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Fighting Tropical Diseases

THE GLOBAL FIGHT AGAINST EXTREME POVERTY REQUIRES A SOLID PARTNERSHIP BETWEEN physical scientists, social scientists, civil society, and policy-makers. For too long, extreme poverty has been viewed mainly or exclusively through the lens of economics and politics. Yet the root causes of extreme poverty involve science-based challenges requiring expertise in disciplines including disease ecology, medicine, public health, climatology, agronomy, and soil science. A new effort to control several of the major killer infectious diseases in Africa (www.earth.columbia.edu/malaria-ntd) illustrates the promise of a science-based policy approach to the fight against poverty, hunger, and disease.

The United Nations (UN) Millennium Development Goals—the world's shared objectives for fighting extreme poverty—put a major focus on AIDS, tuberculosis, malaria, and “other diseases” not explicitly mentioned. These include several neglected tropical diseases that impose a combined disease burden rivaling that of the “big three”: AIDS, tuberculosis, and malaria. These neglected tropical diseases share a high prevalence in rural and poor urban regions of low-income countries, an ability to promote poverty, and disabling and stigmatizing characteristics. Moreover, efforts to control these diseases have been underappreciated, achieving successes not widely known in the policy community.

A policy effort initiated this year by the UN Millennium Project and the Earth Institute at Columbia University will link a scaling-up of the fight against malaria with expanded efforts against several parasitic and bacterial infections, including leishmaniasis, trypanosomiasis, hookworm, lymphatic filariasis, onchocerciasis, schistosomiasis, leprosy, Buruli ulcer, and trachoma. At a January 2006 meeting at the Karolinska Institute in Stockholm, specialists in malaria control, the neglected tropical diseases, and economic development compared evidence and planned a joint campaign for comprehensive disease control. The initial effort will focus on 10 countries (Ethiopia, Ghana, Kenya, Malawi, Mali, Nigeria, Rwanda, Senegal, Tanzania, and Uganda) that have pledged to have comprehensive scale-up plans to fight malaria as well as the neglected tropical diseases ready by the end of April 2006 and to seek funding from the Global Fund to Fight AIDS, Tuberculosis, and Malaria; the World Bank; and other sources.

There are several motivations for this new effort. First, recent analyses indicate that the disease burden imposed by neglected tropical diseases has been underestimated; they not only cause approximately 530,000 deaths annually but also cause much more long-term disability, disfigurement, and suffering. These diseases rival AIDS, tuberculosis, and malaria, resulting in a loss of up to 57 million disability-adjusted life years annually. Epidemiologic studies suggest extensive geographic overlap among these diseases and with AIDS, tuberculosis, and malaria, resulting in polyparasitism, especially among the poor. Second, chronic parasitic infections may increase an individual's risk of acquiring a “big three” disease or worsen its progression. These observations strengthen the rationale for incorporating treatments for parasitic diseases into control programs for the big three.

It is possible to design an easy-to-use “rapid-impact” package for simultaneously treating seven neglected tropical diseases—ascariasis, hookworm, trichuriasis, lymphatic filariasis, onchocerciasis, schistosomiasis, and trachoma—for less than \$1 per person per year plus free donations of four of the five impact-package drugs (azithromycin, albendazole, ivermectin, and mebendazole) by Pfizer, GSK, Merck, and Johnson & Johnson, respectively. In addition, praziquantel is available from various generic manufacturers at low cost. Scaling the rapid-impact package for all of Africa would require an estimated \$200 million per year in addition to approximately \$3 billion per year for malaria control. By integrating the control of neglected tropical diseases with malaria control, this pro-poor package could reduce the disease burden by as much as would the control of any of the big three diseases.

This scale-up will require novel and careful coordination between national program managers for malaria and their counterparts who deal with neglected tropical diseases, with attention to the complexities of compliance, drug interactions, drug resistance, monitoring, and sustainability. However, if successful, a coordinated assault on these tropical infections could become one of the best buys in all of public health. This integration should be incorporated into the next round of funding proposals for the Global Fund to Fight AIDS, Tuberculosis, and Malaria and be considered by other global health initiatives.

— Jeffrey D. Sachs and Peter J. Hotez

