in adults, and on reducing mortality due to non-*falciparum* cases of malaria; and the exclusion of countries with non-stable *falciparum* malaria. Finally, delays in the reporting of ART, DOTS and ITN results means that the calculation of the number of lives saved at any given time will be underestimated because of a time lag between service delivery and reporting.

On the other hand, aspects of the model that over-estimate the number of lives saved include the use of estimates of effectiveness that are optimistic, having largely been derived from research studies and other settings where the quality of treatment and follow-up, or the utilisation of bed nets, is generally better than in "normal" and "real world" setting. For example, the estimates of the impact of the use of ITNs on child mortality were derived from the ideal conditions of randomized controlled trials which had high coverage and usage rates (and were conducted in areas where malaria was especially highly endemic).

Similarly, the assumed ART survival rates may be optimistic because they come from various patient cohorts enrolled in clinical trials that typically have had above-average standards of clinical care. These patients may show treatment adherence rates which are higher than would be the case outside those trial conditions. For example, two studies in have shown retention rates for patients on ART in sub-Saharan Africa (SSA) as low as 75% at 12 months and 62% at 24 months. These were recorded in 22 of 47 countries reporting ART results[26] and were calculated from 33 patient cohorts reported between 2000 and 2007.[27] It is hard to provide reliable measures of "true" effectiveness of ART programmes, but to take survival rates from clinical trials rather than more normal conditions of service delivery is to take the more optimistic route.

Another cause for over-estimation is that the model calculates the number of lives saved separately for each of the three interventions and then adds these figures together. This assumes that every intervention is applied to a unique and separate individual when, in reality, a proportion of interventions will have been directed at the same individual. This is especially relevant in the case of an individual co-infected with AIDS *and* TB who receives ART and DOTS at the same time but who will have been counted as though two lives had been saved. In sub-Saharan Africa, about 10% of ART patients are diagnosed with TB at ART initiation.[28] Although the annex to the 2012 Results Report recognises the overlap in DOTS and ART treatments, it states that the overlap is small and that any double counting of lives saved is therefore limited.[29]

Finally, another possible cause for over-estimating the number of lives saved may be an over-reporting of the number of patients on ART and DOTS regimes, and the number of ITNs

distributed. The Global Fund has worked hard to improve the reliability and accuracy of data, including by conducting data quality audits. However, grant recipients have strong incentives to over-report performance which may result in some inflation of the real figures. On the other hand, the Global Fund excludes results from countries which it considers to have serious data-quality issues, and it may be that in some instances, there is under-reporting due to results getting lost in the system.

The fact that the model has aspects which both under- and over-estimate the number of lives saved may result in a lack of overall bias. However, we argue that the optimistic assumptions about the quality, effectiveness and impact of the three interventions (using methodologies that have been established by the wider global health community) may tip the balance towards an overall over-estimation of the number of lives saved.

2.2 Apportioning results and impact to Global Fund supported programmes

The number of lives saved as reported in the Global Fund's 2012 Results Report is clearly stated as the number of lives saved by Global Fund–supported programmes, not by the Global Fund alone. The lives are saved by programmes that include the financial contributions of other donors, governments and individuals (through various out-of-pocket payments).

In order to determine which ART, DOTS and ITN results can be counted as part of a Global Fund–supported programme, a set of criteria have been developed. According to various documents from the Global Fund, ART results are only counted if the Global Fund supported an essential element of ART (e.g. drug provision or laboratory testing) on a national scale; *and* those HIV grants were performing adequately (rated A or B1); *and* there are no *significant* data-quality issues; *and* if the Global Fund had distributed at least $50 million to the country's HIV programs in the past three years, or if total Global Fund HIV disbursement comprised at least 33% of total reported domestic public expenditure on HIV.[30] [31] Where some data quality issues are identified, service delivery results are adjusted by the Global Fund. A similar approach is used for ITNs and DOTS results.

Since 2004, the Global Fund has also been working with key donors and technical partners (notably PEPFAR, the WHO, UNAIDS and UNICEF) to improve the reliability and consistency of ART reporting by countries and to estimate the level of contribution that each development partner makes to national efforts, especially to avoid any double-counting of reported figures in countries where PEPFAR and the Global Fund provide joint financing. This is designed to improve the reliability of *global* reporting processes. Such harmonisation exercises are being expanded to other indicators for HIV as well as for TB and malaria. However, the numbers used in the Global Fund's own reporting of results from Global Fund–supported programmes *does* include results that may also be counted in the reports of other development partners. In other words, while there is avoidance of double-counting in the

results that countries submit to UN agencies, there is no avoidance of the double-reporting of results by external agencies such as the Global Fund and PEPFAR.

