tients with lower virus susceptibility who might require higher plasma concentrations.

In summary, we observed adequate pharmacokinetic enhancement, although variable, of APV steady-state C\text{\text{min}} when co-administered with LPV/r. Our retrospective study was limited by the lack of data on patient's compliance, and therefore a prospective study is required to confirm our results and to evaluate the efficacy and the safety of this regimen. Because most interaction studies are carried out with a two-drug combination, the result may not be applied to multiple drug regimens as we reported here with the APV-LPV/r regimen, including three drugs with opposing effects on CYP3A4 metabolism. The lack of such data underlines the importance of monitoring PI concentrations to avoid long-term treatment failure or toxicity.

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Assessing the Impact of an Adult Day Program on Hospital Utilization by Persons Living With HIV/AIDS

To the Editor: Hospital utilization by HIV-positive individuals continues to be an important policy concern, because the majority of HIV-related direct care costs are associated with hospital care (1,2). Access to community-based health care has been found to reduce need for hospital care and help HIV-positive individuals function more independently (3). In Vancouver, British Columbia, hospital care for HIV-positive individuals has been complicated by recent increases in the prevalence of HIV infection among injection drug users (IDUs) (4). HIV-positive IDUs are known to incur significantly more hospital admissions than HIV-positive gay men throughout the duration of HIV disease (5). The purpose of this analysis was to examine the impact of Canada's first HIV/AIDS-focused adult day program on hospital utilization patterns of HIV-positive individuals. The Dr. Peter Centre was created in 1997 to serve HIV-positive individuals who are at high risk for declining health, and offers a range of services including nursing (e.g., antiretroviral therapy, methadone administration), counseling, recreation and complementary therapies, and food.

This analysis was based upon a retrospective chart review at St. Paul's Hospital, a major HIV/AIDS teaching hospital in Vancouver. The sample included HIV-positive individuals who had attended the Dr. Peter Centre for at least one year. Each hospital record covered a period of 2 years: 1 year before and 1 year after the subject's first contact with the Dr. Peter Centre. The records spanned the period from May 1996 to January 2001, and contained information concerning frequency of hospital use in five categories: emergency room visits, acute bed admissions, outpatient clinic visits, surgical short stay admis-

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sions, and psychiatric assessments. Basic demographic information was also recorded. In addition, information concerning subjects’ use of antiretroviral therapy (ART) was obtained through a linkage with the British Columbia Centre for Excellence’s Drug Treatment Programme. Eligibility criteria for inclusion in pre-post comparisons required that subjects had at least one visit/admission for the given hospital category during the pre- or postadmission period. Differences between preadmission and postadmission measurements for dichotomous and categorical variables were assessed using McNemar’s test. The Wilcoxon signed rank test was used to assess differences between pre and post measurements of numeric variables.

The records of 89 participants were included in the analysis. Of these, 76 (85%) were male and 13 were female (15%), the mean age was 40 years, and 53 (60%) were IDUs. As shown in Table 1, 72 (82%) subjects were given ART in the preadmission period (median duration: 8 months), and seventy-eight (88%) subjects were given ART in the postadmission period (median duration: 10 months). Comparisons of the total number of subjects given ART were not significant (p = .21).

With regard to hospital use, the number of subjects admitted to a hospital bed was 32 (36%) during the preadmission period, and 30 (34%) subjects were admitted during the postadmission period. The median number of days in a hospital bed was 5.5 days in the preadmission period compared with 2 days in the postadmission period (p = .011), and the median number of admissions was 1 during the preadmission period and was 1 during the postadmission period (p = .337). The median length of stay in a hospital bed decreased from 6.3 in the preadmission period to 4 in the postadmission period (p = .002). Substantial reductions in the total number of acute bed days were also observed, with the sample accounting for 882 days in the preadmission period and 394 in the postadmission period. This represents a reduction of 55% (p = .01). Comparisons of other hospital utilization categories did not significantly differ between periods.

Differential effects were observed when we stratified the data to examine IDUs and non-IDUs separately. The median number of acute bed days for IDUs in the preadmission period was 7.5, compared with 4.5 in the postadmission period; this reduction was not statistically significant (p = .584). For non-IDUs, the median number of acute bed days was 5 in the preadmission period and 0 in the postadmission period (p = .013). Although the median length of stay in an acute bed decreased significantly for IDUs from 11 days in the preadmission period to 5 days in the postadmission period (p = .022), length of stay did not decrease for non-IDUs. However, the median number of visits did decrease significantly for non-IDUs (p = .022) but not for IDUs (p = .125). However, only the increase in emergency room visits among IDUs was statistically significant (p = .037).

