tively. For hypertensive patients treated with statins (8 included trials) the standardized effect size of DSBP and DDBP was 0.07 (95%CI: -0.07-0.21; p=0.33) and -0.12 (95%CI: -0.36-0.11; p=0.31), respectively. **CONCLUSIONS:** Despite previous suggestions, statin therapy in normotensive or hypertensive patients does not lead to reductions in systolic and diastolic blood pressure. Despite these results, however, the routine use of statins, especially in patients with hypertension should be always considered due to the essential reduction of cardiovascular events.

PCV6

COMPARATIVE EFFECTIVENESS OF DIFFERENT DRUG-ELUTING CORONARY STENTS - A SYSTEMATIC REVIEW OF TAIWAN STUDIES

Yu T, Wang YC
Center for Drug Evaluation, Taipei, Taiwan

OBJECTIVES: The first coronary drug-eluting stent gained its market approval in Europe 2002. Many different drug-eluting stents came to the market worldwide since then. In Taiwan, National Health Insurance has partially reimbursed drug-eluting stents since 2006. The number of claimed usage increased from 521 (year 2006) up to 14,311 (year 2010), and total claimed reimburse went up from NTD 15 million to 300 million. The impact to the NHI has been increasing. The aim of this study is to summarize the results of Taiwan drug-eluting stents studies for future researches. **METHODS:** We systematically searched three bibliographic databases: EMBASE, PubMed and Taiwan National Central Library for studies utilizing Taiwan local data. In order to collect as many local studies as we can, no restrictions were applied on publication year, study type, disease, patients, intervention, comparator and outcomes. **RESULTS:** Among the 73 studies we identified in EMBASE and PubMed, only one randomized control trial was found. The authors tried to evaluate the preventive outcome of phosphorycholine-coated dexamethasone stent by observing restenosis rate. We then expanded our analysis scopes to controlled trials, and additional 26 studies were identified and 3 studies matched our research question. Their topics were about "1 year follow-up after PCI with Titan versus TAXUS stents", "gender differences in patients undergoing coronary stenting" and "the effects of starting statin therapy before PCI with drug-eluting stents". On the other part of our research at Taiwan National Central Library, there was no paper matched our including criteria. Most of the papers included there were coronary stents design related articles. **CONCLUSIONS:** Based on systematically research results, we only found one randomized control trial fully used Taiwan local data. Lack of comparative effectiveness on local stents usage could pose a problem when considering evidence-based decision making.

PCV7

IMPLEMENTING AND EVALUATING PHARMACIST-MANAGED WARFARIN SERVICE IN INPATIENT AND OUTPATIENT SETTING IN TAIWAN

Wang YP[1], Tseng JH[2], Huang SY[3]
[1]*Taipei Medical University – Shuang Ho Hospital, New Taipei City, New Taipei City, Taiwan,* [2]*Taipei Medical University – Shuang Ho Hospital, New Taipei City, New Taipei City, Taiwan,* [3]*Taipei Medical University – Shuang Ho Hospital, New Taipei City, New Taipei city, Taiwan*

OBJECTIVES: To identify approaches and to evaluate efficacy of implementing an warfarin service program involving pharmacists. **METHODS:** The pharmacy department worked with the medical staff to establish a warfarin service, including guidelines approval. Pharmacist-managed warfarin service was provided in neurology ward or for patients who were referred from physicians, and others remained standard care of anticoagulants. Data was collected for 3 months after the service implementation (March to May, 2011). Demographic and clinical characteristics as well as laboratory and clinical data were retrieved from institutional electronic databases and compared between the pharmacist-managed and standard-care cohort. Comparisons between study groups were conducted using a $\chi 2$ or Fisher's Exact test for categorical variables and a two sample t-test or Wilcoxon rank sum test for continuous variables. **RESULTS:** INR below the therapeutic range were observed less frequently (53.3% vs. 61.1%, P=0.35) and better control for INR within range were reported more (28.6% vs. 26.9%, P=0.80) in pharmacist-managed arm, when compared to standard-care arm. There were also fewer number of patients never reaching the INR goal during the whole study period (35.7% vs. 46.1%, P=0.52). None of major bleeding event occurred, however, one thrombotic event was observed in each arm. By intervention of pharmacists, possible adverse event and medication errors were also blocked. For example, one patient discharged while INR over 5 without any physicians' or nurses' awareness was actively informed by pharmacist, then contacted to be cautious with possible bleeding risks and management. **CONCLUSIONS:** Pharmacist-managed warfarin service had a positive impact on anticoagulation management. This study provides further evidence to support the of role pharmacists in anticoagulant therapy. We plan to expend the warfarin service experience to the overall institution in the future.