At the end of 2010, the proportions of global results for ART, DOTS and ITNs credited to Global Fund-supported programmes were estimated to be 45%, 68% and 62% respectively (see Table 1).[32] In the more recent 2012 Results Report, the Global Fund estimates that the share of total ART results credited to Global Fund–supported programmes has increased to 54%, and that of the 2.6 million treated cases of smear-positive TB in 2010, 65% were treated in "Global Fund supported programmes." No estimates were given for the proportion of distributed ITNs attributable to Global Fund-supported programmes in the 2012 report.

Table 1: Proportion of global results on ART, DOTS and ITNs attributed to Global Fund supported programmes, at end 2010

Key Result Indicators / Attribution	Global results (national and international)	Global results credited to Global Fund-supported programmes (%)
Cumulative number of people alive on ART	6.6 million	3.0 million (45%)
Number of all forms of TB treated under DOTS	5.6 million	3.9 million (68%)
Number of long lasting ITNs distributed	145 million	89 million (62%)

(Source: The Global Fund, 2012. Background Information on Goals and Targets for the Global Fund Strategy 2012-2016.)

Such apportioning of global ART, DOTS and ITN results to Global Fund–supported programmes, however, does not reflect the financial contribution of the Global Fund itself because Global Fund–supported programmes include the financial contributions of other donors, local governments and individuals. As a result, it is difficult to gauge the specific or isolated contribution of the Global Fund to the number of lives saved.

However, it is worth noting that while in 2010 about 45% of global ART results were credited to Global Fund supported programmes, the contribution of the Global Fund to total AIDS programme financing in low- and middle-income countries has been estimated to be only 10%.[33] Similarly, while in 2010 about 68% of DOTS results and 62% of ITN results were attributed to Global Fund supported programmes, the financial contribution of the Global Fund to overall TB and malaria programme financing in low- and in middle-income countries has been estimated to be 11% and 45% respectively.[34] [35]

It is also worth noting that the contribution of Global Fund grants to total health expenditure (THE) is even smaller. For example, in 2009, Global Fund disbursements made up only 0.37% of THE across 104 low and middle income countries that the Global Fund was supporting that year.[36] Even when considering only low income countries, these grants made up only 3.29% of THE. This is relevant because even if the Global Fund is a major

contributor of funding for ART, DOTS and ITN programmes, those programmes remain dependent on many aspects of the broader health system that are not reflected in disease-specific budgets or expenditure reports.

Thus, the estimated number of lives saved that can be attributed specifically to the Global Fund, although still significant, is less than the numbers attributed to Global Fund supported programmes (especially in relation to ART and DOTS). Clearly, financial contribution is not everything, and the Global Fund's financial contribution also plays a part in leveraging additional finance for ART, DOTS and ITNs from domestic sources. But all this raises questions about "attribution." These questions are discussed later in this paper.

3. Selective measurement?

The Global Fund's approach to estimating the number of lives saved is selective, and does not cover, for example, interventions to reduce vertical HIV transmission; HIV testing and counselling; the treatment of acute malaria and non-HIV sexually transmitted infections; the promotion of condoms; indoor residual spraying; and the delivery of circumcision. The Global Fund has limited its estimation of lives saved to ART, DOTS and ITNs because these three interventions consume a major part of its funding *and* because they have documented mortality outcomes.

Expanding the scope of the modelling exercise to include other interventions (with a documented mortality impact) would theoretically be possible, but would pose additional and significant data-related and methodological challenges. However, the Global Fund is working with partners to explore ways of incorporating a wider range of the services into its modelling of the number of lives saved.

In the meantime, grant recipients are required to monitor a much broader set of programmatic activities and outputs, and the Global Fund itself monitors a broader set of twelve key impact indicators and targets (see Box 1). However, although the Global Fund's approach to monitoring impact covers more than just three interventions, the emphasis placed on just three of them – ART, DOTS and ITNs – *may* have some potential policy implications.

The first potential implication is that it may result in a relative neglect of other interventions or services. It may be indicative that the Global Fund's new 2012–2016 Strategy includes targets for ART, ITNs and DOTS but not for the delivery of other "essential" services. A second and related implication is that, in the context of increasing pressure on global health agencies to demonstrate its value, any focus on a narrow set of interventions may encourage a greater use of vertical programmes as a means of maximising the delivery of those interventions, possibly at the expense of efficiency and equity, and of other health systems priorities.

This is linked to what may be a growing trend towards attributing results to donors and external agencies. In theory, external development assistance for health (DAH) is supposed to have an *indirect* impact on health by catalysing national health systems development and supporting ministries of health and other local agencies to perform more effectively. But if external agencies are judged against the actual delivery and impact of specific interventions, they may feel encouraged to neglect their primary role to *support* countries – and seek instead to have greater influence over the delivery of services and also encourage the use of vertical programmes and stand-alone systems over which they can have more direct control.

