4 de Arazoza H, Joanes J, Lounes R, et al. The HIV/AIDS epidemic in Cuba: description and tentative explanation of its low HIV prevalence. *BMC Infect Dis* 2007; **7:** 130.
5 UNAIDS. 2008 report on the global AIDS epidemic. Geneva: UNAIDS, 2008. http://www.unaids.org/en/KnowledgeCentre/HIVData/GlobalReport/2008/2008_Global_report.asp (accessed Jan 5, 2009).

In their important and provocative article,[1] Reuben Granich and colleagues argue that universal voluntary HIV testing and immediate antiretroviral therapy, irrespective of the degree of immune suppression, could eliminate HIV from countries where the infection is highly prevalent. However, we agree with Geoffrey Garnett and Rebecca Baggaley[2] that this approach could strongly shift the benefits of treatment from the individual to the population.

Although current HIV treatment guidelines favour earlier treatment, the risks and benefits of treatment for people with CD4+ cell counts above 350 per μL are unknown. Trials of therapy for patients with higher counts are yet to begin.

Within the field of communicable diseases, we are aware of little precedent for the approach of "treating for the common good". Treatment of diseases such as tuberculosis might have the effect of decreasing transmission, but the primary goal is to decrease morbidity and mortality for the affected person. A better analogy might be found in immunisation programmes—eg, rubella vaccination of infants and children aims to reduce exposure among pregnant women. However, there is still a clear benefit and minimal risk for the individual vaccinee.

The World Medical Association international code of medical ethics states that "A physician shall act in the patient's best interest when providing medical care."[3] If we are to deviate from this basic principle, we will need a robust ethical model for balancing individual and societal benefits.

We declare that we have no conflict of interest.

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1 Granich RM, Gilks CF, Dye C, De Cock KM, Williams BG. Universal voluntary HIV testing with immediate antiretroviral therapy as a strategy for elimination of HIV transmission: a mathematical model. *Lancet* 2009; **373:** 48–57.
2 Garnett GP, Baggaley RF. Treating our way out of the HIV pandemic: could we, would we, should we? *Lancet* 2009; **373:** 9–11.
3 World Medical Association. World Medical Association international code of medical ethics. http://www.wma.net/e/policy/c8.htm (accessed Dec 9, 2008).

Reuben Granich and colleagues[1] use mathematical models to show that annual screening of most adults for HIV, with immediate commencement of antiretroviral therapy for all infected, would strikingly reduce HIV incidence. The findings are very interesting. We would like to share our lessons from Ethiopia.

Ethiopia had a millennium AIDS campaign with the objective of increasing the number of people tested for HIV through universal voluntary counselling and testing and providing antiretroviral treatment for eligible patients. We were able to increase the number of people tested in 1 year from 560 000 in 2005/06 to 4·6 million in 2007/08. The number of patients started on antiretroviral therapy per month increased from 3500 to more than 5700.[2]

Even though we accomplished a lot in terms of HIV testing and antiretroviral therapy provision, we had challenges during the rapid scale-up of these services. We learnt that mass testing is very resource-intensive and needs a strong health system, including adequate human resources and a continuous supply of commodities. As a result, our current guiding principle is "high yield" and "high impact" through targeted testing of most-at-risk populations: patients with tuberculosis or sexually transmitted diseases, and pregnant women.

Universal voluntary HIV testing and antiretroviral therapy provision might be effective in reducing HIV transmission, but with the current health system constraints in many sub-Saharan African countries such as Ethiopia, it is really not feasible to practise it. We recommend "high yield" and "high impact" HIV testing with early initiation of antiretroviral therapy, and improved adherence and retention of patients in care and treatment.

We declare that we have no conflict of interest.

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2 MOH. Ethiopian monthly antiretroviral treatment report, September 2008. Addis Ababa: Ministry of Health, 2008.

Authors' reply

We thank the many colleagues around the world who have commented on our theoretical paper, and are encouraged by the ongoing discussion about how best to use antiretroviral therapy for HIV prevention. These comments signal that more research is needed.