PCV8

EVALUATION OF EFFICACY AND SAFETY OF ANTIHYPERTENSIVE DRUGS ON THE REIMBURSEMENT LIST FOR DELISTING POLICY IN KOREA

Kim J[1], Lee HY[2], Kim CH[3], Lee SH[4], Lee YS[5], Sohn HS[6], Choi SE[7]
[1]*Seoul National University, Seoul, South Korea,* [2]*Seoul National University, Seoul, South Korea,* [3]*Inje Institute of Advanced Studies(IIAS), Seoul, South Korea,* [4]*College of Pharmacy, Su-Won, South Korea,* [5]*Wonkwang University, Iksan, South Korea,* [6]*Sookmyung Women's University, Seoul, South Korea,* [7]*Korea University, Yeongi-gun, Chungnam, South Korea*

OBJECTIVES: To develop evaluation criteria comparing efficacy and safety of antihypertensive drugs and to perform comparative analysis based on the developed criteria on the pre- existing antihypertensive drugs on reimbursement list in Korea. **METHODS:** A total of 1226 items with 131 ingredients were categorized into 5 classes: Diuretics, β-blocker, Calcium channel blocker, Angiotensin—converting-enzyme inhibitors, Angiotensin-Receptor-blocker. Proxy and final outcomes evaluating efficacy of antihypertensive drugs were determined based on previous studies and opinion of experts. For proxy outcomes, Systolic Blood Pressure and Diastolic Blood Pressure were used while all-cause mortality, cardiovascular mortality, and cardiovascular morbidity were used as final outcomes. Proper criteria evaluating safety are impossible to choose because symptoms and frequency of adverse event varies depending on classes. Systematic review literatures in Korea and other countries were searched using databases such as Pubmed, Cochrane, Embase, Center for Review & Dissemination, KMBase, and KoreaMed. In addition, 6 assessment reports from overseas health technology institutions and opinions of clinical experts were referenced. Finally, 7 literatures using proxy outcomes and 8 literatures using final outcomes were reviewed in-depth after through screening. Additional statistical analysis was not performed. **RESULTS:** On in-depth examination, there was no profound evidence depicting difference in proxy and final outcomes among classes and among ingredients in the same class. Results of 6 overseas technical reports aforementioned were the same as the ones of SR literatures. Opinions of clinical experts confirmed the findings of in-depth examination in proxy outcomes adding that efficacy in final outcomes can be different depending on the co-morbidity status. **CONCLUSIONS:** It was not proven that a particular class or ingredient is superior to others. Therefore, it is expected that if reimbursement list is reorganized based on this result, improvement of public health and saving of health insurance finance is feasible without depriving the prescription rights of clinicians.

PCV9

META-ANALYSIS OF THE EFFICACY AND SAFETY OF STEVIOSIDE (FROM STEVIA REBAUDIANA BERTONI) IN BLOOD PRESSURE CONTROL IN PATIENTS WITH HYPERTENSION

Poolsup N, Pongmesa T, Cheunchom C, Rachawat P, Boonsong R
Department of Pharmacy, Faculty of Pharmacy, Silpakorn University, Mueang, Nakhon Pathom, Thailand

OBJECTIVES: Stevioside is a major constituent of the plant Stevia rebaudiana Bertoni (SRB). Its beneficial effect on human blood pressure has been demonstrated in many studies, with no significant adverse effects being reported. This meta-analysis was aimed to evaluate the efficacy and safety of stevioside against placebo in blood pressure control in hypertensive patients. **METHODS:** A systematic search for relevant studies was performed of the PubMed, ScienceDirect, Cochrane Library and Wiley Online Library databases from their respective inception until Febraury 2012. The bibliography of the retrieved studies was also examined. Stevia rebaudiana Bertoni, stevioside, hypertension and randomized controlled trial were used as searching keywords. The studies were included if they: 1. were randomized controlled trials (RCTs) comparing stevioside from SRB with placebo in hypertensive patients; 2. reported on systolic blood pressure (SBP) and diastolic blood pressure (DBP); and 3. were published in English. Data were pooled using the inverse variance-weighted method and statistical analyses were performed using the Review Manager (RevMan) version 5.1.4. **RESULTS:** Three RCTs involving altogether 280 patients were included in the analysis. Stevioside was found to be effective in reducing SBP, with no significant effect on DBP, compared to placebo. The pooled mean differences in SBP and DBP were -10.43 mmHg (95% CI: -12.15 to -8.72 mmHg, p<0.01) and -6.67 mmHg (95% CI: -13.23 to -0.10 mmHg, p=0.05), respectively. No significant difference in adverse events was reported between the two groups (OR: 1.32, 95% CI: 0.61 to 2.86). **CONCLUSIONS:** Our findings suggest the efficacy of stevioside in reducing SBP but not DBP in hypertensive patients. Additionally, stevioside was shown to produce no significant adverse events in this group of patients.

