Despite the availability of effective therapies in developed nations, infectious diseases continue to take a grave toll on the population and economy of sub-Saharan Africa. Aside from a few successes, the global donor community has not adequately helped African governments meet these health challenges. However, if annual donor contributions increased approximately 10–20-fold, millions of lives could be saved, helping Africa escape the cycle of disease and impoverishment.

A new global commitment to disease control in Africa

JEFFREY D. SACHS

It is time for the global donor community—governments, multilateral agencies, foundations and individual philanthropists—to support a concerted attack on killer infectious diseases in sub-Saharan Africa, including HIV/AIDS, tuberculosis and malaria. Contrary to widespread belief, total donor support for disease control has been meager in recent years, and poor countries lack the financial means to address their public health crises. The result is that, despite existing technology, each year millions of people are dying in Africa and other hard hit regions with consequent economic, political and social turmoil. One summary measure of health, the number of children that die before the age of 5 for every 1000 births, remains staggeringly high at 172 deaths in sub-Saharan Africa compared with just 6 in the high-income countries[1]. Global donor support of $10–20 billion per year, much less than 0.1% of the combined $25 trillion gross national product (GNP) of the rich nations, would save millions of lives each year and would enable Africa to escape from a downward spiral of disease and economic collapse.

The economics of public health in the poorest countries are stark. Sub-Saharan Africa has an average annual income of $500 per capita, and if one excludes South Africa with its $3,000 per capita, the average falls to just a little over $300 per capita[2]. Governments of poor countries, even when not strapped for cash by debt crises, are rarely able to muster 4% of national income for public health, and the average is around 1.8% for sub-Saharan Africa (excluding South Africa)[3]. But even 4% of the GNP would leave a country with a $300 per capita annual income with just $12 per person in health spending. That allowance would have to address the multiple and interlocking crises of HIV/AIDS, malaria and tuberculosis (TB). There are also acute respiratory infections, diarrheal diseases and various vaccine-preventable diseases in under-immunized populations, which claim several million lives per year. South Asia is in a similar bind, with very low public health spending per person in an impoverished region, though the disease ecology is somewhat more benign than in sub-Saharan Africa.

The donor community has talked about support for disease control for decades, but action has been much less than promise. Specific programs have been well advertised and highly successful—most famously smallpox eradication and more recently the dramatic reduction in polio incidence and the successful battle against onchocerciasis (African river blindness). However, the larger truth is that healthcare has been shockingly under-funded. According to the data of the Organization of Economic Cooperation and Development, the scorekeeper of official development assistance, the global donor community gave all of sub-Saharan Africa just $836 million in aid for health during 1999, or roughly $1.30 per African, added on to the meager sums that African governments themselves can muster. Donor support for HIV/AIDS control programs for sub-Saharan Africa averaged a paltry $70 million per year between 1996 and 1998, even as the pandemic surged[4] (Fig. 1). Total official development assistance was in the order of $3 per HIV-infected individual in Africa.

The results are plain to see. In virtually every sphere of public health in Africa there has been regress rather than progress. Immunization rates declined in many parts of the continent during the 1990s. Malaria has been resurgent, reaching into urban areas such as Dar-es-Salaam and Accra which were essentially free of malaria in earlier generations. Most dramatic of all, HIV/AIDS has swept through the continent, especially in southern and eastern Africa, leaving behind a cumulative 17 million dead and 12 million orphans, with an estimated 25 million people now HIV-infected, 3.8 million new cases in 2000, and an estimated 2.4 million deaths during the year (http://www.unaids.org). The inequities of global health have been dramatized as never before by the lack of access of HIV-infected Africans to life-extending highly active antiretroviral therapy (HAART). While HAART has caused death rates from AIDS to plummet in the United States, Europe and in middle-income settings like Brazil where treatment has been possible, it is estimated that only 10,000 of Africa's HIV-infected individuals now receive HAART.