Box 1: Indicators and targets used by the Global Fund to assess impact

1. Declining trend in HIV incidence rate (all ages), by 2015
2. Declining trend in HIV mortality rate (all ages), by 2015
3. 80% coverage of ARV therapy for those in need, by 2015
4. 90% coverage of PMTCT for those in need, by 2015
5. Declining trend in TB incidence rate (all forms), by 2015
6. 50% reduction in TB mortality rate (excluding people living with HIV/AIDS) between 1990 and 2015
7. 70% case detection rate for all forms of TB, by 2015
8. 90% treatment success rate for new smear-positive TB cases, by 2015
9. 75% reduction in malaria disease incidence rate between 2000 and 2015
10. 75% reduction in mortality rate associated with malaria disease between 2000 and 2015
11. 80% household ownership of insecticide-treated nets, by 2015
12. 67% reduction in all-cause under-5 mortality rate between 1990 and 2015 (in countries with more than 5% of under-5 mortality due to malaria

Thirdly, the measurement of impact in terms of lives saved could potentially handicap interventions that lack hard evidence of impact on saved lives. These include interventions whose impact may involve a prolonged time lag and interventions which operate through more complex and indirect pathways. Examples include many health systems strengthening investments (e.g. investing in better medical schools, and improving health information systems); and investments in social determinants of health (such as literacy programmes).

Whether the Global Fund's focus on three selected interventions results in an over-verticalisation of programmes, and whether any emphasis on health impact measures leads to distortions in planning or priority setting, are open questions. In theory, a focus on downstream interventions such as ART, DOTS and ITNs need not conflict with more upstream interventions nor with other development objectives. For example, in order to improve the clinical effectiveness of ART and DOTS, HIV and TB programme managers might seek to advocate for improved access to clean water and nutrition. Similarly, health

systems strengthening efforts should be encouraged as a strategy for improving the quality and efficiency of ART, DOTS and ITNs. But if approaches to performance evaluation over-emphasise the delivery of a narrow set of clinical technologies, the potential to establish positive synergies within a more comprehensive approach to health improvement may be lost.

This danger is accentuated by the measurement of outputs and outcomes without accompanying measures of how sustainable, efficient or equitable programmes are. Thus, while it is apparent that the last ten years has resulted in much improvement in ART, DOTS and ITN coverage, it is harder to determine if these successes have been achieved optimally or efficiently. It remains an open question as to whether more lives could have been saved with the billions of dollars spent; or whether lives were saved in sustainable ways that optimally strengthened health systems, improved equity, or reduced levels of donor dependency.

Without a doubt, the Global Fund has made efforts to avoid being a narrow, selective funder of vertical projects. It has, for example, supported many important social interventions such as those strengthening the human rights of discriminated population groups and those that have catalysed civil society engagement in health systems governance. The Global Fund is also a signatory to the International Health Partnership (IHP), thus committing itself to improving the coordination and effectiveness of DAH, and ensuring that grants are aligned with national priorities and plans. The Global Fund's performance evaluation framework includes key performance indicators related to gender, civil society engagement and health systems strengthening, which also suggests that it is not narrowly focused on a selection of clinical technologies (see Box 2).

Yet in spite of these positive signs, a recent, independent evaluation notes that significant change in the behaviour of external development partners towards greater harmonisation and alignment has not been achieved.[37] External DAH remains fragmented and uncoordinated, and the monitoring of the behaviour and impact of donors and development partners within recipient countries remains inadequate.[38] [39] Further, the indicators designed to allow tracking of the Global Fund's performance on gender, civil society engagement, health systems strengthening and aid effectiveness are weak and limited in what they convey.

In this light, and notwithstanding the impressive and positive news in the Global Fund's 2012 Results Report, it is necessary to ask critical questions about how the Global Fund measures and reports progress.

Box 2: Global Fund's Key performance Indicators on gender, civil society engagement, health systems strengthening and aid effectiveness

Gender: Percentage of programs at grant review which include an analysis by gender, age and population at risk for key services and outcomes and identify actions to improve programs. To be accompanied with equity analyses and action plans at periodic review, with subsequent follow-up.

Community systems strengthening: (a) Percentage of approved funding for community systems strengthening (CSS) interventions in new rounds out of the amount of total approved funding; (b) overall performance of CSS indicators (average % of targets achieved) across the portfolio.

Health systems strengthening: Amount of approved funding for HSS cross-cutting interventions in new rounds; overall performance of HSS strategic actions (average % of targets achieved) and performance in the strategic areas of: (1) health workforce, (2) procurement and (3) HIS.

Aid Effectiveness: Average gap in achieving Paris Declaration targets (in %).

