

10 days since acute stroke onset, 2,000 mg was administered intravenously; from day 11 to the end of the treatment periods (74 days), 1,000 mg was administered per os. The time horizon adopted in the model was 12 weeks. Based on the data on effectiveness of citicoline in complete patient recovery after 3 months reported by A. Davalos et al., the cost-effectiveness ratios (CERs) were calculated and compared. **RESULTS:** Estimated CERs were 513,099.20 RUB per one patient recovered in control group and 435,368.00 RUB per one patient recovered in citicoline group. Furthermore, the costs of rehabilitation of patients were lower in the citicoline group as compared to control group, cost savings were estimated to be about 1,719,610.00 RUB. **CONCLUSIONS:** The study has demonstrated that the treatment of acute ischemic stroke with citicoline was more cost-effective and had the potential to reduce the rehabilitation expenses.

PCV48

REMOTE PATIENT MONITORING IN CRT-D RECIPIENTS MAY REDUCE USE OF HOSPITAL-BASED CARE

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OBJECTIVES: Heart failure (HF) is a costly disease imposing a substantial health burden which affects 1-2% of Europeans. Hospital readmission for HF is a common occurrence with 25% of all patients readmitted within 30-days following initial hospitalization. Reducing readmission is an important component of managing HF costs and increasingly being targeted with health care policy reforms. The objective of this study is to examine how remote patient monitoring (RPM) may affect health care costs following the placement of a CRT-D device for patients with HF through the use of a simulation model. **METHODS:** The analysis was an individual patient event-based simulation from a US payer perspective based on a sample of patients from RAPID-RF, a multi-center prospective single-arm registry which enrolled 889 patients who received a CRT-D and RPM system (LATTITUDE@ Boston Scientific). The modeled population consisted of patients that had at least one alert for weight change, atrial tachycardia or ICD shock with a subsequent intervention (N=128). The population was limited to this subset to focus on the costs of changes in management due to RPM. A non-RPM control group was created by cloning each trial patient and simulating their response in the absence of RPM to the conditions that triggered each alert in the trial over one year using a decision tree which computed rates of hospitalization and physician contacts based on literature data. Event and hospitalization costs were estimated per Medicare (CMS) national average payment. **RESULTS:** RPM reduced total costs after the index procedure by \$323/patient driven by a reduction in costs related to hospitalization admissions. The decrease in hospital admission cost was partially offset by RPM's increase in physician visits and telephone counseling. **CONCLUSIONS:** RPM has the potential to shift HF-related care from an inpatient setting to office-based care, resulting in cost savings to national payers.

PCV49

DABIGATRAN ETEXILATE IN PREVENTION OF STROKE FOR NONVALVULAR ATRIAL FIBRILLATION PATIENTS IN TURKISH HEALTH CARE SETTING; A STUDY ON COST CONTAINMENT OF SOCIAL SECURITY INSTITUTION (SSI)

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OBJECTIVES: Analysis of cost containment of SSI via use of Dabigatran Etxelate (150MG) versus current standard of care (Warfarin) in prevention of stroke for non valvular atrial fibrillation patients in Turkish health care setting. **METHODS:** All calculations are performed for a group of 1000 patients in each treatment arm per year (Treatment arms; Dabigatran 150MG & Warfarin 5MG - results are represented as "cost per patient per day"). Available clinical data is analyzed for calculation of event costs in each treatment arm (RE-LY study). Local costs of events are included from local literature. Microsoft Excel (2007) is used for calculations and construction of data tables. **RESULTS:** Direct cost of SSI (indirect costs are not included in this analysis) is calculated in each treatment arm. Difference of daily medication cost between Dabigatran Etxelate and Warfarin treatments is +3.12 TL/Day*Patient however, this difference is calculated as -3.34 TL/Day*Patient when medication cost is combined with total treatment cost (costs of thromboembolic&adverse events, INR monitoring, impairment). Dabigatran Etxelate offers a cost containment (saving) of 0.22 TL/Day*Patient in prevention of stroke for non valvular atrial fibrillation patients in Turkish health care setting. **CONCLUSIONS:** Limitation of this study is covering only direct cost data due to lack of local literature on indirect costs. Further analysis may be performed by non-interventional studies, which will define cost containment data via real life cost and effectiveness values. This study demonstrates that Dabigatran Etxelate treatment may sustain cost containment (saving) via reduction of direct cost of SSI with respect to current standard of care, in prevention of stroke in patients with atrial fibrillation in current Turkish health care system.

