10. Singh N, Gayowski T, Wagener M, Marino IR, Yu VL. Pulmonary infections in liver transplant recipients receiving tacrolimus. Changing pattern of microbial etiologies. Transplantation **1996**;61:396–401.

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Reply

SIR—As correctly pointed out by Patel, screening for antibodies specific to *Toxoplasma* is not routinely performed in most liver transplantation programs. However, despite the fact that toxoplasmosis is rare following liver transplantation, its consequences can be devastating. It would be useful to know the recipient's toxoplasma serostatus before transplantation, because toxoplasmosis in these patients may not necessarily result from the transplanted organ but from reactivation of latent infection, as was the case in our patient. Furthermore, the possibility of toxoplasmosis is easily forgotten, because its symptoms are nonspecific (e.g., fever).

There are few reported data to support the efficacy of trimethoprim-sulfamethoxazole in preventing *Toxoplasma gondii* infection in these patients. We agree that in addition to treatment and prevention of *Pneumocystis carinii* pneumonia, prophylaxis for toxoplasma infection appears useful during the most severe immunosuppression, such as that in patients with AIDS [1–3]. In fact, trimethoprim-sulfamethoxazole also is routinely used in our unit for kidney and liver transplant patients receiving treatment with azathioprine, cyclosporine, and corticosteroids. Prophylaxis starts at 1 month and is continued up to 4 months after transplantation. However, trimethoprim-sulfamethoxazole prophylaxis is problematic, because it is accompanied by a high incidence of adverse reactions to the sulfonamide component and may be contraindicated in some patients. For our patient with decreased kidney function, this prophylaxis could not be used, and consequently treatment with pyrimethamine plus clindamycin was initiated. As summarized in our article [4], for the other liver transplant recipients with disseminated toxoplasmosis, either trimethoprim-sulfamethoxazole prophylaxis was not used or the data were not clearly available.

The 5-year survival rate among liver transplant recipients in Europe is ~70% [5]. One of the key components for improved prognosis of these patients is good management of opportunistic infections, including toxoplasmosis. The current procedure for liver transplant recipients in our unit includes not only prophylactic use of trimethoprim-sulfamethoxazole but also determination of toxoplasma serostatus before transplantation. This knowledge helps the clinician to be alert and to react promptly when clinical suspicion of toxoplasmosis arises.

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References

1. Carr A, Tindall B, Brew BJ, et al. Low-dose trimethoprim-sulfamethoxazole prophylaxis for toxoplasmic encephalitis in patients with AIDS. Ann Intern Med **1992**;117:106–11.
2. Hardy WD, Feinberg J, Finkelstein DM, et al. A controlled trial of trimethoprim-sulfamethoxazole or aerosolized pentamidine for secondary prophylaxis of *Pneumocystis carinii* pneumonia in patients with the acquired immunodeficiency syndrome: AIDS Clinical Trials Group Protocol 021. N Engl J Med **1992**;327:1842–8.
3. Weigel HM, de Vries E, Regez RM, et al. Co-trimoxazole is effective as primary prophylaxis for toxoplasmic encephalitis in HIV-infected patients: a case control study. Scand J Infect Dis **1997**;29:499–502.
4. Lappalainen M, Jokiranta TS, Halme L, et al. Disseminated toxoplasmosis after liver transplantation: case report and review. Clin Infect Dis **1998**; 27:1327–8.
5. Adam R, Bismuth H, Castaing D, et al. Registry of The European Transplant Association (Villejuif, France). **1998**.

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Dual Nucleoside Therapy in Resource-Poor and Medium-Income Countries

SIR—In their editorial, Miller and Goetz [1] suggest that in the absence of sufficient resources, organizations and health care systems could consider offering dual nucleoside therapy for persons with HIV infection. Several resource-poor and medium-income countries (such as Ivory Coast, Senegal, Chile) have already opted for this treatment strategy. The policy is generally introduced when insufficient funding is available to pay for triple-combination therapy. We are not convinced that this policy is a suitable solution in such a setting. Indeed, in a large number of cases, resistance to the antiviral drugs will rapidly develop [2], leaving the patients without new treatment options because resources will have been used up on relatively ineffective antivirals. This money could be used more effectively to improve the quality of life of these individuals and their families [3]. Offering dual therapy gives the impression that we are doing something, but we have to be sure that we are not just raising false hopes and ultimately doing more harm than good.

