PCV54
A COMPARISON OF CLASSIFICATION AND REGRESSION TREES AND LOGISTIC REGRESSION FOR PREDICTING DEATH OF OLDER LONG-TERM CARE USERS IN JAPAN
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OBJECTIVES: Long-Term Care (LTC) service users with dementia show higher expenditure of care compared to non-care users and need support services. The aim of this study was to determine risk factors that are associated with death among elderly LTC service users in Japan. METHODS: In a retrospective cohort study, we extracted data from all subjects who used LTC services with CNL ranging from 1 to 5 in 2010. The study sample consisted of 50,268 adults aged 65 years and above in 2010 and who had given consent to linkage of their National Healthcare Insurance data with corresponding LTC insurance claims data. Dementia and death were defined according to the corresponding ICD-10 code. Logistic regression (LR) analysis was used to identify factors associated with death in June 2011. Furthermore, we developed and pruned a supervised learning approach using non-parametric Classification and Regression Tree (CART) and Random Forest (RF), the algorithms of machine learning, to create risk factors for death. In order to avoid model overfitting, we did our sampling by 1 to 1 ratio. Finally, our samples consisted of 12,070 adults enrolled and set 70% as training dataset, 15% as testing dataset, and 5% as validation dataset. RESULTS: The factors associated with death were hospitalization more than 30 days in one year, older age, the male sex, and higher CNL, facility care services/ home care services use, and new dementia diagnosis with amnestic type (AUC of 0.79). Similar results were absent in the supervised learning approach, which including CART and RF for death with an AUC of 0.7333 and 0.7623, respectively. CONCLUSIONS: When applied prudent, both LR and CART are suitable for the analysis of death prediction, and more research is required to investigate the factors that are related to long-term hospitalization among elderly.

PCV55
PREDICTION MODEL FOR FUNCTIONAL STATUS AT DISCHARGE FOLLOWING REHABILITATION AFTER INTRACEREBRAL HEMORRHAGE
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OBJECTIVES: To determine the course of functional recovery following rehabilitation in patients after intracerebral hemorrhage (ICH). The prediction of progressive increments in functional status is important for appropriate treatment planning and for setting rehabilitation goals. The aim of this study was to develop and validate a prediction model to predict clinical outcome in patients with ICH. METHODS: Data were collected on electronic medical record (EMR) referrals and brain computed tomography (CT) scans from the National Rehabilitation Center (NRC) in Korea. Functional level was measured using the modified Barthel index (MBI), recorded at admission and discharge. Factors considered for predictors associated with the MBI total score at discharge included patients’ clinical and imaging variables such as age, location, ICH volume, and effect due to hemorrhagic etc. at the admission. RESULTS: Five hundred twenty six patients aged 13 years or older (mean age: 57.2 years) who were discharged between November 15, 2006 and April 24, 2015, from NRC were retrospectively analyzed. Significant predictors of the total MBI score included balance, cognitive function measured by the total score of Mini-Mental State Examination (MMSE), functional ambulation categories, muscle strength of left hip flexors, muscle strength of right knee extensor, presence of pneumonia, spasticity of right lower extremity, intraventricular hemorrhage score, abnormality of pain sense, aphasia, hemorrhage of brainstem, intracerebral hemorrhage volume, longitudinal sitting balance, mass effect due to hemorrhage etc. The adequacy of prediction was as measured by adjusted R2 = 0.8013. CONCLUSIONS: The functional status prediction model performed well. Further studies should be planned to evaluate whether the model can be of practical use to physicians when attempting to set up an appropriate rehabilitation schedule at the patients’ admission.

PCV56
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OBJECTIVES: To compare the effectiveness of β-blockers for older patients following a primary hospital admission for HF. METHODS: We conducted a cohort study using Quebec administrative databases to identify patients who were prescribed the β-blockers, carvedilol, bisoprolol or metoprolol tartrate after the diagnosis of HF. We characterized the use of these drugs prescribed at discharge by the type of β-blocker prescribed at discharge and first HF hospitalization. To control for differences among patient characteristics, a multivariate Cox proportional hazards model was used to compare the combined primary endpoint of all-cause mortality and HF readmission, its components, and cardiovascular mortality. RESULTS: Of the 3609 patients with HF with a median follow-up of 3.0 years, the crude annual mortality was 16.5% with metoprolol tartrate, 15.7% with carvedilol, and 17.7% with bisoprolol. After controlling for covariates, we found that carvedilol (HR 0.94; 95% CI 0.80-1.09) and bisoprolol (HR 1.05; 95% CI 0.94-1.17) were not superior to metoprolol tartrate in improving survival. HF readmission rate was significantly increased from 18% to 25% with carvedilol and bisoprolol versus metoprolol tartrate (HR 0.73; 95% CI 0.58-0.91). Our primary findings were consistent throughout sensitivity analyses. CONCLUSIONS: We suggest that there is no evidence of a differential effect of β-blockers on mortality in older patients with HF, but the agent selected may have an impact on the rate of HF readmissions.