PCV50

COST SAVING AFTER SUTURELESS REPLACEMENT IN AORTIC VALVE STENOSIS: RESULTS FROM A PROPENSITY-MATCHED SCORE ANALYSIS IN GERMANY

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OBJECTIVES: New sutureless aortic valve prostheses reduce the surgical time. Objective of this study is to assess if shorter operative times may also result in improved patient outcomes and the impact on the hospital costs. **METHODS:** Records of 547 patients that underwent aortic valve replacement with a bioprosthesis from March 2009 and May 2013 were identified. Based on a propensity score analysis 2 groups (Sutureless and Sutured) with 82 matched pairs were created from the 112 patients received a Perceval sutureless bioprosthesis and the 435 patients received a sutured valve. Hospital and follow up outcomes, resources consumption was recorded and compared between groups. Analysis was performed according

the National Health Care system perspective. **RESULTS:** Preoperative characteristics and risk scores of the 2 groups were comparable. Hospital mortality was 3.7% in Sutured and 2.4% in Sutureless (p=0.65). Aortic cross-clamp, cardiopulmonary bypass time and operation time were 20%, 23% and 16% shorter in Sutureless (each one p<0.001). Sutureless required less blood transfusion (1.2±1.3 vs 2.5±3.7 units, p=0.005) with a similar incidence of postoperative bleeding (2 patients vs 5, p=0.221). Sutureless had a shorter intensive care unit stay (2.0±1.72 vs 2.8±1.3 days, p<0.001), a shorter hospital stay (11.4±3.9 vs 17.3±13.7 days, p<0.001) and a shorter intubation time (9.5±4.6 vs 16.6±6.4 hours, p<0.001). A neurological event was recorded in 3 sutureless patients and in 6 sutures (p=0.248). Sutured has an higher incidence of postoperative atrial fibrillation, pleura effusions and respiratory insufficiency (p 0.015, 0.024 and 0.016, respectively). Reduced risk of post operative complication resulted in a dramatic reduction of resources consumption in the sutureless group allowing a saving of 50% of the complication related resource use. **CONCLUSIONS:** Shorter procedural times resulting from sutureless aortic valve replacement are associated with better outcomes and lower costs. Sutureless valve may be considered as the first-line treatment for patients underwent aortic valve replacement with a bioprosthesis.

PCV51

TRENDS IN THE COST-EFFECTIVENESS OF STROKE CARE

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OBJECTIVES: To assess the annual average costs and quality adjusted life years (QALYs) of stroke services in the UK before and after the introduction of the National Stroke Strategy (period: 2006-2011). **METHODS:** Data from the South London Stroke Register (SLSR) from 2006 to 2011 were used to populate a discrete event simulation (DES) model. Parameters, such as daily probability of survival and length of stay, included in the model were calculated by using Cox proportional hazard model and multivariate regression methods respectively. Barthel Index was used as proxy for measures of quality of life. Treatment costs were introduced in the model in order to calculate the total costs based on resource usage. The model simulated the stroke care delivery from stroke onset with 10-year follow up. Average cost and QALYs were calculated for every year from 2006 to 2011. **RESULTS:** The average total costs per treating a stroke patient decreased from £30,745 to £27,086 between 2006 and 2011 (p-value for trend < 0.001). This is mainly as a result of savings achieved in the inpatient phase due to a shorter LOS and a higher proportion of patients with mild disability. Per patient QALYs also increased from 2.2 to 3.1 during the same period (p-value for trend < 0.001), this is due to a higher proportion of patients having access to better organised stroke care. **CONCLUSIONS:** This study has demonstrated that stroke services in the UK have improved their value for money over time with constant gains in efficiency. The use of DES together with SLSR data allows the testing of the costs and outcomes of a whole stroke provision system or components of it and provide opportunities for retrospective (as done in this study) as well as prospective analysis (in the case of health technology assessment studies).

