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Cost-effectiveness and budget impact of lopinavir/ritonavir and atazanavir plus ritonavir regimens based on 48-week results from the CASTLE study

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Purpose of the study

The CASTLE study showed no significant differences in the percent of patients with viral load <,50 copies/ml or in CD4+ T-cell count increase at 48 weeks for the two antiretroviral (ARV) treatment regimens. Total cholesterol (TC) levels were elevated in 18% and 7% of patients receiving lopinavir/ritonavir (LPV/r) and atazanavir plus ritonavir (ATV+RTV) respectively. However, the economic impact of these findings is not known. The purpose of this study was to conduct a CEA and budget impact analysis comparing LPV/r and ATV+RTV for a group of antiretroviral-naïve patients with a baseline CD4+ T-cell distribution and TC profile similar to the CASTLE population.

Methods

This decision analysis study used a previously published Markov model of HIV disease, incorporating coronary heart disease (CHD) events to compare the short- and long-term budget impacts and CHD consequences expected for the two regimens.

Summary of results

The basic assumption was a baseline CHD risk of 4.6% and that 50% of the population in the CASTLE study were smokers. The CHD risk differences in favor of ATV+RTV resulted in an average improvement in life expectancy of 0.031 QALYs (11 days), and an incremental cost-effectiveness ratio of $1,409,734/QALY. Use of the LPV/r regimen saved $24,518 and $36,651 at 5 and 10 years, respectively, with lifetime cost savings estimated at $38,490. A sensitivity analysis using a cohort of all smokers on antihypertensive medication estimated the TC difference between the regimens at 48 weeks resulting in an average improvement in life expectancy of 0.088 QALYs (32 days) in favor of ATV+RTV, and cost-effectiveness ratio of $520,861/QALY.

Conclusion

The use of an ATV+RTV-based regimen in ARV-naïve patients with a CHD risk similar to patients in the CASTLE study is not a cost-effective use of scarce resources. The very small added CHD risk incurred by LPV/r treatment is more than offset by its short- and long-term cost savings.