A MODEL-BASED ANALYSIS OF THE EFFECTS OF INTENSIFYING LIPID-ALTERING THERAPY ON DIRECT MEDICAL COSTS OF CORONARY HEART DISEASE EVENTS IN A SECONDARY PREVENTION POPULATION IN THE UNITED STATES

Zhang B1, Friedman M1, Charland SL2, Burge RT2, Simko RJ3, Menzin J4

1Boston Health Economics, Inc, Waltham, MA, USA
2Abbott Laboratories, Abbott Park, IL, USA

OBJECTIVES: To assess the effects of various lipid-modifying strategies on direct medical costs of coronary heart disease (CHD) events among a representative patient cohort with established CHD. METHODS: Model-based analysis, using data from clinical trials, published literature, and national databases to project CHD medical costs (emergency, inpatient, and outpatient) over 5 years. The analysis focused on hypothetical cohorts of 10,000 CHD patients (50 years of age or older) with any abnormal lipid parameter (LDL-C, HDL-C, Non-HDL-C, and/or TG). The expected number of CHD events was calculated using the Framingham Heart Study equation for secondary prevention. Age, sex, and coronary risk-factor data for patients with CHD were obtained from a nationally-representative US health survey. Direct medical costs were expressed in SUS 2006, discounted annually at 3%. The drugs of interest included simvastatin (S) alone and fixed-dose extended release niacin/simvastatin (ERN/S), allowing an evaluation of increasing doses of S or adding a second agent to S. RESULTS: Direct medical costs of CHD events over 5 years are estimated to be approximately $3436 per patient for patients treated with 20 mg of S. These costs would decrease by 8.8% with 1000/20 mg of ERN/S. Compared to more aggressive lipid therapy with 40 mg of S, 1000/40 mg of ERN/S would decrease CHD costs by 9.1%. Relative to a maximum dose of S, 1000/40 mg of ERN/S would decrease CHD costs by 44.76 GBP vs CPTx, CVD, CHD, MI etc. (N = 122). Demographic, clinical and socioeconomic information was collected. Cost analysis was based on the direct cost estimations and the measurement of the effectiveness was based on the absolute reductions in the mean SBP for each subgroup after 1 year of treatment. Patients were separated in two subgroups: a) those with uncomplicated hypertension (N = 1243) and b) those with complications e.g. CVD, CHD, MI etc. (N = 122). Demographic, clinical and socioeconomic information was collected. Cost analysis was based on the direct cost estimations and the measurement of the effectiveness was based on the absolute reductions in the mean SBP for each subgroup after 1 year of treatment. The perspective of the Greek NHS was taken. Tariffs are referred to 2006 prices and costs are expressed in Euros. RESULTS: Mean direct cost per patient suffering from uncomplicated hypertension was estimated at €687 per year while for the second subgroup was significantly higher at €701 per year. Mean reduction in the patients' Systolic Blood Pressure was 32.58 mmHg for the first subgroup and 34.38 mmHg for the second. RESULTS: A majority of the 34,540 CHF patients were white (86%), one-half were 80 years or older and approximately 58% were female. Male CHF patients had a higher Charlson comorbidity score compared to females (4.27 vs. 3.99; p < 0.0001). Females were more likely than males to have an inpatient readmission within 365 days (58.6% vs. 41.2%; p = 0.016), an emergency department visit within 180 days preceding (58.3% vs. 41.7%; p = 0.0019) and following CHF admission (57.7% vs. 42.3%; p = 0.035); physician office visits within 365 days preceding (58.5% vs. 41.5%; p = 0.0001) and following CHF admission (57.7% vs. 42.3%; p = 0.0001). Females were also more likely than males to die within 60 days (56.3% vs. 43.7%; p = 0.009), 90 days (56.5% vs. 43.5%; p = 0.006), 180 days (56.2% vs. 43.8%; p = 0.0001) and 365 days (56.1% vs. 43.9%; p < 0.0001) of the initial CHF admission. In multivariate models, factors associated with health care resource use, expenditures and mortality had similar trends in both gender models. CONCLUSION: There appears to be gender differences in resource use and outcomes among CHF patients. Effort to better target interventions, diagnostic and therapeutic, among patients at higher risk of adverse outcomes carries potential for cost-effective management of CHF patients.

