higher medical costs in six European settings. **METHODS:** The Archimedes model was used to simulate cohorts of individuals ages 40 to 75 with no prior history of diabetes, cardiovascular disease, or chronic kidney disease, in Denmark, France, Germany, Italy, Poland and the UK. Individuals were simulated for 10 years and the incidences of diabetes and MACE were tracked, along with mean total medical costs per person. A risk score was computed for each simulated person, with baseline data on age, gender, BMI, waist, smoking, family histories of diabetes and cardiovascular disease, and antihypertensive usage. For each country, the subpopulations of individuals with above median risk score (TOP50), and individuals in the top risk score quartile (TOP25) were compared to the full cohorts. **RESULTS:** Diabetes and MACE incidences were higher in the TOP50 and TOP25 subgroups, as were total medical costs. In each country, the mean 10-year discounted medical costs for the full cohorts vs. the TOP50 subgroups were: Denmark €8,482 (95%CI 8,027 - 8,937) vs. €11,292 (10,614 - 11,969); France €6,264 (5,917 - 6,611) vs. €8,492 (7,953 - 9,031); Germany €8,717 (8,218 - 9,217) vs. €11,974 (11,204 - 12,743); Italy €7,688 (7,273 - 8,104) vs. €10,279 (9,643 - 10,914); Poland €1,798 (1,707 - 1,888) vs. €2,418 (2,274 - 2,561); UK €4,100 (3,885 - 4,314) vs. €5,580 (5,238 - 5,921). Medical costs were even higher in the TOP25 subgroup. **CONCLUSIONS:** This risk score could be an effective tool for identifying individuals likely to incur higher health care costs due to diabetes and MACE. Targeting individuals with such scores could make screening programs more efficient, provided validation in real-world populations.

PCV23

BETA BLOCKERS FOR TREATMENT OF CHRONIC HEART FAILURE IN SPAIN: REVIEW OF THE ECONOMIC EVIDENCE AND EFFICIENCY ANALYSIS

Polanco C, García-Jurado L
Merck SL, Madrid, Spain

OBJECTIVES: Chronic heart failure (CHF) is a major health issue because of its growing prevalence, morbimortality and associated resource consumption. Beta blockers have been shown to be effective and cost-effective therapies for CHF. The aim is determining what beta blocker constitutes the most efficient therapy for CHF patients in Spain. **METHODS:** Systematic review of primary (clinical trials) and secondary (meta-analyses, clinical practice guidelines and economic assessments) evidence on beta blockers for CHF issued before May 2012. Once that efficacy of each beta blocker was established, local drug databases were accessed in order to estimate the updated annual cost of each therapy and daily dose in Spain. **RESULTS:** Given their similar efficacy [death RR: bisoprolol: 0.66, $p<0.0001$; metoprolol: 0.66, $p<0.0001$; carvedilol: 0.65, $p<0.005$, nebivolol: 0.88, $p=0.21$] and safety profiles, international clinical guidelines on Cardiology recommend bisoprolol, metoprolol succinate, carvedilol and nebivolol as first choice therapies for CHF (class I and level of evidence A). Annual treatment costs per patient reached 38.70€; 162.53-311.69€; 170.70€ and 188.14€ for bisoprolol, carvedilol, metoprolol succinate and nebivolol, respectively. When hospitalization costs are considered, cost per avoided death was 9.512€, 14.989€, 16.767€ and 50.795€ for bisoprolol, carvedilol, metoprolol succinate and nebivolol, respectively. Results of the cost-benefit analysis indicated that only bisoprolol showed a net benefit, with an estimated annual savings of 116.293€. Budget impact analysis yields that bisoprolol implies a saving of 76-88% of carvedilol cost of therapy per year and patient, 77% when compared to metoprolol succinate and 79% versus nebivolol. **CONCLUSIONS:** Despite the underuse of betablockers for CHF treatment, they have demonstrated to be effective and cost-effective. Among them, bisoprolol gathers pharmacologic, legal and pharmacoeconomic characteristics that confirm their being the most efficient beta blocker (both in terms of cost-benefit and cost-effectiveness) for CHF patients in Spain.

