

dence of lipodystrophy increases with the duration of exposure to HAART, with approximately a 57 percent increase per six months of additional exposure.<sup>1</sup> Thus, the inclusion of a control group of patients who continued to take a protease inhibitor might have shown that switching to one of the study drugs was beneficial, since the overall severity of lipodystrophy did not progress over the next 12 months. In addition, some differences in the study outcomes could be attributable to differences in compliance with the drug regimen, a factor that was not assessed in the trial.

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1. Martinez E, Mocroft A, Garcia-Viejo MA, et al. Risk of lipodystrophy in HIV-1 infected patients treated with protease inhibitors: a prospective study. *Lancet* 2001;357:592-8.

**THE AUTHORS REPLY:** The incidence of discontinuation of the study drug because of adverse effects was higher in the efavirenz group (27 patients [17 percent] discontinued the study drug) and in the nevirapine group (26 [17 percent]) than in the abacavir group (9 [6 percent],  $P=0.01$  by the chi-square test). The higher incidence of adverse effects in the efavirenz and nevirapine groups would have compensated for the lower virologic efficacy in the abacavir group if an intention-to-treat analysis (with noncompletion equivalent to failure) had been performed. Dr. Hirschel asks how many of the instances of drug discontinuation in the efavirenz group were among patients who had acquired HIV infection through intravenous drug use. Among the 171 intravenous drug users included in the study, only the rate of discontinuation of nevirapine was significantly higher than that among nonusers (28 percent vs. 9 percent,  $P=0.04$  by Fisher's exact test), not the rates of discontinuation of efavirenz (25 percent vs. 17 percent,  $P=0.3$  by Fisher's exact test)

or abacavir (6 percent vs. 6 percent,  $P=1.00$  by Fisher's exact test).

Our study was designed to determine the best substitute for a protease inhibitor in patients with a virologic response who wished to change the protease-inhibitor component of their regimen, for whatever reason. The main objective of the study was to perform a head-to-head comparison among nevirapine, efavirenz, and abacavir as potential candidates for a simplified regimen. Accordingly, a fourth control group of patients who continued to use a protease inhibitor was not considered. Dr. Mikhail points out that the lack of an increase in the prevalence of lipodystrophy at 12 months, as compared with base-line values, can be interpreted as a potential beneficial effect. However, this effect has not been demonstrated in studies that included objective measurements of body fat and in which there was a control group of patients who continued to use a protease inhibitor.<sup>1</sup>

The patients included in our study had long-term, stable, optimal virologic responses with their protease-inhibitor-containing therapies, and they participated in the trial because of the appeal of switching to a simpler regimen with potential equivalence to their protease-inhibitor-containing regimen. Although we assumed that the rate of compliance among these patients was high, Dr. Mikhail is right in stating that no specific assessment of drug compliance was performed.

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1. Ruiz L, Negro E, Domingo P, et al. Antiretroviral treatment simplification with nevirapine in protease inhibitor-experienced patients with HIV-associated lipodystrophy: 1-year prospective follow-up of a multicenter, randomized, controlled study. *J Acquir Immune Defic Syndr* 2001;27:229-36.

## Costs of Health Care Administration in the United States and Canada

**TO THE EDITOR:** There is little doubt that per capita health care administrative costs are lower in Canada than in the United States, as Woolhandler et al. report (Aug. 21 issue),<sup>1</sup> even though the precise magnitude of the gap is open to debate, a point that

Aaron makes in his accompanying editorial.<sup>2</sup> However, the Canadian single-payer system results in chronic shortages of medical services because of underfunding. The underfunding problem is usually considered to be a separate issue from the sin-

gle-payer system itself,<sup>2</sup> but the very structure of the single-payer system may cause the problem.

In the United States, persons who wish to spend more on health care than the norm have a simple way of doing so: they can purchase premium private medical insurance. Notwithstanding the Medicare prescription-drug plans currently being discussed, it is generally not an option in the United States to increase medical expenditures through the taxation system, given contemporary political and fiscal constraints. In Canada, however, increases in medical expenditures are possible largely only through the taxation system. And even if, as some surveys suggest, most Canadians are willing to spend more on health care,<sup>3</sup> taxpayers cannot be sure that any given tax increase will actually go to health care expenditures. Therefore, Canadian taxpayers generally resist tax increases, and underfunding and chronic shortages result.

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2. Aaron HJ. The costs of health care administration in the United States and Canada — questionable answers to a questionable question. *N Engl J Med* 2003;349:801-3.
3. Fife R. Most want surplus spent on Medicare, defence: liberal party poll finds overwhelming support for spending. *National Post*. December 27, 2002.

