PHARMACOECONOMIC EVALUATION OF VASOTEC® IN HYPERTENSIVE PATIENTS WITH CONGESTIVE HEART FAILURE: AN UPDATE OF THE RETROSPECTIVE CANADIAN ANALYSIS BASED ON THE STUDIES OF LEFT VENTRICULAR DYSFUNCTION (SOlvD)

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OBJECTIVES: ACE inhibitors are a potent therapy for congestive heart failure associated with left ventricular dysfunction and hypertension. Taking a hospital perspective, we report an update of a previous analysis of the health economic consequences of treating these hypertensive patients with enalapril in the Canadian setting.

METHODS: A decision analytic model was used to project survival probabilities and hospitalization rates beyond the trial observation period (5 years) using a secondary analysis of a subset of 1917 hypertensive patients with or without overt symptoms of congestive heart failure from the Studies of Left Ventricular Dysfunction (SoLVD). Patients who had HBP, defined by either an elevated systolic (140 mmHg) or diastolic (90 mmHg) blood pressure were selected for this study. We updated the model with Canadian cost inputs for fatal and non-fatal hospitalization, ambulatory care, death outside of the hospital, and enalapril for year 2003. Costs and benefits were discounted at a 5% annual rate. RESULTS: Over a projected 5-year period, patients treated primarily with enalapril twice-daily gained 0.18 life-years and experienced 0.4 fewer hospitalizations per patient compared to those receiving placebo. Over their lifetimes, patients treated with enalapril were projected to gain 2.14 life-years and experience 0.36 fewer hospitalizations. The incremental cost-utility ratios for enalapril versus placebo shown net cost savings of CAN$2309 over 5 years and CAN$3552 per QALY gained over patients’ lifetimes. For the subset of patients with overt symptoms of congestive heart failure, enalapril was cost saving in both the 5-year and lifetime projections. These results were not sensitive to changes in model parameters. CONCLUSION: Enalapril treatment for hypertensive patients with left ventricular dysfunction is projected to extend life expectancy, reduce hospitalizations, and to be either cost saving or highly cost-effective in Canada.

LONG-TERM COST-EFFECTIVENESS OF PRIMARY ANGIOPLASTY COMPARED TO FIBRINOLYSIS IN ACUTE MYOCARDIAL INFARCTION

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Primary angioplasty (PA) is clinically superior in reducing the risk of mortality and stroke at 30 days compared with fibrinolysis. OBJECTIVES: To assess the long-term incremental cost effectiveness of PA compared with fibrinolysis and the overall certainty of the baseline analysis using probabilistic sensitivity analysis. METHODS: Long-term costs and effects of PA and fibrinolysis were compared using Markov modeling. Four possible transition states were included in each arm: remaining asymptomatic, myocardial infarction, revascularization and dead. Patients could transition between the first three states with cycle intervals set at one year. The “dead” state was the absorbing state with no further transition. Transition probabilities remained fixed between states throughout the cycles. The termination condition was set to ten cycles or years. Costs for the transition states included direct costs and estimates of productivity losses. Outcomes were derived from available clinical literature. Discount rates were 5% for costs and 3% for benefits over time. The incremental cost effectiveness ratio was obtained at the end of 10 cycles. Parameter distributions were created to reflect the overall uncertainty of the point estimates for clinical outcomes and costs, which were included in the probabilistic analysis. Monte Carlo simulation using 1,000 sample trials was performed for the probabilistic analysis. RESULTS: After 10 years, the model predicted the total mortality with PA would be 20.9% (2.1% annualized) compared with 30.3% (3% annualized) in the fibrinolysis arm. Cumulative reinfarctions would be 11.5% in the primary angioplasty arm and 20.3% in the fibrinolysis arm. Cumulative rates for revascularization would be 65% in the primary angioplasty arm and 51.9% in the thrombolysis arm. Probabilistic sensitivity analysis suggested that in nearly 80% of sample clinical trials, PA was economically dominant over fibrinolysis. CONCLUSIONS: The model predicts that PA would be dominant and will have a lower rate of long-term mortality and myocardial infarction, but with more revascularization procedures compared with fibrinolysis.

SWITCHING PATIENTS TO ROSUVASTATIN FROM ATORVASTATIN OR OTHER STATINS IS COST-EFFECTIVE: PHARMACOECONOMIC ANALYSIS OF MERCURY I

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OBJECTIVE: To assess the cost-effectiveness of switching patients from atorvastatin (ATV), simvastatin (SIM) or pravastatin (PRA) to rosuvastatin (Crestor®; RSV), from the perspective of a UK primary health care provider. METHODS: The clinical benefit assessed was the proportion of patients treated to the European Atherosclerosis Society low-density lipoprotein cholesterol (LDL-C) goal (<3 mmol/L). Clinical data were taken from Measuring Effective Reductions in Cholesterol Using
Rosuvastatin therapY I (MERCURY I) trial in which 3140 adults with, or at risk of, coronary heart disease initially received a fixed daily dose of RSV 10 mg, ATV 10 or 20 mg, PRA 40 mg or SIM 20 mg. After 8 weeks’ treatment, patients were randomised to remain on treatment or to switch treatments as follows: from ATV 10 mg, SIM 20 mg, PRA 40 mg to RSV 10 mg or from ATV 20 mg to RSV 10 or 20 mg for a further 8 weeks. In a decision-analysis model, it was assumed that patients not achieving goal on an alternative statin after 8 weeks would be switched to RSV. Costs for drug acquisition, primary care physician visits, nurse visits and laboratory tests were included where appropriate. Cost-effectiveness was expressed as the cost per patient treated to LDL-C goal over a 16-week period. **RESULTS:** Initiating and maintaining patients on RSV was more cost-effective than either 1) initiating and maintaining on another statin; or 2) switching from another statin to RSV 10 mg. Compared with continuing on ATV, PRA or SIM, switching to RSV would treat more patients to goal at an incremental cost of £17–117 per extra patient treated to goal. **CONCLUSIONS:** Initiating and maintaining patients on RSV were more cost-effective than switching from the other statins to RSV. For patients initially receiving other statins, switching to RSV treated more patients to goal at relatively little additional total cost while drug costs were equivalent or lower.