PCV24

ECONOMIC ANALYSIS OF BEMIPARIN AND ENOXAPARIN USED FOR THROMBOSIS AND EMBOLISM PREVENTION IN ORTHOPEDIC PATIENTS IN RUSSIA

Ryazhenov VV, Gorokhova SG
I.M. Sechenov First Moscow State Medical University, Moscow, Russia

OBJECTIVES: New anti-thrombotic strategy with recent low-molecular-weight heparins (LMWHs) used for the prevention of symptomatic deep venous thrombosis and pulmonary embolism (DVT/PE) has shown clinical and outcome benefits in patients undergoing orthopedic surgery. The purpose of our study is to analyze the costs of LMWHs in total knee replacement and to compare cost-effectiveness and budget impact of bemiparin and enoxaparin addition to current treatment of such patients in Russia. **METHODS:** Cost-effectiveness analysis and budget impact model of patients with total knee replacement ($n=1000$) is used to compare alternative strategies with bemiparin and enoxaparin for deep venous thrombosis and pulmonary embolism prevention. The model calculates the budget impact of in-hospital LMWHs drug therapy change for these patients. Only direct costs of medicines were considered. The prices of medications were taken from the official price listing. Rates of main outcome were based on literature data (confirmed venous thromboembolism 32.1% for bemiparin and 36.9% for enoxaparin). Net budget impact was expressed as a difference in costs between the strategies where bemiparin is gradually elevated versus traditionally enoxaparin prevention. The budget impact is reported in terms of additional annual total costs. **RESULTS:** According to the model, prevention of DVT/PE with bemiparin in total knee replacement was dominant when compared to enoxaparin. Scenario of the introduction of bemiparin reduces budget costs for LMWHs drugs (in case 50% bemiparin and 50% enoxaparin for 130.9 RUB / patient). In case of 100% bemiparin it can provide actual DVT/PE prevention in 117 additional patients with total knee replacement. **CONCLUSIONS:** Bemiparin demonstrated optimal cost-effectiveness and budget savings compared to enoxaparin in total knee replacement. Further steps such as including bemiparin in clinical recommendations and medical standards of care for the patients is needed for implementing bemiparin in routine hospital practice.

PCV25

HOSPITALIZATION COSTS OF ACUTE CORONARY SYNDROME PATIENTS UNDERGOING PERCUTANEOUS CORONARY INTERVENTION: COMPARISON BETWEEN CLOPIDOGREL AND PRASUGREL PATIENTS IN A UNITED STATES HOSPITAL DATABASE

Bae JP[1], Ernst FR[2], Lipkin C[2], Zhao Z[1], Faries DE[1], Moretz C[2]
[1]*Eli Lilly and Company, Indianapolis, IN, USA,* [2]*Premier Healthcare Alliance, Charlotte, NC, USA*

OBJECTIVES: Evidence on the use of newer antiplatelet agents and their cost implications remains scarce. Previous research has shown a shorter average hospital length of stay for prasugrel-treated patients compared to clopidogrel-treated patients. We analyzed a large geographically diverse database from the US and compared cost of hospitalization for patients with acute coronary syndrome (ACS) who have undergone percutaneous coronary intervention (PCI) and who received either clopidogrel or prasugrel. **METHODS:** Using a large representative US database maintained by PREMIER, we analyzed patient characteristics and total hospitalization costs during the index (first) hospitalization among ACS-PCI patients treated with clopidogrel or prasugrel between July 2009 and June 2011. Analysis included patients treated with prasugrel who were on-label and clopidogrel-treated patients who would have been eligible for prasugrel treatment per the label. Observed costs were analyzed unadjusted and adjusted for baseline differences using a generalized linear model with a gamma distribution and log link function with propensity score stratification. **RESULTS:** Data were available for 75,315 patients who received clopidogrel and 9,483 patients who received prasugrel during their hospitalization. The observed mean hospitalization costs (SD) for clopidogrel and prasugrel, respectively, were $17,519 ($2,548) and $17,136 ($2,562). Mean costs for clopidogrel and prasugrel recipients, respectively, were $16,937 ($2,162) and $16,664 ($2,137) for STEMI, $17,926 ($2,747) and $17,511 ($2,849) for NSTEMI, and $17,900 ($2,665) and $17,393 ($2,676) for UA (all comparisons, $P<0.001$). The adjusted results showed prasugrel-treated patients cost as much as $882 less than clopidogrel-treated patients ($P<0.001$) during the index hospital stay. **CONCLUSIONS:** Prasugrel-treated patients used fewer health care resources compared to clopidogrel-treated patients during the index hospital stay, as measured by hospital costs. Similar results were obtained after adjusting for patient demographics and clinical characteristics. The potential for unmeasured confounder bias is a limitation in this real-world observational research.