Africa's health crises are both a cause and effect of its' intense impoverishment. Poverty obviously affects health by limiting access to health services, sanitation and adequate nutrition and housing, but poor health also adversely impacts economic growth through a multiplicity of channels, a point being documented through scholarly studies of the Commission on Macroeconomics and Health of the World Health Organization (http://www.cid.harvard.edu/cidcmh). In stricken countries, worker productivity is reduced; foreign investors shun regions with high-disease burdens; poor families have large numbers of children in response to high rates of child mortality and so invest less in each child's health and education; and disease directly destabilizes societies. An academic study group supported by the Central Intelligence Agency, the State Failure Task Force, discovered that a high infant mortality rate was one of the most powerful predictors of subsequent governmental collapse in a worldwide study of political dynamics[5]. It is not surprising, then, that in a generation of surging infectious disease Africa has suffered outright declines in per capita national income despite rapid global economic growth.

Donor programs suffer from more than financial neglect. The natural leadership of global public health by the WHO (World Health Organization) has been stymied by having its core budget, provided by member governments, frozen in dollar terms for a decade. And because of an insufficient prioritization on health, the World Bank made remarkably few grants or loans for AIDS, malaria or TB control in Africa during the

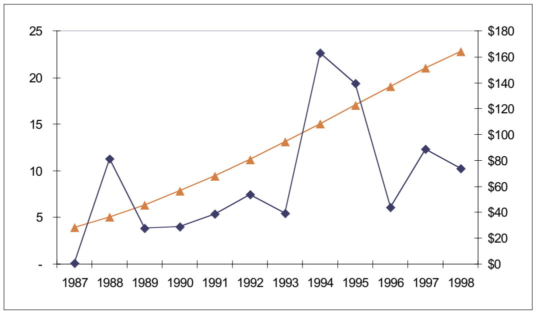

Fig. 1 HIV-infected individuals and total official development assistance in sub-Saharan Africa. ▲, HIV infections in millions (left axis); ◆, Total aid in $ millions (right axis).

1990s (http://www.worldbank.org/html/extdr/pb/pbaidsactivities.htm). Until a recent revival of WHO leadership under Gro Harlem Brundtland, the international initiative lay mainly with national donor agencies and their own limited health budgets and limited expertise. The result has been a hodge-podge of pet projects, often without scientific input or sufficient scale of intervention to make much difference. Donor agencies generally lack mechanisms for *ex ante* scientific review of proposed projects and *ex post* evaluation.

Bill Gates of Microsoft, more than any national leader, helped to redirect the course of global support for health in the past two years by putting down $750 million in a new Global Fund for Children's Vaccines to reinvigorate programs for childhood immunization. The money mattered. Suddenly the international agencies came to attention and coalesced into a Global Alliance for Vaccines and Immunization (GAVI). Expert review was initiated and the pooling of resources in one fund rather than dozens of disparate efforts led to a coordinated global strategy. Backed by the new funding, the GAVI has recently made funding commitments to more than 20 countries (http://www.vaccinealliance.com).

It is now time for the international community to establish comparable global trust funds for AIDS, malaria, TB and other childhood diseases. More than 120 members of the Harvard University faculty, in health sciences and public policy, have recently endorsed such a proposal in the case of AIDS (http://www.cid.harvard.edu). These funds should be under the leadership of the WHO, with strong backing by the leading biomedical and public health institutions around the world, such as the NIH (National Institutes of Health) and Centers for Disease Control in the United States and comparable bodies in other countries. The basic mechanism for such global funds should build in scientific review as a central mechanism (as well as operational monitoring, evaluation and audits). Governments of developing countries would submit plans for disease control and these plans would be vetted by independent expert scientific review committees, something akin to an NIH study section. Based on the recommendations of the expert review committees, a plan would either trigger financing from the fund or would be returned to the country for further work and possible funding at a later stage. Part of the terms of reference should be encouragement to governments that they draw upon their own national experts in the design and implementation of programs.

With such a global effort, as opposed to the disorganized and under-funded programs of recent years, several additional benefits would ensue. The major pharmaceutical companies could more readily be induced to provide their products to the poorest countries at production cost, rather than at patent-protected prices. Several companies, including Merck, Bristol Myers Squibb and Abbott Laboratories, have already agreed to make their antiretroviral products available at cost, and others would very likely join as part of a major and high-profile global effort. The companies, however, rightly worry that an unstructured distribution of their products will lead to black-marketing and misuse of the products. Misuse could be especially detrimental by causing a rapid proliferation and transmission of drug-resistant pathogens by non-adherent patients. A scientifically structured global effort could provide for reliable monitoring of drug distribution and use, and make possible the needed epidemiological investigations into the spread of resistance. Additionally, large-scale clinical studies should accompany the scaling up of disease control and could be built directly into the programmatic protocols. These studies would provide urgent information to assist in the optimization of medical interventions.

