Better Economic Tools for Evaluating Health and Development Investments

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Abstract
On the eve of the 1980s Water Decade, Walsh and Warren (1979) advocated a selective package of vaccinations and oral rehydration therapy (ORT) as the most cost-effective way to reduce mortality in developing countries. That study, cited 1000 times, and similar economic evaluations had the effect of dampening interest in campaigns for clean water and sanitation. ORT was one of the greatest life-saving innovations of the twentieth century, but cost-effectiveness analysis (CEA) cannot make valid comparisons between preventive public health intervention (such as sanitation), and specific therapies (such as ORT). The full benefits of clean water and sanitation are much broader than the effect of PRT and include: direct reduction in morbidity and mortality for adults and children from multiple water-borne pathogens; savings in time and calories expended on carrying water; increase in school enrollment for children released from the chore of fetching water; fewer diarrhea-related absences, greater school success, and thus higher returns to investments in education. Conventional cost-effectiveness analyses appear to validate the superiority of single-input, single-output interventions because they do not measure heterogeneous or diffuse benefits, unanticipated spillover benefits, or benefits that take some time to appear. The failure of economists and policy makers to find ways to value multiple outcomes or to share costs among multiple agencies results in 'missing markets' for multisectoral investments in public health and human development. [excerpt]

Keywords
co-factors, cost-effectiveness, economics, externalities, multi-sectoral

Disciplines
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Better economic tools for evaluating health and development investments

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On the eve of the 1980s Water Decade, Walsh and Warren (1979) advocated a selective package of vaccinations and oral rehydration therapy (ORT) as the most cost-effective way to reduce mortality in developing countries [1]. That study, cited 1000 times, and similar economic evaluations had the effect of dampening interest in campaigns for clean water and sanitation [2]. ORT was one of the greatest life-saving innovations of the twentieth century, but cost-effectiveness analysis (CEA) cannot make valid comparisons between preventive public health interventions (such as sanitation), and specific therapies (such as ORT). The full benefits of clean water and sanitation are much broader than the effect of ORT and include: direct reduction in morbidity and mortality for adults and children from multiple water-borne pathogens; savings in time and calories expended on carrying water; increase in school enrollment for children released from the chore of fetching water; fewer diarrhea-related absences, greater school success, and thus higher returns to investments in education [3,4]. Conventional cost-effectiveness analyses appear to validate the superiority of single-input, single-output interventions because they do not measure heterogeneous or diffuse benefits, unanticipated spillover benefits, or benefits that take some time to appear [5,6]. The failure of economists and policy makers to find ways to value multiple outcomes or to share costs among multiple agencies results in ‘missing markets’ for multisectoral investments in public health and human development [7,8].

Criticism of economic methods that underestimate social benefits and externalities (spillovers) escalated in the era of increased AIDS funding. There is wide recognition that poverty, inequality, social exclusion, sexism, and other social and economic factors influence the environment of risk for HIV. Interventions to address such ‘structural drivers’ of the epidemic, however, entail costs and benefits in multiple sectors. AIDS-funding agencies are reluctant to address structural drivers of HIV transmission, citing their mandate to spend only for HIV prevention and treatment, narrowly defined. AIDS spending has been limited to addressing what Rose called ‘causes of cases,’ rather than ‘causes of incidence’ [9,10] in highly infected populations. Advocates of upstream investments, such as girls’ education or endemic disease control through sanitation, aim to alter the risky environment that drives the epidemics in poor populations. But they have needed a method of calculating heterogeneous benefits from investments that affect multiple sectors and apportioning costs among various implementing agencies.

In the current issue of AIDS, Remme et al. [11] provide a new methodology for allocating costs and benefits of investment in girls’ education. The intervention they studied in Zomba, Malawi, was successful in averting HIV and HSV-2 infections, teen pregnancies, and depression, and increasing school attendance. Nevertheless, they found that, using the conventional silo approach to estimating costs and benefits, none of the budgetary sectors (HIV, sexual and reproductive health, mental health, and education) would have funded the intervention. Under a co-financing model, the intervention would be funded,

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with costs distributed according to benefits identified in each subsector [11]. This work represents a significant methodological breakthrough for economic evaluation of multisectoral interventions. Applying this innovation to AIDS is especially useful. The relative abundance of vertical funding for AIDS compared with other endemic conditions has distorted health system development in poor countries. On the other hand, the AIDS spotlight has brought much needed attention to neglected diseases and general health in Africa. UNAIDS Executive Director Michel Sidibé has spoken of taking AIDS out of its silo, reflecting a growing realization that AIDS-affected individuals and communities face multiple, interacting challenges, the solutions to which are interdependent.

For two decades, evidence has accumulated that malnutrition, parasites, bacterial, viral, and fungal infections can increase transmission of HIV by increasing HIV viral load and contributing to ulceration and inflammation of the genital tract in HIV-infected and uninfected sexual partners. Fever episodes of malaria produce 10-fold increases in HIV viral load for up to 7 weeks, and HIV increases malarial parasitemia in infants and adults [12–14]. Urinary schistosomiasis causes genital lesions and inflammation in 33–75% of women in endemic areas, promoting susceptibility to sexual transmission of HIV [15–20]. In a region with 200 million malarial episodes annually and 120 million people with urogenital schistosomiasis, even a small increase in transmission risk from these cofactors generates large numbers of new HIV infections. Among policy makers and donors, however, there is still resistance to investing in bed nets, antiparasitics, maternal health, or cash transfers for general education to reduce new HIV infections.

Remme et al. [11] demonstrate that spillover benefits can be apportioned among budget sectors. Other recent works showing the cost implications of disease interactions also argue for better integration of health spending. Ndeffo Mbah et al. [21] show that treating schoolchildren with praziquantel (US$0.29 per child per year, including delivery, training, social mobilization, and administrative costs) can be more cost-effective in averting new HIV infections by preventing female genital schistosomiasis than any HIV-prevention methods currently funded. Wilson et al. [22] found that HIV-infected persons provided with insecticide-treated bed nets and water filters had slower progression to AIDS. Kern et al. [23] found that provision of bed nets and water filters, at a cost of $24 per household, ‘resulted in substantial net cost savings, due to the delay in the initiation of ART’. Public health interventions, neglected in the 1980s, are still cost-effective complements to life-saving therapies, like ORT and antiretroviral therapy (ART).

Sub-Saharan Africa faces growing epidemics of chronic noncommunicable diseases. Obesity, diabetes, and cardiovascular disease will soon claim more lives and more years of life than HIV/AIDS does today, but a large proportion of donor funding is earmarked for HIV. Levitt et al. [24] point out that the same skills of health-care providers who manage patients on ART are those needed for managing patients with other chronic, treatable conditions, like diabetes and hypertension. Many HIV-infected patients present with comorbidities, some resulting from HIV or ART. Maintaining ‘the fragmentary care model’ [25] is inefficient and inequitable. Shrinking budgets and still-burgeoning health challenges demand more rational allocation of funds to address interdependent health conditions and social needs.

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Conflicts of interest

There are no conflicts of interest.

References