PCV26

COST ANALYSIS OF TICAGRELOR VERSUS CLOPIDOGREL IN PATIENTS WITH ACUTE CORONARY SYNDROME IN RUSSIA

Pyadushkina EA[1], Gerasimova KV[2], Avxentyeva M[1], Krysanov I[1]
[1]*Research Center for Clinical and Economic Evaluation and Pharmacoeconomics, Russian National Research Medical University, Moscow, Russia,* [2]*The First Moscow State Medical University named after I.M. Sechenov, Moscow, Russia*

OBJECTIVES: The PLATO trial showed that ticagrelor reduced the risk of myocardial infarction, stroke or death from vascular causes compared to clopidogrel (hazard ratio 0.84, 95% CI 0.77 to 0.92) without a significant increase in major bleeding. The objective of this analysis is to evaluate direct and indirect costs of ticagrelor versus branded clopidogrel in patients with acute coronary syndromes (ACS) from a Russian health care perspective. **METHODS:** An excel based model was developed to estimate the direct and indirect cost per treatment arm for specific CV events (non fatal MIs, CV deaths and other deaths). Rates of non fatal myocardial infarction (MI), CV death and death from other causes was extracted from the PLATO trial (NCT00391872). Difference in direct medical and non-medical costs for ticagrelor vs clopidogrel in patients was estimated using the events above. One-way sensitivity analysis was performed. **RESULTS:** The result of this analysis shows that ticagrelor is associated with reduced health care costs compared with branded clopidogrel for one year treatment in a Russian health care setting. The incremental drug costs of ticagrelor (- 264.46 RUB (€6.48) per patient per year) was offset by higher non drug costs associated with fewer MI's and deaths. Treatment with ticagrelor for one year is associated with total cost savings of 2749.97 RUB (€67.37) per patient, the direct cost savings was of 1260.83 (€30.89) and the indirect was 1489.13 RUB (€36.48) Sensitivity analysis showed that ticagrelor remains to be cost saving compared to branded clopidogrel as long as the ticagrelor price is less than 3520.94 RUB (€86.25) per package while keeping other model parameters unchanged. **CONCLUSIONS:** This analysis demonstrates that one year treatment with ticagrelor is less costly than branded clopidogrel for patients with ACS from a Russian health care perspective.

PCV27

PHARMACOECONOMIC EVALUATION OF NEUROPROTECTIVE THERAPY OF PATIENTS WITH ACUTE ISCHEMIC STROKE IN UKRAINE

Mishchenko O[1], Iakovlieva L[1], Adonkina V[1], Chinush I[1], Matyashova N[2]
[1]*National University of Pharmacy, Kharkiv, Ukraine,* [2]*National University of Pharmacy, Kharkiv, Ukraine*

OBJECTIVES: Two approaches recanalization or restoration of adequate perfusion and neuroprotection are identified as a pathogenic treatment of acute ischemic stroke (AIS). Timely mechanical revascularization and thrombolytic therapy prevent the development of neurons necrosis and significantly improve survival and quality of patient life. Unfortunately, in Ukraine these methods are difficult of access for patients due to high cost, late diagnostics and contraindications. The