PCV52

DISCRETE EVENT SIMULATION MODEL OF PRIMARY PREVENTION OF STROKE: BENEFITS OF INCREASING COVERAGE TO UNSERVED PATIENTS

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OBJECTIVES: To assess the impact of a hypothetical increase in the stroke primary preventive care coverage in the UK. Productivity gains, using resource utilization as proxy, and monetary benefits were calculated. **METHODS:** Data from the South London Stroke Register (SLSR) from 2009 to 2011 were used to create a hypothetical cohort to populate a discrete event simulation (DES) model. The model simulated the stroke care delivery from primary preventive stroke care until discharge from stroke unit or general medical ward. Primary preventive care was defined as taking medications to control hypertension, high-cholesterol and also anticoagulants in patients with atrial fibrillation in order to prevent strokes. Treatment costs were introduced in the model in order to calculate the total costs based on resource usage. Hypothetical scenarios consisting in 10% incremental increase of primary preventive care for high-risk factors were tested. The reduction of strokes was given by relative risk reduction ratios extracted from clinical trials. **RESULTS:** Our findings indicate that for every 10% increase in the number of patients undergoing primary prevention treatment the number of strokes would be reduced by 1.2%. In a scenario where 50% of the untreated patients receive primary prevention 7,232 strokes would be reduced per year. For the same scenario, 47 hyper acute beds, 359 acute beds and 47 general medical ward beds could be saved in average. In total this would yield in £42.2 million of savings in the inpatient phase of stroke care. **CONCLUSIONS:** Our findings suggest that by enhancing primary prevention of stroke care in the UK, significant benefits can be achieved in terms of reductions in resource consumption and monetary savings as a result of averted strokes. The generation and analysis of these retrospective hypothetical scenarios, using real-world evidence on stroke, help evaluate policy choices in stroke care in the UK.

PCV53

THE BURDEN OF RESISTANT HYPERTENSION IN 5 EUROPEAN COUNTRIES

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OBJECTIVES: Greater than 40% of Europeans over age 25 have hypertension, and 10% of those have medication resistant hypertension (RHT). In EU5 (France, Germany, Italy, Spain, UK) that results in 9.4 million persons with blood pressure above goal, despite treatment with 3+ medications. These patients have a greater than 30% risk of cardiovascular disease (CVD) over 10 years and an increased risk of end-stage renal disease (ESRD). This analysis sought to quantify the burden of RHT

in EU5, a subject about which nothing has been published to date. **METHODS:** A burden of illness model was constructed to examine the impact of RHT in EU5, specifically the incremental incidence, mortality and direct medical costs of CVD, which includes: coronary heart disease (CHD), congestive heart failure (CHF) and stroke. Framingham risk equations which included a coefficient for treatment resistance and SCORE risk charts were used to estimate the risk of CVD for patients with and without RHT. Transition probability data were taken from the literature to estimate the risk of death from CVD events, subsequent CVD events and ESRD. Direct costs for these events and their long-term consequences were taken from the literature and from country-specific drug and acute inpatient costs. **RESULTS:** The total direct medical cost of RHT in EU5 is estimated to be €3.9 billion in 2013. This does not include the cost for drugs to treat RHT, or other costs such as lost productivity not directly borne by the health care system. RHT will contribute to 188,000 cases of CHD, 57,400 strokes, 31,500 CHF and 1,400 ESRD and 30,000 deaths in 2013. **CONCLUSIONS:** The burden of RHT due to the increased incidence of CVD and ESRD is high. Reducing the incidence of CVD and ESRD through better blood pressure control should be a priority for health care decision makers.