In the case of tuberculosis control, everyone agrees that a suboptimal treatment regimen is unacceptable. We have to increase the pressure on politicians to not only provide universal

access to optimal treatment for persons with HIV infection but also to increase funding for the development of an effective vaccine.

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References

1. Miller LG, Goetz MB. Editorial response: what is the relevance of antiretroviral therapy that does not include protease inhibitors? Clin Infect Dis **1998**;27:1386–7.
2. Larder BA. Viral resistance and the selection of antiretroviral combinations. J Acquir Immune Defic Syndr **1995**;10:S28–33.
3. Colebunders R, Decock R, Mbeba MJ. Improving the quality of care for persons with HIV infection in sub-Saharan Africa. Trop Geogr Med **1995**;2:78–81.

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Reply

SIR—Colebunders and Verdonck argue that opting for dual nucleoside therapy may not be a suitable option for resource-poor and medium-income counties. They point out that for other disease states such as tuberculosis, consensus dictates that suboptimal treatment is unacceptable. Although we clearly acknowledge their point that dual therapy for HIV infection is suboptimal, unfortunately care for HIV infection in these countries does not necessarily fit into the paradigm of tuberculosis. Resource-poor countries cannot afford to give optimal care to HIV-infected patients (or patients with other resource-consuming diseases such as end-stage kidney disease) because of economic reasons, and compromises must be made. With tuberculosis, pharmacological treatment is relatively inexpensive, and one can afford to be dogmatic about the shortcomings of suboptimal regimens.

We do not argue that these countries routinely adopt dual nucleosides as a therapeutic standard. We suggest that dual nucleosides be considered for HIV-infected persons instead of merely employing prophylaxis for opportunistic infections [1]. Besides the study by Forrest et al. [2], other population-based studies suggest that dual nucleoside therapy offers significant advantages in terms of longevity in HIV-infected persons [3]. Dual therapy–related prolongation of life even for a few years may be significant given that infected persons in resource-poor countries are young and in the most productive years of their lives.

Although Colebunders and Verdonck argue that money could be spent more effectively to improve the quality of life, there are little data to support what strategies are most cost-effective or could best improve quality of life. Even if one ignores current methodological controversies in measuring cost-effectiveness [4], health-related quality of life [5], and quality of care in HIV infection [6], studies on these issues have been done in wealthy nations, and assumptions used in these analyses cannot be extrapolated to resource-poor countries.

We wholeheartedly support their model for improving quality of care in places such as sub-Saharan Africa [7]; however, with little more than a conceptual framework, it is both difficult to measure quality of care and to assert the superiority of one method over another. Clearly, as they suggest, a multidisciplinary approach is essential to improve quality of care and quality of life. However, the precise components of such an approach are unclear and difficult to prove without investing a large amount of money that may better spent on the medical infrastructure. In summary, as the price of nucleoside analogues continues to drop in these regions, we believe that dual therapy may have some merit. We hope that those countries that have opted for this treatment strategy share their experiences with the global community managing HIV infection so that others can learn, and hopefully benefit, from their experiences.

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References

1. Miller LG, Goetz MB. Editorial response: what is the relevance of antiretroviral therapy that does not include protease inhibitors? Clin Infect Dis **1998**;27:1386–7.
2. Forrest DM, Seminari E, Hogg RS, et al. The incidence and spectrum of AIDS-defining illnesses in persons treated with antiretroviral drugs. Clin Infect Dis **1998**;27:1379–85.
3. Palella FJ Jr, Delaney KM, Moorman AC, et al. Declining morbidity and mortality among patients with advanced human immunodeficiency virus infection. HIV Outpatient Study Investigators. N Engl J Med **1998**;338:853–60.
4. Bozzette SA. Specific considerations for cost-effectiveness studies in AIDS. J Acquir Immune Defic Syndr Hum Retrovirol **1995**;10:S23–7.
5. Shumaker SA, Ellis S, Naughton M. Assessing health-related quality of life in HIV disease: key measurement issues. Qual Life Res **1997**;6:475–80.
6. Bozzette SA, Asch S. Developing quality review criteria from standards of care for HIV disease. J Acquir Immune Defic Syndr Hum Retrovirol **1995**;8:S45–9.
7. Colebunders R, Decock R, Mbeba MJ. Improving the quality of care for persons with HIV infection in sub-Saharan Africa. Trop Geogr Med **1995**;2:78–81.

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