PCV57
MORTALITY TRENDS IN CARDIOVASCULAR DISEASE: A NEW MODEL TO VISUALIZE THE CONTRIBUTION OF SPECIFIC DISEASES, COHORT EFFECTS AND CODING CHANGES TO OVERALL MORTALITY IMPROVEMENT
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OBJECTIVES: To identify the drivers of trends in mortality for disease classes is challenging. We used the Requiem model to visualize trends by gender and age in 3-D format to identify cohort effects, impacts of interventions and mortality coding changes (Hernandez et al., 2019). METHODS: Using Quebec administrative databases to identify patients who were prescribed the antiplatelet drugs was estimated and validated on observed mortality for England and Wales from 1970 to 2013 by single year of age and gender. Disease codes were mapped at 4-digit level from ICD-8 to ICD-10 by medical modellers. An analysis was run for all CVD and individual diseases within that category. Outputs were displayed in multiple formats, including 3-D images of central mortality and deaths by age over time, and heat maps of absolute mortality improvement per disease and the component each disease contributed to all-cause mortality trends. RESULTS: CVD mortality has declined by up to 8% per year in England and Wales, especially in the “golden cohort” born in the 1930s, as shown clearly in the heat maps. Mortality rates from ischaemic stroke have fallen precipitously by up to 10% per year in both genders, especially in the 60+ age group, as shown in the 3-D charts. This contributed up to 0.4% absolute improvement in all-cause mortality prior to 1990. Mortality improvement from myocardial infarction was up to 20% per year in both genders aged 40 to 80, especially in the mid-1980s to 1990s, contributing up to 2% in absolute improvement in all-cause mortality in men in the mid-1980s and 1% in women in the early 1990s. CONCLUSIONS: The Requiem model 3-D visualisation shows the substantial improvement in mortality from CVD and all causes was largely driven by improvements in ischaemic stroke and MI in the golden cohort. In future years, as this cohort eventually dies, mortality improvement rates in CVD are likely to decline.

PCV58
SIMPSON’S PARADOX: WHY SMOKING REDUCES THE RISK OF DYING OF CARDIOVASCULAR DISEASE
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OBJECTIVES: To use a stochastic all-cause, cause of death mortality model to determine the risk of cardiovascular (CVD) mortality in smokers compared with non-smokers by using the UK allowing for smoking harms of disease and onto Viva model adjusts population baseline mortality for known risk factors to calculate the mean age of death and most likely causes of death for an individual, and has been validated against long-term cohorts in the UK and USA. We used the model to calculate the likely outcomes for a 50-year-old male who smokes no, 10 or 20 cigarettes a day, with population average values for blood pressure, body-mass index, cholesterol and alcohol consumption. RESULTS: The mean ages of death were 82.7 years for the non-smoker, 78.7 years for a 10/day and 76.1 years for a 20/day smoker. At each year of life, smokers had a higher mortality from CVD than non-smokers. However, overall, there were fewer CVD deaths in smokers than non-smokers. This is an example of Simpson’s paradox and the probability of death at a specific age is likely to be the opposite for each subgroup in the population. Smokers have increased mortality from cancer and respiratory disease, and on average die of these at a younger age than those who eventually die of CVD. Smokers also have fewer years of life than non-smokers in which CVD deaths can occur. CONCLUSIONS: Smoking increases the risk of many diseases, which have their greatest impact at different ages. Smokers have lower overall risks of CVD death as they are more likely than non-smokers to have died from disease before the peak age for CVD deaths. The real-world effect of interventions for smoking-related diseases will be influenced by this impact of competing causes of death.

CARDIOVASCULAR DISORDERS – Cost Studies
PCV59
BUDGET IMPACT MODEL (BIM) OF RIVAROXABAN IN COMPARISON WITH ENOXAPARIN PLUS WARFARIN IN THE TREATMENT OF VENOUS THROMBOEMBOLISM (VTE) UNDER THE PERSPECTIVE OF THE PRIVATE HEALTH SYSTEM
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OBJECTIVES: Venous thromboembolism (VTE) which comprises deep vein thrombosis (DVT) and pulmonary embolism (PE) is associated with a significant health-care burden. Currently, standard of care is parenteral low molecular weight heparin (LMWH) or oral anticoagulants (NOAC). Rivaroxaban (R) is an oral direct factor Xa inhibitor that requires a dose adjustment or routine coagulation monitoring, bringing an important advantage for VTE treatment. The EINSTEIN clinical program of rivaroxaban showed that, compared to enoxaparin±Warfarin (E/W) and VKA, it significantly reduced the rate of new and recurrent VTE events. CONCLUSIONS: In this study we aimed to evaluate the budget impact of rivaroxaban for VTE treatment in comparison with current practice. METHODS: The budget impact analysis was conducted using a 1-year time horizon. Eligible patients were estimated from literature and validated by an expert panel. Total costs of hospitalization and