feasibility of combined neuroprotection in patients with AIS convincingly are substantiated by leading Ukrainian neurologists. The aim is to evaluate the economic feasibility of combined regimens of neuroprotection compared with the traditional. **METHODS:** Analysis of the results of comparative clinical trial of three neuroprotective regimens therapy of patients with moderate and severe AIS: traditional + citicoline (1 regimen); traditional + citicoline + actovegin (2 regimen); 3 regimen: traditional (pentoxifylline, heparin, acetylsalicylic acid, mannitol) (S. M. Vinychuk, O. A. Pustova, V.O. Mokchnach et al., 2008) was carried out. Cost-effectiveness analysis was used. Using a decision tree comparing the economic burden of the three regimens for one year was carried out. **RESULTS:** The number of patients who recovered completely after three months were used as efficacy. The efficacy for 1, 2 and 3 regimens were respectively 29.6%, 38.9% and 23.3%. Direct costs of the treatment regimens were $ 1.015; $ 1.186; $ 617 for 1, 2 and 3 regimens, respectively. Incremental cost-effectiveness ratio (ICER) for 1 and 2 regimens were respectively $6.317, $3.647. The economic burden per one patient for one year were $ 7006; $ 6511; and $ 6930 for 1, 2 and 3 regimens, respectively. **CONCLUSIONS:** The use of regimen 1 and regimen 2 provides greater efficacy and needs greater cost. With the forecast for one year and taking into account the indirect costs the neuroprotective regimen with combination of two drugs (regimen 2) has economic advantages.

PCV28

2-YEAR INCIDENCE OF STROKE AND HEMORRHAGES HOSPITALIZATIONS AND COSTS WITHIN ATRIAL FIBRILLATION PATIENTS IN FRANCE

Cotté FF[1], Chaize G[2], Kachaner I[3], Gaudin AF[4], Vainchtock A[5], Durand-Zaleski I[6]
[1]*Bristol-Myers Squibb, Rueil-Malmaison , France,* [2]*HEVA, Lyon, France,* [3]*Pfizer, Paris, France,* [4]*Bristol-Myers Squibb, Rueil Malmaison, France,* [5]*HEVA, LYON, France,* [6]*Hôpital Henri Mondor, Créteil, France*

OBJECTIVES: The prevalence of atrial fibrillation (AF) in France approaches one million people. The major complication associated with AF is stroke. Current anticoagulation options for stroke prevention increase the risk of hemorrhages. Objectives were to estimate the 2-year cumulative incidence and costs of hospitalizations for strokes and hemorrhages in adults hospitalized for AF and eligible for stroke prevention. **METHODS:** Data for patients with an AF-related hospitalization in 2008 were extracted from the French Hospital National Database (PMSI). Risk scores (i.e.CHADS2; range:0–6) were calculated from 2006–2008 data. Patient eligible for stroke prevention with anti-coagulants (i.e.CHADS2≥1) were selected for the follow-up analysis. Strokes and hemorrhages hospitalizations were identified according to ICD-10 codes. Strokes severity was based on rehabilitation length and death. Cumulative incidence was calculated by the number of new hospitalizations during the 2-year period divided by the number of patients. Mean hospital costs were calculated from to the 2011 National Hospital Tariff for acute and rehabilitation care. **RESULTS:** A total of 61,582 AF patients were identified. Mean age was 75.0(±11.0) years old and mean CHADS2 was 1.90(±0.99). 2-year cumulative incidences of any strokes and hemorrhages were 3.21% (ischemic/60%; hemorrhagic/24%; unspecified/16%) and 5.31% (gastro-intestinal/26%; intracranial/5%; others/69%), respectively. Mean costs of ischemic and hemorrhagic strokes were €4,848 and €7,183 (mild), €10,909 and €14,298 (moderate), €29,065 and €29,701 (severe) and, €6,035 and €4,590 (fatal), respectively. Mean costs of hemorrhages were €3,601 and €7,331 for gastro-intestinal and intracranial localizations and, €3,941 and €2,552 for others major and non-major hospitalized bleeds. **CONCLUSIONS:** Frequencies and cost of hospitalized hemorrhages appear important to be taking into account in the global burden of AF. This data should be useful for future French pharmacoeconomic evaluations of new oral anti-coagulants. Thus, this real world data study may be helpful to assess consistency of patients' features within recent published clinical trials.