PCV54

RETROSPECTIVE COSTING STUDY TO ESTIMATE BURDEN OF HEART FAILURE IN SPAIN

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OBJECTIVES: To analyze and estimate resource utilization and associated costs, one year following an acute episode of heart failure (HF) in Spain. **METHODS:** Patient-flow data after index hospitalization for acute HF (AHF) were obtained from EAHFE database, an emergency (ER)-based registry containing records of all AHF patients treated in 29 Spanish hospitals (over 5,800 cases). Estimated medical resource utilization data during patients' ER and other wards stay, hospitalization, and first-year follow-up was collected from medical specialists through questionnaire. AHF episodes and hospitalizations incident rates were estimated through literature review and disease statistics in official sources. Cost data was retrieved from Spanish Pharmacists official sources and a national health care costs database (Euros, 2013). To assess uncertainty, sensitivity analysis was carried out. **RESULTS:** A total of 111,803 annual hospital admissions are estimated in Spain (2013). 92% of patients suffering an AHF episode are discharged alive and of these 90% survive the first month; 23% of these patients are discharged directly from ER, while the majority of those who are hospitalized, are admitted to Internal Medicine (53%) or Cardiology (17%) wards. On an average, patients are re-admitted 0.41 times within 1 year. Total direct costs in the first year following an AHF episode averages €6,822, of which 88% are incurred in hospital, with drugs and diagnostic tests accounting for less than 5% of all hospital costs. Follow-up costs, in average, split equally between drugs and outpatient visits/tests, but vary widely depending on local HF protocols. Extrapolation of results to the Spanish population suggests that the total burden of HF is more than €542 million per year. **CONCLUSIONS:** Treating HF patients within Spain is resource intensive. Costs are primarily incurred in hospital and are mostly driven by the length of stay.

PCV55

THE BURDEN OF ILLNESS OF CHRONIC THROMBOEMBOLIC PULMONARY HYPERTENSION: A MANAGED CARE PERSPECTIVE IN THE UNITED STATES

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OBJECTIVES: Chronic thromboembolic hypertension (CTEPH) is associated with considerable morbidity and mortality. The objective of this study was to describe the burden of illness in patients with CTEPH. **METHODS:** Data for this study came from a large commercial claims database. CTEPH patients were identified based on having >2 medical claims for either primary pulmonary hypertension (ICD-9 code:416.0) or chronic pulmonary heart disease (ICD-9 code:416.8), history of pulmonary embolism in the past one year (ICD-9 code:415.1, V12.51, 38.7; CPT-4 codes:36010, 37620, 75825, 75940; HCPCS codes:C1880) and either one claim for right heart catheterization or one claim of echocardiogram and diagnosed by a pulmonologist/cardiologist within 12 months of the medical claim. Demographic variables were extracted at a patient level from administrative files and economic variables, which included health care utilization and costs for outpatient, inpatient, emergency and pharmacy services came from the respective medical and pharmacy claim files and summarized at a per-patient-per-month (PPPM). Five controls were randomly picked and matched to each CTEPH patient on demographic characteristics. Incremental burden of CTEPH was estimated using non-parametric statistical tests between controls and CTEPH group. All costs were adjusted to 2012 base year using consumer price index. **RESULTS:** A total of 191 CTEPH patients were identified and matched to 955 controls. CTEPH group had significantly higher (p<0.001) PPPM health care utilization compared to the matched control across all drivers: outpatient (3.1 vs. 1.5), inpatient (0.13 vs. 0.02), emergency room (0.16 vs. 0.04), and pharmacy services (4.5 vs. 2.6). The increase in utilization translated in higher (p<0.001) total PPPM incremental costs of \$5,007 in the CTEPH group with inpatient (\$3,909 vs. \$332) and pharmacy costs (\$607 vs. \$180) being as much as twelve and three times greater compared to controls. **CONCLUSIONS:** Health care resource use and costs for CTEPH patients is high from a managed care perspective.

PCV56

THE BURDEN OF ILLNESS OF PULMONARY ARTERIAL HYPERTENSION: A MANAGED CARE PERSPECTIVE IN THE UNITED STATES

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OBJECTIVES: Pulmonary arterial hypertension (PAH) is a progressive disease resulting in high health care resource use and costs. The objective of this study was to

estimate the burden of illness in PAH patients. **METHODS:** Data came from a large commercial claims database. PAH patients were identified based on having >2 medical claims for primary pulmonary hypertension (ICD-9 code:416.0), and either one claim for right heart catheterization or one claim of echocardiogram and diagnosed by a pulmonologist/cardiologist within 12 months of the medical claim. The first medical claim during this period served as in the index date with 12 months prior to this event as baseline and 12 months post as follow-up period. Demographic variables were extracted at a patient level from administrative files and economic variables, which included health care utilization and costs for outpatient, inpatient, emergency and pharmacy services came from the respective medical and pharmacy claim files and summarized at a per-patient-per-month (PPPM). Five controls were randomly picked and matched to each PAH patient on demographic characteristics. Incremental burden of PAH was estimated using non-parametric statistical tests between controls and PAH group. All costs were adjusted to 2012 base year using consumer price index. **RESULTS:** A total of 2,245 PAH patients were identified and matched to 11,225 controls. PAH group had significantly higher (p<0.001) PPPM health care utilization compared to the matched control across all drivers: outpatient (2.6 vs. 1.5), inpatient (0.08 vs. 0.02), emergency room (0.1 vs. 0.04), and pharmacy services (4.2 vs. 2.6). The increase in utilization translated in higher (p<0.001) total PPPM incremental costs of \$3,193 in the PAH group with inpatient (\$1,665 vs. \$345) and pharmacy costs (\$790 vs. \$178) being as much as five times greater compared to controls. **CONCLUSIONS:** Health care resource use and costs for PAH patients is high from a managed care perspective.