**A COST-EFFECTIVENESS ANALYSIS OF TAXUS™ DRUG-ELUTING STENT IN THE UK**

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Coronary stents (metal mesh tube) are routinely used with coronary angioplasty for the treatment of ischaemic heart disease. As many as 25% of patients need reinterventions post conventional coronary stenting due to re-narrowing of the treated artery. **OBJECTIVE:** The objective is to assess the total 6-month cost and the incremental cost-utility of the TAXUS™ stent (TAXUS), a paclitaxel-eluting coronary stent system, compared to conventional stents (CS). **METHOD:** A decision analytical model was developed to assess the 6-month cost and the incremental cost-utility of TAXUS compared to CS. The study takes a UK NHS perspective. Clinical event rates for the TAXUS and CS were taken from TAXUS II clinical trial. Utility values were sourced from the literature. Unit cost data were based on UK published sources. **RESULTS:** Expected costs at 6 months were £4154 for CS and £4386 for TAXUS in the treated population. Compared to CS TAXUS was cost saving in diabetic patients (CS £4546 vs. TAXUS £4152), cost neutral in small vessels (CS £4301 vs TAXUS £4342) and slightly cost additive in long lesions (CS £4306 vs TAXUS £4425). Most of the initial increase in procedure cost is offset due to savings in fewer repeat procedures. The incremental cost-utility of TAXUS compared to CS ranged from £32,381/ QALY in the total population to £4,500/ QALY in patients with small vessels and to £13,500/ QALY in patients with long lesions. In diabetic patients TAXUS was the dominant strategy. **CONCLUSIONS:** Most of the initial increase in procedural costs with TAXUS is offset due to savings in repeat procedures. In some high-risk patient groups such as diabetics and those with small vessels TAXUS is cost saving or cost neutral. In all patient groups, TAXUS is a cost-effective new treatment modality for patients with coronary artery disease.

**LONG-TERM COST-EFFECTIVENESS OF INVASIVE STRATEGY IN PATIENT WITH UNSTABLE CORONARY ARTERY DISEASE—RESULTS FROM THE FRISC-II TRIAL**

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**OBJECTIVES:** The use of early coronary catheterization and revascularization in unstable coronary artery disease (UCAD) varies, which could have important consequences for patients as well as long-term costs. The objective of this study was to estimate the long-term cost-effectiveness and cost-utility ratios of this strategy. **METHODS:** We analysed data in the open randomized, clinical FRISC II invasive trial, which consisted of total 2457 patients, with signs and symptoms of UCAD. We prospectively recorded the patients’ use of health services as well as productivity losses. Health states scores were obtained within the trial five times during the 2-years follow-up. Results were analysed in both a societal and a health care provider perspective. The uncertainty was handled using the net-benefit approach. **RESULTS:** There was a significant 1.74% absolute reduction in mortality in the invasive compared to the non-invasive group at two-years follow-up. The difference in mean total cost was SEK 11,386 ($1,467). This difference was not significant. The estimated cost per quality adjusted life year (QALY) gained for the invasive strategy, based on within trial results and projected life expectancy, was SEK 22,873 ($2,948). The estimated cost per life year gained was SEK 57,651 ($7,429). If costs of added life years were included the cost per quality adjusted life year was SEK 78,077 ($10,061). **CONCLUSIONS:** Invasive strategy in patients with unstable angina or non-ST-segment elevation myocardial infarction, was in the long-term perspective shown to be cost-effective. The results were consistent in all subgroups.

**COST-EFFECTIVENESS ANALYSIS OF CITICOLINE VS CONVENTIONAL TREATMENT IN STROKE PATIENTS**

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The use of early coronary catheterization and revascularization in unstable coronary artery disease (UCAD) varies, which could have important consequences for patients as well as long-term costs. The objective of this study was to estimate the long-term cost-effectiveness and cost-utility ratios of this strategy. **METHODS:** We analysed data in the open randomized, clinical FRISC II invasive trial, which consisted of total 2457 patients, with signs and symptoms of UCAD. We prospectively recorded the patients’ use of health services as well as productivity losses. Health states scores were obtained within the trial five times during the 2-years follow-up. Results were analysed in both a societal and a health care provider perspective. The uncertainty was handled using the net-benefit approach. **RESULTS:** There was a significant 1.74% absolute reduction in mortality in the invasive compared to the non-invasive group at two-years follow-up. The difference in mean total cost was SEK 11,386 ($1,467). This difference was not significant. The estimated cost per quality adjusted life year (QALY) gained for the invasive strategy, based on within trial results and projected life expectancy, was SEK 22,873 ($2,948). The estimated cost per life year gained was SEK 57,651 ($7,429). If costs of added life years were included the cost per quality adjusted life year was SEK 78,077 ($10,061). **CONCLUSIONS:** Invasive strategy in patients with unstable angina or non-ST-segment elevation myocardial infarction, was in the long-term perspective shown to be cost-effective. The results were consistent in all subgroups.