PCV29

HEALTH CARE RESOURCE UTILIZATION AND COSTS OF CARDIOEMBOLIC STROKE IN THE REGION OF MADRID, SPAIN: PRELIMINARY RESULTS OF CODICE STUDY

de Andres F[1], Vivancos J[2], Barriga FJ[3], Diaz F[4], Izquierdo L[5], Ortega MA[6], Castillo L[3], Ximenez-Carrillo A[2], Martin MP[4], Gomez-Escalonilla CI[5], Torres C[1], de Salas-Cansado M[7], Casado MA[1], Soto J[8], Gil-Nuñez A[4]
[1]*Pharmacoeconomics & Outcomes Research Iberia, Madrid, Madrid, Spain,* [2]*Hospital Universitario de La Princesa, Madrid, Madrid, Spain,* [3]*Hospital Universitario Fundación Alcorcón, Alcorcón, Madrid, Spain,* [4]*Hospital General Universitario Gregorio Marañón, Madrid, Madrid, Spain,* [5]*Hospital Universitario Príncipe de Asturias, Alcalá de Henares, Madrid, Spain,* [6]*Hospital Universitario Infanta Sofía, San Sebastián de los Reyes, Madrid, Spain,* [7]*Pfizer Spain, Alcobendas, Madrid, Spain,* [8]*Pfizer España, Alcobendas/Madrid, Spain*

OBJECTIVES: To estimate the health care resource utilization and direct costs of cardioembolic stroke in patients treated in public hospitals of the Region of Madrid (Spain). **METHODS:** An observational, prospective study was performed in 5 Neurology services from hospitals in the Region of Madrid, 2 with stroke units (SU) and 3 without stroke units (wSU). Patients with a diagnosis of cardioembolic stroke with ≤48-hours were recruited in a 4-month period in 2012. Patients' socio-demographic, clinical data: disability (modified Rankin scale, mRs), hospital stay and mortality; complications and health care resource utilization (hospitalisation, inpatient and at discharge rehabilitation, medication, laboratory tests and specific therapeutic interventions) were collected. Unitary costs were obtained from national health care database and the Spanish Catalogue of Medicinal Products (€, year 2012). **RESULTS:** Preliminary results from 76 patients (25 SU, 51 wSU) were: mean age, 74.2±1.42; 64.5% female; mean mRs at discharge, 2.02±0.20; non-valvular atrial fibrilation was the main cause of cardioembolic stroke (28.9%); mean length of stay, 10.1±1.14 days; mortality, 5.3%; 42 patients (68.4%) needed in-patient rehabilitation and 48 patients (63.2%) needed rehabilitation after hospital discharge; 22 patients (28.9%) suffered hospital complications (63.6% of them suffered infections, 27.3% cardiovascular complications and 59.1% others). Health care resource utilization differences between SU and wSU hospitals were found in: length of stay (7.2±1.26 days, SU; 11.6±1.55 days, wSU; p-value=0.014) and specific therapeutic interventions (41.7%, SU; 8.0%, wSU; p-value=0.001). The overall 4-month cost per patient was 13,647€ (49.2%, hospital stay; 24.8%, rehabilitation at discharge). **CONCLUSIONS:** Cardioembolic stroke imposes significant economic burden for the Public Health System in the Region of Madrid. Key cost drivers were hospital stay and patients' rehabilitation at discharge. Patient management in SU hospitals was associated with more specific therapeutic interventions and shorter hospital stay than hospitals wSU.

PCV30

ASSESSMENT OF THE HOSPITAL COSTS OF MITRAL REGURGITATION (MR) PATIENTS, A FRENCH NATIONAL HOSPITAL DATABASE ANALYSIS

Cros S[1], Levesque K[2], Bufi L[3], Caranhac G[4], Gotlieb L[3]
[1]*Abbott Vascular International BVBA, Diegem, Belgium,* [2]*Abbott Vascular, Rungis Cedex, NT, Canada,* [3]*Abbott Vascular, DIEGEM, Belgium,* [4]*HOX-COM Analytiques, Vincennes, France*