There are limitations to this study. First, the sample may not be representative of all persons using similar programs. Second, hospital records were obtained from only one hospital, and subjects may have used services at other hospitals. However, previous studies have shown that the majority of low-income HIV-infected individuals receive primary care through St Paul’s Hospital, and we feel it is highly unlikely that our findings are due to patients seeking care at alternate institutions during one of the periods (5). Finally, although data concerning ART was provided, no information concerning adherence was obtained. Although ART use was high within the cohort, there were not great differences in amount of ART use in the preadmission and postadmission period, and therefore the observed reductions in acute bed use cannot be explained fully by ART use.

In summary, we found that participation in a specialized HIV/AIDS day program was associated with substantial reductions in acute bed use and reduction in the length of hospital stays. Differential effects were observed for IDUs and non-IDUs. Acute bed use among non-IDUs decreased significantly in the postadmission period, whereas the reduction in acute bed use among IDUs did not reach statistical significance. Access to HIV-focused adult day programs can reduce the need for hospital care, with substantial cost-saving potential. These findings have implications for other cities where day programs have not yet been implemented.

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Use of Alternative Therapies Among HIV-Infected Patients at an Urban Tertiary Care Center

To the Editor: Increasing numbers of HIV-1–infected patients are using complementary and alternative medicine (CAM). These can include herbs, nutritional supplements, teas, and noningestible therapies such as massage and reiki. Use of these therapies among HIV-infected persons range from 22%–89% in this population (1–5). Due to potential drug interactions, healthcare providers should screen for CAM use in patients.

Herbal remedies and mega-vitamin usage often are not reported to clinicians for a variety of reasons. Patients often believe these substances are “natural,” and therefore not dangerous. Others fear that physicians and healthcare professionals may have negative attitudes toward CAM usage and do not report it to avoid confrontations with the healthcare professional. In addition, physicians and healthcare professionals are often not likely to ask patients about their self-medication. Eisenberg et al. (6) noted that 70% of patients did not reveal herbal usage to their physicians. Studies have shown a wide range of physician knowledge (14%–74%) of patients’ CAM usage (7–9). Regardless of why patients are not disclosing CAM usage, negative effects can result from this lack of communication. These negative events could include drug-herb interactions and toxicities or adverse effects from the CAM therapy itself. Patients may also substitute CAM therapies for more conventional therapies without informing the healthcare professional. Thus, the healthcare providers may not be able to adequately treat their patients without complete knowledge of what they are participating in and/or ingesting.

We designed this study to determine the proportion of patients using CAM in a large HIV outpatient clinic, the types of therapies used, and the characteristics of those people taking part in CAM. Finally, we aimed to uncover the degree of knowledge physicians have of their patient’s CAM use. We interviewed a convenience sample that included 324 (50%) of the 647 active patients in a tertiary care outpatient HIV clinic from April through July 2000. A registered dietitian administered a structured questionnaire covering both past and present usage of CAM therapies, and patients were also asked if these therapies were reported to their physicians. We excluded multivitamins and defined the vitamins and minerals group as an amount greater than the Recommended Dietary Allowance for micronutrients (10). Manual therapies were defined as those therapies that are performed by a CAM provider, such as massage therapy, acupuncture, and reiki. Other oral supplements included macronutrients and other ingestible therapies that did not fit in the herb or micronutrient groupings, such as proteins and amino acids, fatty acids, and over-the-counter steroid products. The clinic medical records were reviewed for CAM treatment documentation. HIV viral load and CD4+ T-lymphocyte laboratory values, demographic information, and highly active antiretroviral therapy usage were extracted from the clinic’s database. Statistical analyses included chi-squared and Mann-Whitney U test.

The only statistically significant difference between CAM users and nonusers was race, with white patients partaking in CAM more often than other racial groups (p = .005). Laboratory values were not significantly different. Overall, 178 (55%) reported ever using at least one CAM therapy. Approximately one third (97/324) of patients used at least one of the 57 herbal remedies reported. Twenty-four micronutrients, 12 other oral supplements, 14 types of teas, and 11 manual therapies were reported ever used. The five most popular therapies included vitamin C, vitamin E, echinacea, ginseng, and massage. One quarter (80/324) of those interviewed used vitamins or minerals. Teas, other oral supplements, and manual therapies were used by 15%, 7%, and 12% of patients interviewed, respectively. Of note, a majority of the patients (59%) stated they had informed their physicians, yet only 13% of the reported therapies were documented in the medical records. Figure 1 depicts the percent of patients who claimed to have reported usage versus the therapies that were documented in the medical record. This figure indicates that other oral supplements and vitamin and mineral usage were more likely to be reported and documented.

It is important to be aware of any substances that have the potential to cause toxicities and to interact with prescribed medications. Our survey found a majority of patients in a tertiary care outpatient clinic have used some form of CAM. This finding is similar to usage rates in other studies of HIV patient CAM use. Aside from race, there were no significant differences between CAM users and nonusers. It is important to note that many of the herbs most frequently used by the surveyed patients (i.e., echinacea, Saint-John’s-wort, and garlic) are those that have been shown to interact with medications (11–13).

FIG. 1. Complementary and alternative medicine therapies: patient reported versus physician documented.