Given the devastating spread of AIDS in Africa, and the recent price discounts on anti retroviral drugs, the rich countries are finally poised to do more. They should now set up a Global AIDS Trust Fund with an initial annual budget of around $4 billion dollars to cover prevention and a targeted treatment of at least 1 million patients in Africa within the first two to three years (http://www.vaccinealliance.com). As the treatment coverage expands, the fund would probably require around $5–10 billion per year after the first few years of operation. Assuming that the combination of scaled-up prevention and treatment efforts (and their synergistic benefits) finally turn the tide of the pandemic, and that the cost of interventions continues to fall—especially if an effective vaccine is finally introduced—the annual cost of a global AIDS control effort would likely not exceed $10 billion per year.

Funding for AIDS must not crowd out the urgency of scaled-up interventions to control malaria, TB and a variety of childhood killers. Each of these major disease categories requires its own global funding with its own community of experts linked together under the WHO umbrella. Malaria control, for example, requires a complex mix of vector control (such as drainage of mosquito breeding sites, residual pesticide spraying of residences and insecticide-impregnated bednets) and case management—efforts quite different from the expertise needed for AIDS control. As with AIDS, though, effective case management also requires far more care in the management of drugs. Combination therapies may well be needed to slow the spread of resistance to the few remaining anti-malarials, now that chloroquine-resistant *Plasmodium falciparum* has spread through much of Africa (http://www.who.int/infectious-disease-report/index.html). Preliminary estimates, though still rough, indicate that malaria and TB control will each require around $2–3 billion per year for Africa, and the array of other lethal childhood diseases will probably also require a few billion dollars annually. A serious costing of these interventions is now underway by the WHO Commission on Macroeconomics and

Health, and these estimates will be available by the end of 2001. It seems likely that disease control in Africa will require, in sum, at least $10 billion per year in donor support, and perhaps up to $20 billion.

In addition to these critical interventions with existing technologies, we should bear in mind the critical role that future research should play in giving the world even more effective tools, and possibly ones that are less expensive. The quest for vaccines against HIV/AIDS, TB and malaria—as well as other lower profile diseases—is generally grossly under-funded relative to the disease burden in poor countries. And even when funding is substantial because the disease hits hard in rich countries (as in the case of AIDS), the pathogens in Africa or other low-income regions often have different genotypes that require distinctive approaches. The rich countries should offer more direct budgetary support for R&D into promising vaccines and biological products that will have impact on diseases with heavy burdens in the developing world. They should also adopt financial inducements for private-sector research and development, including a guarantee that efficacious products for distribution in Africa and other low-income countries will be purchased at a profitable price by the donors (http://www.cid.harvard.edu/malaria/malaria.htm).

Given that current donor spending on health has been running at under $1 billion annually for all of Africa, a proposal to spend $10–20 billion per year through several new global trust funds might seem like pie in the sky. But such a proposal could actually win donor support. Even $20 billion per year is just $20 per person for the 1 billion people living in the high-income countries. And with average incomes of $25,000 per year, $20 is easily manageable. During the past generation, the rich countries averted their eyes from the horrific rise of disease and collapse of public health systems in Africa, hoping that the problems would somehow go away, or that the African countries would somehow surmount the problems on their own. But the problems have not gone away, only grown dramatically. There can be no excuse for any further delay.

1. United Nations Development Programme, *Human Development Report 2000.* 189 (Oxford University Press, New York, 2001).
2. World Bank. *World Development Report 2000/2001.* 274–275 (Oxford University Press, New York, 2001).
3. World Health Organization. Geneva, Switzerland, *World Health Report 2000*, Annex Table 8.
4. Attaran, A. & Sachs, J. Defining and Refining the International Donor Support to Combat the AIDS Pandemic. *The Lancet* **357**, 57–61 (2001).
5. State Failure Task Force. "State failure task force report: Phase II findings". in *Environmental Change and Security Project Report*, Issue 5. 49–72 (Woodrow Wilson Center, Washington, DC, 1999).

Center for International Development
Harvard University
Cambridge, Massachusetts, USA
and Commission on Macroeconomics and Health
World Health Organization
Geneva, Switzerland