The hypothetical approach that was modelled need not be interpreted as putting public health in competition with individual health. There is increasing evidence of individual benefit from earlier initiation of antiretroviral therapy, and the optimum time to start therapy remains uncertain. Only research can determine conclusively whether the modelled approach would benefit individuals by reducing HIV transmission and HIV disease, or whether drug toxicity and other considerations would outweigh advantages.

We agree that operational challenges in high burden, resource-constrained settings are formidable. The paper was a hypothetical exercise and further research is required to assess whether the studied approach has merit. We also agree that ethical and human rights issues need to be addressed, along with technical and financial considerations, as the concept of antiretroviral therapy for HIV prevention is further developed. We stress that other prevention modalities would continue to have a role, including ethical partner notification, as appropriate.

Technical issues raised by the correspondents include the importance of acute infection and its associated high infectivity, epidemic trends in southern Africa, the role of sexual concurrency, the degree of protection against HIV from other preventive interventions, and the postulated rates of adherence to therapy. The assumptions that went into the model were supported by the results of published studies, including available information on the relative importance of the acute infection period. However, we welcome further specialist discussion of the model.

WHO will hold a meeting later this year which will allow discussion of many of the issues raised in the letters responding to our paper. Anticipated outcomes include review and discussion of relevant research questions and methods, ethical and human rights concerns, and operational challenges, including costing.

Finally, we carefully avoided the term "eradication" in our paper. "Elimination" refers to reduction in incidence of a public health challenge to levels below some arbitrarily defined threshold. Paediatric HIV disease has been virtually eliminated in the industrialised world by use of universal voluntary testing of pregnant women together with antiretroviral prophylaxis and other appropriate interventions. Irrespective of terminology, the model showed that it is theoretically possible to substantially reduce HIV transmission through regular, universal voluntary testing and immediate antiretroviral therapy. We agree with the comment from Ethiopia that efforts to scale up services should start where need is greatest.

We declare that we have no conflict of interest.

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Better measures of affordability required

A Cameron and colleagues (Jan 17, p 240)[1] address the important topic of affordability of medicines in low-income and middle-income countries. The magnitude of the affordability problem depends on medicine prices *and* on the income level and distribution in a country.

Regarding income level, a convenient yet uncommon metric is used by Cameron and colleagues—ie, the salary of the lowest-paid unskilled government worker (LPGW). Use of this unusual measure hampers the interpretation of results and might overestimate the affordability of medicines. As they acknowledge, often "a substantial proportion of the population" earns less than the LPGW.

In collaboration with WHO and Health Action International, we investigated this situation in 17 of the countries in the Cameron study.[2] It turned out that, in 13 of these countries, half or more of the population was actually able to spend (much) less than the LPGW. The LPGW therefore is relatively well-off in most countries and at least half of the population in the 13 countries need to work more days than the LPGW to pay for necessary medicines.

Using household expenditure data and income distributions, we applied more common measures of affordability of medicines, based on impoverishment (ie, earning less than US$1 or $2 per day) and catastrophic spending on medicines (ie, more than a certain proportion of total spending).[3,4] Our results highlight that the already compelling results shown by Cameron and colleagues are, in fact, substantial overestimates of the affordability of medicines. Unfortunately, therefore, even more people lack financial access to necessary medicine, stressing the need for intervention.

We declare that we have no conflict of interest.

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Authors' reply

Comparison of treatment costs with the salary of the lowest-paid government worker (LPGW) is recommended by WHO and Health Action International as a means of estimating medicine affordability[1,2] and has been reported in various publications.[3,4] This measure uses local medicine prices collected with a standard survey to determine the number of days' wages the LPGW would need to purchase a course of treatment. Although it provides a simple method of illustrating the effect of medicine prices on the average consumer, and has the advantage of being a metric available in all countries, the LPGW measure is not without limitations.[3]

Even if a treatment is affordable for the LPGW, it might not be affordable for the often substantial proportion of the population earning less than this salary in low-income and middle-income countries. Further, it does not account for the need for other non-discretionary expenditures (eg, food), seasonal fluctuations in income, the number of dependants living on this wage, and other treatment costs such as consultations and diagnostics. Finally, it does not address individual preferences in coping with the financial demands of medicine purchases. Despite these limitations, it remains a useful, relatively simple and easy to comprehend indication of affordability which can assist in assessing the accessibility of treatment and interpreting