Binary values were obtained using a threshold, which based on the mean survival time of patients derived from literature. **RESULTS:** Back-propagation as well as fuzzy-logic neural networks were applied. A 10-fold cross validation method was used to obtain the appropriate models. Final results were compared with the generic, logistic regression-based model. The best prediction score of the ANN model was 82% (generalization) and was higher than logistic regression prediction rate. Best obtained model was tested under its practical application in the in-silico study to model switching from cisplatin to carboplatin therapy in NSCLC. The results demonstrate that thanks to the better survival rate such operations could be cost-effective. **CONCLUSIONS:** Artificial Neural Networks could be applied in pharmacoeconomics analysis as additional modeling tools.

**CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)**

**OBJECTIVE:** To identify items in the existing disease-specific St. George’s Respiratory Questionnaire (SGRQ) that might be suitable for use in a COPD specific utility instrument. **METHOD:** The SGRQ has three domains. We planned to use three items per domain (mild, moderate and severe) for the new instrument. Using data from 893 patients we first reduced the original 50 SGRQ items to the 40 “best” items using classical test methods and Rasch modelling (RUMM 2010 software). The Person Separation Index for these 40 items was 0.9 (an “excellent” fit to a unidimensional model). We then used Rasch location maps to identify suitable items. We examined those items that covered 95% of the patients, then divided the population into tertiles according to their person location value: mild (mean location –0.97 logits, SD = 0.35), moderate (mean location 0.09 logits, SD = 0.39), severe (mean location 1.45 logits, SD = 0.56). For each level of patient severity we chose one item per SGRQ domain using criteria based upon quality of fit of the item to the unidimensional model of all 40 items. **RESULTS:** We were able to identify one suitable item per domain at each severity level. The locations of the nine items ranged from –1.16 logits to 1.47 logits. The mean item location for the three mild items was –0.55 logits, moderate items 0.18 logits, severe items 1.16 logits. **CONCLUSION:** We have now identified nine items from three domains of health in COPD. Each item has a clearly defined level of severity. This approach should ensure that the utility instrument, when fully developed, has good discriminative properties and may also have good evaluative properties.

**DEVELOPMENT OF A COPD SEVERITY SCORE IN CLAIMS DATABASE**

**OBJECTIVES:** The purpose of this study is to establish a measure of the COPD severity using claims data. **METHODS:** The study sample was identified from a large claims database covering the period 1999–2002. Patients of age 18–65 with previous acute exacerbation of COPD (AECB) were included in the study sample (n = 2068). Variables associated with COPD severity were extracted. Variables with low face validity, high endorsement rate (>97%), or low homogeneity (measured by Chronbach’s alpha) were excluded. Principal component analysis with orthogonal solution was conducted to identify the latent severity score. Scree test and eigenvalue-one criterion were used to determine the number of latent factors. The severity score was standardized (mean = 50, SD = 10). Construct validity was tested by comparing severe COPD patients to moderate/mild patients of 3-month AECB incidence rate and by comparing the failure rate (ER/hospitalization) of antibiotic treatment in AECB. **RESULTS:** Six variables were excluded from the original 18 potential variables due to low face validity or high endorsement rate. Principal component analysis based on the remaining 12 variables produced a single latent factor (eigenvalue = 3.6), therefore no factor rotation was performed. The score loaded high on the use of oxygen therapy, corticosteroids, and bronchodilators, etc. The resulting factor loading agreed with the clinical recommendation in GOLD criteria of treating COPD by severity. Chronbach’s alpha test showed good homogeneity of the severity score (0.71) and no input variables were rejected. The construct validity tests showed that, compared with mild/moderate COPD patients, severe patients were about 3 times more likely to have AECB episodes and 60% more likely to have antibiotic treatment failure in AECB episodes. **CONCLUSIONS:** The COPD severity score developed in this study can be applied to a wide range of retrospective studies of COPD, where results from
the usually accepted measure of COPD severity categorization, spirometry, are not available.

**CARDIOVASCULAR**

**CARDIOVASCULAR—Clinical Outcomes Studies**

**PCV1**

**THE COST-EFFECTIVENESS OF IRBESARTAN IN THE TREATMENT OF HYPERTENSIVE TYPE 2 DIABETIC PATIENTS WITH MICROALBUMINURIA IN TAIWAN**

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**OBJECTIVES:** To project the cumulative incidence of end-stage renal disease (ESRD), life expectancy and costs in Taiwan of treating patients with diabetes, hypertension, and microalbuminuria (DHM) with either standard hypertension treatment alone or standard hypertension treatment plus irbesartan 300mg daily.

