COST-EFFECTIVENESS ANALYSIS OF SIMVASTATIN AND LOVASTATIN/EXTENDED-RELEASE NIACIN TO ACHIEVE LDL AND HDL GOAL USING NHANES DATA

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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.

COST EFFECTIVENESS ANALYSIS OF HMG-CO-A REDUCTASE INHIBITORS IN A MEDICAID POPULATION

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OBJECTIVES: This retrospective analysis of publicly available pharmacy claims data evaluates prescription trends and estimates cost effectiveness of statins based on acquisition cost and LDL-C lowering capacity.

METHODS: Massachusetts Medicaid statin utilization data for 2001 was obtained from the Centers for Medicare and Medicaid (CMS) website (www.cms.gov/medicaid/drugs/drug5.htm). Units per prescription, average cost per prescription, marketshare, days supply, and average cost per day were calculated. The annual cost per percent LDL-C reduction was calculated by dividing the annual cost by the percent LDL lowering capacity. These methods modeled the CURVES study and a subsequent pharmacoeconomic analysis by Hilleman, et al. LDL-C lowering capacity was obtained from the package insert for drug strengths not studied in the CURVES study. Drugs were compared based on equipotent LDL-C lowering capacity. Acquisition costs were not reflective of manufacturer rebates.

RESULTS: The statin market was comprised of atorvastatin at 67.33%, simvastatin at 14.76%, pravastatin at 10.74%, lovastatin at 3.91% and fluvastatin at 3.25%. Atorvastatin 10mg, the most commonly prescribed agent (40.02%), was the most cost effective agent with an annual patient cost per percent

determination of cost effectiveness in clinical guidelines for cardiovascular prophylaxis with statins

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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 538K 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.