OBJECTIVES: The purpose of this study was to investigate the likelihood of achieving both LDL and HDL goals in the primary prevention of cardiovascular disease using an epidemiologic sample of United States residents by comparing simvastatin to a combined regimen of lovastatin/extended-release niacin. An additional objective was to estimate the cost-effectiveness of each product and the incremental cost-effectiveness ratio between regimens.

METHODS: A decision analytic model was developed to compare the cost-effectiveness of simvastatin and lovastatin/extended-release niacin. Product labeling estimated the change in cholesterol concentrations and the frequency of clinically important adverse events. The Third National Health and Nutrition Examination Survey (NHANES) adult data were used to estimate population cholesterol levels. Average wholesale price was used for medication costs.

RESULTS: The NHANES data revealed there were 256 patients (10.5%) that required a LDL goal of <160mg/dL, 1268 (52.2%) that required a goal of <130mg/dL, and 906 patients (37.3%) that required a goal of <100mg/dL. For both the 130mg/dL and 100mg/dL LDL goal analyses (and HDL ≥40mg/dL), lovastatin/extended-release niacin had higher success rates and lower average total costs than simvastatin. Simvastatin had the highest success rate in achieving LDL level <160mg/dL and HDL ≥40mg/dL. However, the average total health system cost (medications, physician visit costs, and laboratory costs) to use simvastatin was approximately twice that of lovastatin/extended-release niacin ($665 versus $332).

CONCLUSIONS: For LDL goals <130 and <100mg/dL (and HDL ≥40mg/dL), lovastatin/extended-release niacin was both more successful and less costly than simvastatin.

OBJECTIVES: To quantify the major determinants of population cost effectiveness of clinical guidelines for risk screening and prevention of cardiovascular disease (CVD) with “statin” therapy. METHODS: Risk profiles were collected for 4704 men age 35–84y and 1216 women age 45–84y without CVD. 5-year risk of a cardiovascular hospital admission for each individual was calculated using a Framingham risk equation. The predicted number of incident events in 5 years was scaled by age and gender to the 2001 NZ census population and integrated over age groups. Costs, benefits, and cost effectiveness were estimated at treatment thresholds Tc/HDLc = 4.0 to 6.5 and 5y risk 10% or 15%; and screening age thresholds 35/45 (M/F) to 50/60y and treatment adherence 50% to 84%. RESULTS: In the NZ population of 784K men age 35–84y and 558K women age 45–84y, at treatment thresholds of Tc/HDLc = 5.5 and 15% 5y risk, 56K men and 20K women would be eligible for prophylaxis. Compared to no intervention, 5y prophylaxis with 84% adherence would avert 3875 incident cardiovascular events and add 3712 life years at an incremental cost of $NZ29M and ICER < $NZ8000 ($US4000) per event avoided or LYG (discounted at 5%). The ICERs change 2 to 3-fold with treatment adherence (50% vs 84%), threshold lipid ratio (4.5 or 6.5 vs 5.5) and threshold screening age (50/60 vs 35/45) but less than 25% with treatment efficacy (24% vs 30%) and the 5y risk treatment threshold (10% vs 15%). The cost per LYG also depends strongly on the 5y cardiovascular fatality rate and the discount rate. CONCLUSIONS: Prophylaxis with ‘statins’ is very cost effective at current drug prices and clinically realistic treatment thresholds. Clinical guidelines for cardiovascular prophylaxis should focus on the threshold age for risk screening, the threshold lipid ratio and methods for enhancing treatment adherence.
COST-EFFECTIVENESS OF TREATING BY SIMVASTATIN 40 MG/DAY HIGH VASCULAR RISK PATIENTS: AN ECONOMIC EVALUATION BASED ON THE HEART PROTECTION STUDY

OBJECTIVES: Estimate the cost-effectiveness ratio in France of treating high vascular risk patients with simvastatin. METHODS: Data on efficacy and resources consumed were extracted from the published results of the MRC/BHF Heart Protection Study (HPS) performed in UK. HPS compared the occurrence of total and CHD deaths, major vascular events (MVE), and major coronary events (MCE) in more than 20,000 patients with high vascular risk (patients with diabetes, history of stroke or other cerebrovascular disease, peripheral arterial disease, or with CHD). Patients were randomly assigned to receive simvastatin or placebo and followed at least for five years. The cost-effectiveness analysis was performed using French unit costs. The survival benefit over the study period was estimated from the HPS results. Direct costs included the extra costs of simvastatin and the benefit associated with avoided vascular events. Indirect costs were not considered. Costs and benefit were discounted at 5%. RESULTS: All-cause mortality was reduced by 13% (RR = 0.87, p = 0.0003). There was a discounted survival benefit of 0.04 year per included patient. There were highly significant reductions of about one quarter in the risk of first event rate of MVE (RR = 0.76, p < 0.0001) and of MCE (RR = 0.73, p = 0.0001). The absolute value of the percentage of avoided event during the 5-year period in the simvastatin group was 5.4% for any major vascular event, 2.1% for non fatal MI, 1.3% for non fatal stroke, 2.4% for revascularisation, 1.2% for fatal MI and 0.2% for fatal stroke. The discounted extra cost of simvastatin was estimated at €1994 ($1 = €1) taking into account the statins used in the placebo group. This cost was reduced to €1031 by considering the direct cost associated with avoided vascular events. Cost-effectiveness ratio was then estimated at €23,678 per life year gained ($22,000 to $50,000 in the different subcategories of patients, ratios well accepted as being cost-effective). CONCLUSIONS: Treatment with simvastatin in different subcategories of patients with high vascular risk is cost-effective in the French setting.