EVALUATING GENDER DIFFERENCES IN HEALTH CARE RESOURCE USE AND OUTCOMES AMONG ELDERLY PATIENTS WITH CONGESTIVE HEART FAILURE

Bharmal M1, Zyczynski T2, Linstaedt A1, Kennedy L1, Gemmen EK1

1Quintiles Strategic Research & Safety, Falls Church, VA, USA, 2GE Healthcare, Princeton, NJ, USA

OBJECTIVES: Evaluate gender differences in resource use, expenditures and mortality among U.S. Medicare patients following discharge from a hospital admission for congestive heart failure (CHF). METHODS: Analyses were conducted on national 5 sample of Medicare claims from January 1999 to December 2001. A cohort that had an initial hospitalization with a primary diagnosis of CHF was identified. Resource use at one year preceding and following the initial CHF admission was compared among males and females. Separate multivariate regression models were developed by gender to assess the factors associated with outcomes. Models included variables for patient characteristics, comorbidity, compliance with routine care and resource use in the year prior to CHF admission. RESULTS: A majority of the 34,540 CHF patients were white (86%), one-half were 80 years or older and approximately 58% were female. Male CHF patients had a higher Charlson comorbidity score compared to females (4.27 vs. 3.99; p < 0.0001). Females were more likely than males to have an inpatient readmission within 365 days (58.6% vs. 41.2%; p = 0.016), an emergency department visit within 180 days preceding (58.3% vs. 41.7%; p = 0.0019) and following CHF admission (57.7% vs. 42.3%; p = 0.035); physician office visits within 365 days preceding (58.5% vs. 41.5%; p = 0.0001) and following CHF admission (57.7% vs. 42.3%; p = 0.0001). Females were also more likely than males to die within 60 days (56.3% vs. 43.7%; p = 0.009), 90 days (56.5% vs. 43.5%; p = 0.006), 180 days (56.2% vs. 43.8%; p = 0.0001) and 365 days (56.1% vs. 43.9%; p < 0.0001) of the initial CHF admission. In multivariate models, factors associated with health care resource use, expenditures and mortality had similar trends in both gender models. CONCLUSION: There appears to be gender differences in resource use and outcomes among CHF patients. Effort to better target interventions, diagnostic and therapeutic, among patients at higher risk of adverse outcomes carries potential for cost-effective management of CHF patients.
the patients, as well as resource-consuming for the health care system. The ECON-APROS study has demonstrated that, besides the importance clinical-wise to treat hypertensive patients in their early stages of the disease, it is also cost-effective for the Greek health care setting.

**PCV22**

**COST EFFECTIVENESS ANALYSIS OF BOSENTAN FOR THE TREATMENT OF PULMONARY ARTERIAL HYPERTENSION IN SOUTH KOREA**

Lee TJ1, Kim J2, Sohn HS3, Kim D1

1Hallym University, Chuncheon, South Korea, 2Seoul National University, Seoul, South Korea, 3Sooke Myung Women’s University, Seoul, South Korea

**OBJECTIVES:** Pulmonary arterial hypertension (PAH) is a rare progressive and severe disease with short life expectancy. Bosentan has been shown to slow PAH progression and improve functional status, quality of life, and survival. The objective of the study is to assess cost effectiveness of bosentan for the treatment of PAH from a health care payer’s perspective in South Korea.

**METHODS:** A Markov model was used to estimate the expected lifetime, quality-adjusted life years (QALYs) and costs for a hypothetical cohort of 100 PAH patients treated for one year with bosentan compared to iloprost. The health states included in the model were WHO functional class I to IV and death. Transition probabilities were calculated based on observed transitions for bosentan and iloprost. Utility values were borrowed from an existing study, of which the utilities were calculated from estimated EuroQol health states. Costs were comprised of medication, hospitalization, and monitoring. Medication and monitoring costs were estimated from the National Health Insurance reimbursement data, with the latter based on expert opinion while hospitalization costs were estimated from a teaching hospital’s claims data for 13 patients. **RESULTS:** The model predicted that the expected life years of 100 PAH patients would be 98.5 years with bosentan and 98.4 years with iloprost. Treatment efficacy values were based on WHO functional class I to IV and death. The estimated costs would be 3,395 million KRW with bosentan and 8,618 million KRW with iloprost. Treatment with bosentan compared to treatment with iloprost resulted in a significant cost saving. These findings were not substantially greater gain in QALYs, though little gain in life years, with a difference of 5,431 (1,234) favoring levo (p = 0.04). During follow-up through end of study day 90, no significant differences were observed in hospital admissions (p = 0.67), inpatient days (p = 0.81) or emergency visits (p = 0.41). Subset analysis excluding patients with low baseline blood pressure also showed lower cost for the index admission for the levo group. Assuming an average price for levo in countries where is currently approved, incremental cost-effectiveness of levo relative to SOC in this subset is less than $1000 per year of life gained—a value well below accepted thresholds. **CONCLUSION:** In REVIVE II, patients treated with levo had shorter LOS and lower cost for the initial hospital admission relative to patients treated with SOC. When administered in accordance with the current label, levo is highly cost-effective relative to SOC.