**METHODS:** A peer-reviewed, published Markov model that simulated progression from microalbuminuria to nephropathy, doubling of serum creatinine, ESRD, and all-cause mortality in patients with DHM was adapted to Taiwan. Three strategies were compared: A) early use of irbesartan (i.e. start treatment in subjects with microalbuminuria) versus B) late use of irbesartan (i.e. as from overt nephropathy), or C) standard hypertension care (with comparable blood pressure control). Cumulative incidence of ESRD, costs and life expectancy were projected for a hypothetical cohort of 1000 subjects. Treatment-specific progression and mortality probabilities were derived from published trials: IRMA-2 (in microalbuminuria) and IDNT (in overt nephropathy). Medical management and cost data per state were obtained from published local sources. A flexible time horizon up to 25-years and third party payer perspective were used. Future costs and LE were discounted at 3% yearly.

**RESULTS:** When compared to standard blood pressure control, early irbesartan was projected to reduce the cumulative incidence of ESRD from (mean ± standard deviation) 22% to 8%, save TN $248,302 (US $7303), and add 0.702 life years per treated patient. Late irbesartan was dominant to control but dominated by early irbesartan.

**CONCLUSIONS:** Treating DHM patients with early irbesartan was projected to reduce the incidence of ESRD, extend life and reduce costs. Treating patients at a later stage is still beneficial, however to a lower extent. Applying flexible time horizons shows additional relevant information to decision makers.

**PCV2**

**ACHIEVEMENT OF THE EUROPEAN 1998 LDL-C GOAL BY HYPERCHOLESTEROLAEMIC PATIENTS IN THE STELLAR TRIAL: AN EVIDENCE-BASED MEDICINE (EBM) APPROACH**

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**OBJECTIVES:** To determine the number needed to treat (NNT) for one additional patient to achieve the Joint European Task Force 1998 goal for low-density lipoprotein cholesterol (LDL-C) of <3.0mmol/L (116mg/dL) at 6 weeks for rosvustatin 10mg compared to atorvastatin, pravastatin and simvastatin. Patients included in the Statin Therapies for Elevated Lipid Levels compared Across doses to Rosuvastatin (STELLAR) trial had an initial LDL-C ≥ 4.1mmol/L (160mg/dL) and <6.5mmol/L (250mg/dL).

**METHODS:** Data on patients achieving the European 1998 LDL-C goal with rosvustatin and the other statins were extracted and recalculated using an intention to treat (ITT) approach where all patients randomised were included in the analysis and any dropouts were assumed to be treatment failures. The ITT analysis formed the basis of the NNT calculations. Negative NNT’s were interpreted as infinity.

**RESULTS:** The NNT’s for rosvustatin 10mg compared to the other statins are: atorvastatin 10mg (3.9, 95%CI: 2.8 to 6.3), 20mg (9.5, 95%CI: 4.9 to 135.8); 40mg (361.1 in favour of atorvastatin, 95%CI: 10.7 to infinity); 80mg (17.7 in favour of atorvastatin, 95%CI: 7.2 to infinity); simvastatin 10mg (1.9, 95%CI: 1.6 to 2.3), 20mg (3.1, 95%CI: 2.3 to 4.4); 40mg (6.7, 95%CI: 4.0 to 19.8), 80mg (67.4, 95%CI: 9.4 to infinity); pravastatin 10mg (1.4, 95%CI: 1.2 to 1.5), 20mg (1.6, 95%CI: 1.4 to 1.8); 40mg (1.9, 95%CI: 1.6 to 2.4). In applying NNT’s, the numbers should be rounded up, e.g. an NNT of 3.9 means that you need to treat 4 patients with rosvustatin 10mg rather than atorvastatin 10mg to get one additional patient to the LDL-C goal at six weeks.

**CONCLUSIONS:** NNT’s are the “currency” of EBM with an NNT < 40 considered beneficial in chronic conditions. In this context, rosvustatin 10mg has an advantageous NNT profile compared to the available doses of other statins.

**PCV3**

**TIME TO LDL-CHOLESTEROL GOAL ATTAINMENT IN SPAIN**

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**OBJECTIVES:** To assess LDL-C reduction and goal attainment over time and determine time period when patients are most likely to attain goal after initiation of LDL in Spain.

**METHODS:** Retrospective cohort study conducted at 23 primary care centres and 16 outpatient lipid centres. Eligible patients were adults (≥18 years) with CHD/CHD equivalent or RFs) were included in the study. Mean age was 60 years (SD 10.22), 48% were female. Statins were initial LDL in 90% patients. Only 20% CHD and 29% 2 + RF patients were at goal at study end. Proportion of patients at goal increased to 23% after 3 months of therapy start and remained stable afterwards around 25%. Increase in proportion of patients at goal was only positive (+23%) for the first 3 months (p < 0.05) and then remained around 0% increase till study end.

**CONCLUSIONS:** Percentage of patients at goal only increased during first three month period after start of lipid lowering therapy, remaining flat thereafter. More aggressive lipid lowering therapy should be started for those not at goal after first 3 months from LDL start, to enable more patients to get to LDL-C goal.