PCV57

COSTS OF ACUTE HEART FAILURE IN FRANCE

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OBJECTIVES: To describe the incidence and profile of patients hospitalised for acute heart failure (AHF); to assess the trajectories of patients before and after hospitalization; and to estimate the cost of AHF inpatient stays. **METHODS:** Patients with AHF were identified over a 5-year period (2006 - 2010) from the French PMSI (Programme de Médicalisation des Systèmes d'Information), a national disease-related group inpatient database. The PMSI database contains data related to all private and public hospital stays in France (about 20 millions/year). Heart failure was identified with the ICD-10, code I50. **RESULTS:** The numbers of patients hospitalised at least once per year for AHF increased from 144,043 in 2006 to 158,623 in 2010. These numbers lead to incidence rates of 2.28‰ in 2006 and 2.45‰ in 2010. The proportion of patients aged ≥75 increased from 71.0% in 2006 to 74.3% in 2010. Half of patients were male. The mean number of comorbidities was 9.6 in 2010. The mean length of stay was 9.5 days and 12.6 days per year (2010), as mean re-hospitalization for AHF within the same year was 22%. The mean annual number of AHF hospitalisations per patient was 1.3. The mean cost for an AHF hospitalisation in the acute setting was 4,713€ in 2010. The mean annual cost for all hospitalisations occurring for a patient hospitalised at least once in a year (2010) for AHF was 6,253€. Mean costs per hospital stay was higher if the patient died during hospitalisation (5,722€ vs. 4,627€, p<0.001). Extrapolation to the whole country leads to a yearly cost of nearly a billion of euros (991 millions). **CONCLUSIONS:** Incidence of AHF hospitalisation increased in the recent years. This analysis highlighted the high economic hospital burden of AHF in France.

PCV58

DISEASE BURDEN OF ISCHEMIC STROKE ALONG FIRST YEAR POST-STROKE IN SPAIN

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OBJECTIVES: Stroke has catastrophic consequences resulting in death or disability in 80% of patients and representing a substantial burden on the health care system, as well as on patients, family, and society. Stroke is considered as the 2nd cause of burden of disease in Europe and ischemic stroke (IS) represents a high percentage of total strokes. The objective of the present study was to analyze the first year post-stroke burden of IS in Spain. **METHODS:** We performed an observational, multicenter, naturalistic and prospective study that included 16 hospitals (stroke units of National Health System hospitals) of 16 Spain regions. We took into consideration consumption of health care resources, social burden, productivity lost and health-related quality of life of patient and caregiver during the first year post-stroke. **RESULTS:** A total of 321 stroke patients were recruited. Mean age 72 years, 54.8% male. Basal NIH stroke scale was 9.11 and 28.9% presented moderate-high disability. 291 (90.7%) patients presented IS. Overall 1-year cost per IS was 27,596.53€. Direct health care costs were 8,623.35€ (31.25%), direct intrahospital health care costs supposed 69% (5,926.21€) of these costs. Direct non-health care costs were 18,377.75€ (66.59%), of which 16,515.09€ (59.84%) were informal care costs. Productivity lost was 595.43€ (2.16%). **CONCLUSIONS:** IS were the majority of total strokes in the study and represent a high burden on health care system and society, mainly due to hospitalization and informal care costs. Intrahospital costs were double than the published DRGs in Spain. Other diseases like Alzheimer or dementia represent a lower burden than stroke.

PCV59

FOLLOW-ON HEALTH CARE COSTS IN PATIENTS WITH ACUTE CORONARY SYNDROME (ACS)

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OBJECTIVES: To review published estimates of post-acute-care costs over one year in patients with acute coronary syndrome (ACS). **METHODS:** Using the Medline and