OBJECTIVES: To evaluate the annual acute and long-term hospitalizations cost of MR from a French National Payer perspective. **METHODS:** A 12 months retrospective population-based study was conducted using the 2009–2010 French Medical Information System (PMSI). This exhaustive database covers all public and private hospitals in France and it is based on standardized hospital discharge reports. Each patient is identified using a unique anonymous identification number allowing a longitudinal follow-up. Extracted variables included patients' demographics, outcomes, acute hospital and post-discharge resource utilizations. **RESULTS:** 19,868 MR patients were identified and analyzed in two sub-groups depending on their therapeutic management. In the surgical group (n=4,099), the index hospitalization length of stay was 17 days, 77% of patients were discharged to a rehabilitation facility and the average re-hospitalization rate was of 33% over a 6 month period. The average total cost per patient was €22.152. In the non-surgical group (n=15,769), patients were hospitalized on average 3.1 times over 12 months with an average length of stay of 7.7 days. Among those patients, 24% were admitted to a rehabilitation facility (on average 1.5 times) with an average length of stay of 27.9 days. The average total cost per patient was €12.177, varying between €9.957 to €13.538, without and with heart failure respectively. Detailed analysis showed 2 to 3 times higher costs in the 9th and 10th percentiles. By sub-group, the average cost of the 10th percentile was €50.268 for the surgical group and €36.503 for the non-surgical group. **CONCLUSIONS:** The total observed cost in this population was €283 million over 12 months. Significant differences were observed in cost and resource used between the surgical and non-surgical groups and depending on type of surgery or presence of heart failure within each subgroup. This is the first study reporting hospital costs associated to MR in France.

PCV31

COST OF CARDIOVASCULAR DISEASES IN SERBIA

Lakić D[1], Tasic L[1], Kos M[2], Odalović M[1], Tadić I[1]
[1]*University of Belgrade – Faculty of Pharmacy, Belgrade, Serbia and Montenegro,* [2]*Faculty of Pharmacy, University of Ljubljana, Ljubljana, Serbia and Montenegro*

OBJECTIVES: Cardiovascular diseases (CVDs) imposes a burden to society in terms' of mortality, morbidity and economic losses. The aim of this study was to estimate the cost of CVDs in Serbia in 2009 from the perspective of the society. **METHODS:** For the purpose of the study CVD was defined by the International Classification of Disease 10 revision, as the following diagnosis: hypertension, coronary heart disease, cardiomyopathy, heart failure and cerebrovascular disease. The prevalence, top-down method was used to quantify the annual cardiovascular costs. Productivity losses were estimated using the human capital approach and the friction cost method. Data were collected from Serbian Health Insurance Fund and National Public Health Institute "Batut". A discount rate of 5% was used to convert all future lifetime earnings into the present value. **RESULTS:** The total direct costs of CVD in 2009 were € 400 million. The majority of total costs (€ 514.3 million) were for: medication (29.94%), hospital days (28.97%) and hospital inpatient care – surgical and diagnostic interventions (17.84%). Indirect costs (mortality and morbidity) accounted for 22.15% of total costs. The results showed that more than half a million working days were lost due to incapacity resulting from CVDs. The results were robust to a change in ±20% of volume or the unit price of all direct and indirect cost and to discount rate 2% and 10%. **CONCLUSIONS:** The total CVD in 2009 represented approximately 1.8% of the Serbian gross domestic product. The results of study would be valuable to health policy makers to bridge the gap between invested resources and needs, in order to improve cardiovascular disease outcomes.

PCV32

THE COST OF DIABETES COMPLICATIONS IN BELGIUM

Lamotte M, Chevalier P
IMS Health, Vilvoorde, Belgium

OBJECTIVES: The risk of cardiovascular risk is higher in patients with diabetes but what with the cost of this complication? The aim of this study was to compare the cost of cardiovascular events in patients with and without diabetes in Belgium. **METHODS:** Cost of cardiovascular events among hospitalized patients were estimated using the longitudinal IMS Hospital Disease Database (2008), including data on 34.3% of Belgian hospital beds, combined with Belgian population data. Stays were identified based on ICD-9 or DRG coding. Cardiac disease included myocardial infarction (MI; ICD-9:410), angina (ICD-9: 413) and heart failure (ICD-9: 428). Cerebrovascular disease (CVD) was defined as stroke (APR-DRG:045;046) and Transient Ischemic Attack (TIA; DRG:047). Diabetes was defined with the ICD-9 codes 249 and 250. Cost comparisons were made using a Wilcoxon non-parametrical test.