**PCV23**

**HOSPITAL COSTS FOR TREATMENT OF ACUTE HEART FAILURE: ECONOMIC ANALYSIS OF THE REVIVE II STUDY**

De Lissovsky G1, Freaman K1, Mullahy J1, Dutschke A2, Sterz R1

Salon J1

1United BioSource Corporation, Bethesda, MD, USA, 2University of Wisconsin, Madison, WI, USA

**OBJECTIVES:** Acute decompensated heart failure (AHF) is a leading cause of hospital admission. The Randomized Evaluation of Intravenous LeVosimendan Efficacy (REVIVE II) trial compared patients randomly assigned to levosimendan (levo) or placebo (SOC), each in addition to local standard AHF treatments. We report the REVIVE II economic analysis. **METHODS:** REVIVE II enrolled patients (N = 600) hospitalized for AHF remaining dyspneic at rest despite treatment with intravenous diuretics. Case report forms documented index hospital treatment (drug administration, procedures, days by care unit) as well as subsequent admissions during 90 day follow-up. These data were used to impute cost based on an econometric cost function derived from >100,000 AHF hospital billing records selected per REVIVE II inclusion criteria. **RESULTS:** Index admission mean length of stay (LOS) was shorter for the levo group compared with standard of care (SOC) (6.8 vs. 8.7 days, p = 0.007) although ICU/CCU days were similar (levo 2.9, SOC 3.2, p = 0.81). Excluding cost for levo, predicted mean (median) cost for the index admission was levo $13,590 (9,458), SOC $19,021 (10,692) with a difference of $5,431 (1,234) favoring levo (p = 0.04). During follow-up through end of study day 90, no significant differences were observed in hospital admissions (p = 0.67), inpatient days (p = 0.81) or emergency visits (p = 0.41). Subset analysis excluding patients with low baseline blood pressure also showed lower cost for the index admission for the levo group. Assuming an average price for levo in countries where is currently approved, incremental cost-effectiveness of levo relative to SOC in this subset is less than $1000 per year of life gained—a value well below accepted thresholds. **CONCLUSION:** In REVIVE II, patients treated with levo had shorter LOS and lower cost for the initial hospital admission relative to patients treated with SOC. When administered in accordance with the current label, levo is highly cost-effective relative to SOC.

**PCV24**

**COST EFFECTIVENESS OF THE CARDIOVASCULAR PREVENTION WITH RAMIPRIL AND/OR STATINS IN HIGH RISK POPULATION IN ITALY**

Iannazzo S, Pradelli L

Advanced Research Srl, Turin, Italy

**OBJECTIVES:** Several drugs demonstrated the ability to reduce cardiovascular events incidence in secondary prevention. Among them we have aspirin, statins, beta-blockers and ACE-inhibitors. We performed a cost effectiveness analysis of several therapeutic options to assess their relative pharmacoeconomic performance. **METHODS:** We built a Markov model to simulate the survival rate and the cardiovascular events frequency in a high cardiovascular risk cohort formed by Italian patients who already had an acute myocardial infarction. Secondary prevention strategies considered were: C—standard therapy; R—ramipril plus standard therapy; S—simvastatin plus standard therapy; P—pravastatin plus standard therapy; R + S—ramipril and simvastatin plus standard therapy; R + P—ramipril and pravastatin plus standard therapy. Treatment efficacy values were based on the findings of the HOPE study for ramipril, the HPS study for simvastatin, the LIPID, WOSCOPS and CARE for pravastatin. Time horizon of the simulation was cohort lifetime. Direct sanitary costs were considered and valued according to current national prices, tariffs, and published literature. **RESULTS:** The average life expectancy resulted from the simulation was 12.0 in C, 12.9 in R, 12.7 in S, 13.1 in P, 13.6 in R + S and 14.0 in R + P strategies. The incremental cost effectiveness ratios (ICERs) with respect to C strategy were 1241 Euro/Life Year in R, 7610 Euro/Life Year in S, 7315 Euro/Life Year in P, 4660 Euro/Life Year in R + S and 5192 Euro/Life Year in R + P strategies. **CONCLUSION:** The simulation showed that the associations between ramipril and statins are the most effective strategies. From the economic standpoint ramipril alone is largely the most cost-effective strategy. This is mainly due to the lower cost of the drug with respect to statins.