**TO THE EDITOR:** Aaron's commentary on the report by Woolhandler and colleagues is much too dismissive of their work. Tacitly assuming that the *Journal* is read only by Americans and that "policymakers" means "American policymakers," he probably would dismiss most cross-national studies of health care systems, on the grounds that culture and interest-group politics chain (American) policymakers forever to a health care system that Aaron himself admits is an "administrative monstrosity."

Policymakers beyond America's borders, however, do read the *Journal*. They are not nearly so constrained by cultural blinders. During the 1990s, for example, Taiwan moved to universal health insurance coverage and opted for a single-payer system, after carefully studying health care systems abroad. Similarly, Canadian policymakers are forever being encouraged by critics to move Canada's health care system closer to the U.S. approach. These foreign policymakers and their policy analysts will find cross-

national work on administrative costs highly relevant, quibbles over methodology notwithstanding.

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**TO THE EDITOR:** Aaron concludes that the article by Woolhandler et al. is an interesting academic exercise but is irrelevant for policy circles. This conclusion is based on the perception that the United States and Canada are very different and that this difference limits the relevance to the United States of the Canadian single-payer system. But the method of health care funding in Canada before it established a single-payer system was similar to that in the United States. It included both voluntary and for-profit insurance; the roles of such insurance were dramatically reduced with the establishment of the single-payer system. Moreover, although one would be politically naive to assume that a country as large as the United States can simply import a foreign model (however similar that country's system may have been to the U.S. system at one time), one would be wrong to assume that the uniqueness of the United States precludes our learning from other countries in designing our system of health care.

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**TO THE EDITOR:** The report on the cost of health care administration in the United States and Canada is inaccurate. Table 3 of the article shows the results of the authors' efforts to tally the number of people enrolled in our health insurance plans, which in 2001 included Uniprise in addition to United Healthcare. They then attempt to calculate the number of people employed per 10,000 enrollees. These calculations are incorrect and misleading to readers. In 2001, United Healthcare and Uniprise combined provided health insurance products to about 16.5 million people, not 8.5 million, as listed in Table 3. At the time, the entire corporation employed 30,000 people. However, only 20,117 were involved in the administration of these products. Therefore, 12.2 employees per 10,000 enrollees should have been reported, not 35.1.

With 21 business units diligently working to provide affordable health services to 50 million Americans, UnitedHealth Group will continue to invest in information technology and efficient business practices that reduce the cost of health care administration. We appreciate this opportunity to correct the record.

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**THE AUTHORS REPLY:** As Sekhon points out, Canada's health care spending is low — 57 percent of the U.S. figure per capita<sup>1</sup> — despite universal, nationwide health insurance. Modest differences in net physician income account for little of the cost differential, about 2 percent. However, Canada's frugality has caused shortages of some expensive services. These shortages are overblown in the press, which seldom reports that the rates of most services provided to Canadians — doctor visits, hospital days, immunizations, and even transplantations and hip replacements — are similar to American rates.<sup>1</sup> Moreover, the quality of care appears to be similar to that for insured Americans.<sup>2</sup>

Since the implementation of nationwide health insurance, infant mortality and life expectancy have improved faster in Canada than in the United States.<sup>1</sup> Although Canadians may spend too little, they get far better value for their money. A system combining Canadian efficiency and U.S. spending levels, as we have proposed elsewhere,<sup>3</sup> would be the world's best.

We disagree with Sekhon that tax-based funding automatically means underfunding. In the United States, government expenditures for health care have expanded faster than private expenditures. Moreover, the government generously supports medical education and research, along with defense contractors and tobacco prices. In Canada, the electorate has recently forced governments to boost health care spending. Government spending can be skimpy or exuberant, depending on who is for it and who is against it.

Navarro and also Reinhardt and Cheng criticize Aaron's political judgment. His economic critique of our methods was also flawed, because it was based on incorrect assumptions about comparative wages. He started from a hypothetical example of a nation with wages 1/10 those in the United States, positing that lower wages (a feature of Canada's sys-

tem that could not be imported) account for much of Canada's administrative savings. Yet Canada's lower health care prices are not explained by lower wage rates. In 1996 (the latest year for which data are available), the average annual pay of hospital administrative workers in the two nations was virtually identical: \$26,807 in Canada and \$27,570 in the United States (unpublished analysis of data from the March 1997 U.S. Current Population Survey and the 1996 Canadian Census). Aaron's recalculation of our figures is based largely on his incorrect wage assumption.