4. Conclusions and Recommendations

We have examined the model used to calculate its summary figure of the number of lives saved by Global Fund supported programmes, and have drawn attention to the methodological assumptions and uncertainty of the results. We have discussed the fact that the model has elements that may under and over-estimate the true number of lives saved by ART, DOTS and ITNs, but that over-optimistic assumptions about treatment effectiveness may tip the balance towards an overall over-estimation of the number of lives saved. We have tried to draw attention to the contribution of domestic finances to these Global Fund–supported programmes and have pointed to inadvertent policy impacts that may result from a narrow or selective approach to this type of impact assessment. At the same time, we have noted that the selective approach used in estimating the number of lives saved underestimates the full impact of Global Fund–supported programmes.

The precision of the mathematical modelling will improve as more and better quality data are generated. But until then, given the nature of the assumptions built into the model, the Global Fund should publish its results with uncertainty ranges. In addition, The Global Fund should also publish disaggregated estimations of the number of lives saved by each of the interventions to improve transparency and enable peer review.

Importantly, the Global Fund, working with other international partners and technical experts, is now implementing a Programme and Impact Evaluation Strategy that includes active support to national disease programmes in 20-25 so-called "high-impact" countries. This should enable a more refined approach to performance evaluation and impact measurement. A more bottom-up and country-focused approach could also help improve the quality of data, and allow the Global Fund to work with governments and other development partners to support more coherent and sustainable health information systems development.

This is welcome. But in implementing this new strategy, the Global Fund must ensure that it supports the development of more integrated systems of planning, priority-setting and performance evaluation that extend beyond the three diseases. In other words, its focus on high-impact countries, while welcome for reasons given, must avoid reinforcing verticality around the measurement of selective outputs within those countries.

The more empirically based and context-specific approach mentioned above will reveal the substantial variation in the effectiveness of ART, DOTS and ITNs, both within and between countries. This variation arises from differences in access and uptake rates, quality of care, availability of skilled health workers, rates of compliance with treatment, and population coverage of other determinants of clinical effectiveness, such as access to clean water and good nutrition. Furthermore, when this variation is described, policy attention can then be directed not just to the delivery of selected technologies, but also to the conditions under which those interventions are effective. An approach that results in revealing (and understanding) variation in effectiveness stands in marked contrast to a modelling approach that assumes standardised levels of effectiveness across countries and settings.

In regards to publicising the estimated number of lives saved by Global Fund–supported programmes, greater care needs to be taken by the Global Fund in communicating the crucial importance of other donors and domestic funding, and the importance of generic health system financing in supporting HIV, TB and malaria programmes. Although the Global Fund does acknowledge the contribution of others in what is ultimately a shared achievement, the still fragmented and uncoordinated nature of the global health complex suggests a need for donors and global health agencies to play down their role relative to country level actors and institutions.

The Global Fund might also want to emphasise more strongly the importance of prevention activities and health systems strengthening efforts even though the impact of these investments is difficult to measure. This is a challenge. While modelling the impact of selected health care interventions is fairly straightforward, interventions to strengthen health systems or to influence the social and behavioural determinants of health are more often difficult to isolate, measure and evaluate.

In spite of these methodological difficulties, holistic evaluation is important and needs to be done as well as possible. But it cannot be done by individual agencies. Instead, it needs to be done as an integrated evaluation of the performance of all actors and institutions at the country level, using both quantitative measures of outputs and impact, as well as qualitative assessments of budget allocations, priority-setting processes and the quality of health management.

To push this agenda forward, we argue that the Global Fund (and other agencies) should consider a different approach to the way they apportion results and attribute credit to Global

Fund–supported programmes. The current approach must be questioned because these programmes represent a somewhat arbitrary mix of funding and support from the Global Fund, governments, other donors and ordinary individuals. The results from these programmes represent the impact of neither a country nor just the Global Fund by itself.

We propose instead that external donors focus on estimating two measures of impact. The first would be a holistic measure of the results, progress and impact of country-wide programmes that are supported by *all* relevant actors within a country, including both governments and development partners. The second would be an estimate of the specific contribution made by individual agencies to country-wide results and impact. This could be achieved quite simply by apportioning a share of country results to agencies according to their proportional contribution to either overall health systems funding or to programme financing.

Such an approach would present a more accurate picture of the specific contribution of external agencies while explicitly recognising the contributions of governments and of cross-cutting health systems investments to disease-based programmes. It would also help avoid the double reporting of results and impact at the global level by external agencies. More importantly, the approach would encourage the rationalisation of fragmented, vertical programmes with their multiple reporting lines and help develop more coherent national planning, budgeting, and management systems. Here, the Global Fund, working through the agreements of the IHP, could play a crucial and positive future role in shaping the practices and approach to impact measurement and performance evaluation more generally.

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