Finally, Tuckson calls our attention to errors in Table 3 of our article. The correct enrollment figure for United Healthcare is 16,500,000, putting United Healthcare's number of employees per enrollee at the low end of U.S. insurers, rather than the high end (though still 10 times as high as Canada's provincial plans). Our error derives from our incorrect assumption that a table in UnitedHealth Group's annual report provided complete data on enrollment. In fact, after a recent reorganization, UnitedHealth Group began doing about half of its health insurance business under the Uniprise name.

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2. Szick S, Angus DE, Nichol G, Harrison MB, Page J, Moher D. Health care delivery in Canada and the United States: are there relevant differences in health care outcomes? Toronto: Institute for Clinical Evaluative Sciences, June 1999. (Publication no. 99-04-TR.) (Also available at <http://www.ices.on.ca/>.)
3. Woolhandler S, Himmelstein DU, Angell M, Young QD. Proposal of the Physicians' Working Group for Single-Payer National Health Insurance. *JAMA* 2003;290:798-805.

**THE EDITORIALIST REPLIES:** Navarro alleges that the similarity of the prereform Canadian payment system and the current U.S. payment system indicates that the evolution of policy in the United States could easily follow the same pattern as that in Canada. I believe that this inference is a non sequitur. The fact that the Canadian payment system once resembled ours does not bear on whether the postreform Canadian system is relevant to current U.S. policy de-

bates. The histories of the United States and Canada have many similarities and differences. The operative question is whether conditions in the United States now resemble past conditions in Canada. I think they do not.

Reinhardt and Cheng observe that other nations can learn from the mistakes of the United States. They suggest that my showing that the estimated difference between U.S. and Canadian administrative costs is exaggerated and my argument that today's Canadian institutions for health care administration have little relevance to the current debate about U.S. health care reform means that I think other nations have nothing to learn from the many policy blunders of the United States. This allegation is unfounded. Nothing in my editorial or my other work supports it.

Reinhardt and Cheng also dismiss as a "quibble" my demonstration — based on one of several questionable procedures — that Woolhandler and colleagues overstate the difference between Canadian and U.S. administrative costs by \$50 billion, or near-

ly one third. It is not clear to me just how much larger than \$50 billion an error would have to be to graduate from being a "quibble."

Sekhon notes that a single-payer system need not ration care but can be readily used for that purpose. He sees the capacity to ration as a drawback, because rationing causes queues and other distortions. In contrast, I regard the capacity of single-payer plans to ration effectively as a potential virtue. The need to ration care for the well insured is rapidly becoming inescapable in the face of an avalanche of new and costly technology. No system of rationing will be free of distortions, and a single-payer system may do the job well or poorly, depending on how it is organized and run. But creating politically sustainable institutions to ration health care sensibly and compassionately is one of the leading challenges that our nation cannot avoid and has yet to meet.

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## Sudden Death in Young Athletes

**TO THE EDITOR:** In his article on sudden death in young athletes (Sept. 11 issue),<sup>1</sup> Maron includes a discussion of commotio cordis, in which he illustrates and describes a blow directly over the heart as an initiator of ventricular tachyarrhythmias. Although he discusses the necessity for protective precordial guards, there is no mention of the specific need to avoid direct strikes to the area over the heart as a means of prevention.

Athletes training in the martial arts and other combat-like sports can be trained to "miss" the precordium. This preventive measure is pertinent, as these sports (including karate, kung fu, and Olympic tae kwon do) are practiced worldwide by large numbers of the high-risk adolescent subpopulation.<sup>2</sup> We have successfully introduced this cardiac avoidance system to our athletes without any detriment to proficiency.

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2. Patel DR, Stier B, Luckstead EF. Major international sport profiles. *Pediatr Clin North Am* 2002;49:769-92.

**TO THE EDITOR:** Maron mentions coronary anomalies but does not discuss Kawasaki's disease, the most common cause of acquired heart disease in the United States. Although regression of coronary-artery aneurysm is recognized, long-term sequelae involving the coronary arteries can develop into young adulthood.<sup>1</sup> Iemura et al.<sup>2</sup> have shown evidence of persistent abnormal vascular-wall morphology and vascular dysfunction, including intimal-wall thickening, at the sites of regressed coronary aneurysms, which has led to early myocardial infarction and arrhythmia in young adults. Iemura et al. suggest long-term follow-up into adulthood, together with the avoidance of risk factors for atherosclerosis.

Transthoracic echocardiography is usually sufficient to examine coronary arteries in childhood; however, the procedure becomes difficult as children grow. Coronary magnetic resonance angiography has been shown to be very useful in adolescents