PCV10

ANALYSIS OF CONSUMPTION OF ACE INHIBITORS FUNDED BY REPUBLIC FUND OF HEALTH INSURANCE OF THE SERBIA IN 2009

Tomic Z[1], Sabo A[1], Milijasevic B[1], Stilinovic N[2]
[1]*Faculty of Medicine, University of Novi Sad, Novi Sad, Vojvodina, Serbia and Montenegro,* [2]*Faculty of Medicine, University of Novi Sad, Novi Sad, Serbia and Montenegro*

OBJECTIVES: Cardiovascular diseases are the most frequent cause of morbidity and mortality in many countries. That explains why medications for the treatment of cardiovascular diseases are group of drugs with largest consumption, and ACE inhibitors take a large part in the consumption. The aim of this study was to analyze the consumption of prescribed ACE inhibitors, in Serbia during year 2009. **METHODS:** The data about the use of ACE inhibitors were obtained from the Republic Fund of Health Insurance of the Serbia (RFZO). **RESULTS:** Total consumption of ACE inhibitors in year 2009 was 176,29 DDD and total financial outlay was 59.772.897,11€. Largest use of plain ACE inhibitors was for enalapril (78,32 DDD), fosinopril (20,09 DDD), ramipril (19,11 DDD) and cilazapril (14,19 DDD). The volume of their consumption is not in accordance with the funding spent for these products. Enalapril, which has the highest percentage of consumption in this group of 44,43%, has 28,73% of total allocated funds, while the consumption for fosinopril amounts to 11,40% while 18,69% of funds within the group is allocated for this drug. In Norway and Sweden, country with developed pharmacotherapeutic practice, highest usage of plain ACE inhibitors was for ramipril and enalapril. In these countries, other more expensive products are significantly less likely to be used. If the consumption structure of ACE inhibitors in Serbia in 2009 was as in Norway, but with the same volume of consumption RFZO would save about 9.500.000,00€ only for plain ACE inhibitors. **CONCLUSIONS:** Viewed from the perspective of the RFZO, large financial resources would be saved if the structure of the utilized ACE inhibitors in Serbia was more similar to the country with developed pharmacotherapeutic practice.

PCV11

USE OF ANTI-INFECTIVES FOR SYSTEMIC ADMINISTRATION IN SERBIA IN 2010

Milijasevic B[1], Tomic Z[1], Sabo A[1], Vukmirovic S[2]

[1]Faculty of Medicine, University of Novi Sad, Novi Sad, Vojvodina, Serbia and Montenegro, [2]Faculty of Medicine, University of Novi Sad, Novi Sad, Serbia and Montenegro

OBJECTIVES: To analyze use of anti-infective drugs for systemic administration (ATC-group J) in Serbia in 2010 year. **METHODS:** Data about use of anti-infective drugs for systemic administration in Serbia in 2010 was taken from the Agency for Drugs and Medical Devices of Serbia. **RESULTS:** Total use of all drugs in Serbia in 2010 was 966,26 DDD/1000 inhabitants/day. ATC-group J was on the eighth place according to amount of DDDs with 19,63 DDD/1000 inh/day or 2,03% of total consumption. According to the funding spent, this group was on the second position with 90.651.670,00€. In this group, subgroup with highest consumption were antibacterial drugs for systemic use (subgroup J01), with 19,35 DDD/1000 inh/day or 98,57% of total use in group J. This subgroup takes first place in funding spent with 59.740.274,49€ or 65,90% of total expended finances in this group in 2010. Beta-lactam antibacterial drugs with 11,71 DDD/1000 inh/day or 60,52% were drugs with highest use in this subgroup, macrolides and lincosamides were at second place with 3,23 DDD/1000 inh/day or 16,69%, while on the third place were quinolones with 2,09 DDD/1000 inh/day or 10,80% of total drug utilization inside this subgroup. Funding spent on beta-lactam antibacterial drugs was 36.469.664,56€ or 61,05%, macrolides and lincosamides 8.573.022,83€ or 14,35%, and for quinolones 6.745.763,79€ or 11,29% of total funding spent for subgroup J01 in the year 2010. **CONCLUSIONS:** In comparison to 2009 spending of group J in Serbia in 2010 year was decreased for 18,35 DDD/1000 inh/day or 48,31%. The amount of funding spent in this group, however, of drugs was decreased for only 20,03%.

PCV12

DETERMINANTS OF EXPOSURE TO POTENTIAL INTERACTIONS BETWEEN ANTIPLATELET DRUGS, ANTICOAGULANTS, DIGOXIN AND COMMON CHINESE MEDICATIONS IN TAIWAN

Tsai HH[1], Lin HW[2], Toh S[3]
[1]China Medical University, Taichung, Taiwan, [2]China Medical University, Taichung County, Taiwan, [3]Harvard Medical School and Harvard Pilgrim Health Care Institute, Boston, MD, USA

OBJECTIVES: To estimate the prevalence of potential interactions between antiplatelet drugs, anticoagulants, digoxin and Chinese medications (CM) and further to explore the determining factors associated with the occurrence of potential interactions. **METHODS:** This study assessed the prevalence of exposure to the major interactions between the seven selected western medications commonly used for the cardiovascular diseases (i.e., aspirin, clopidogrel, digoxin, dipyridamole, heparin, ticlopidine, and warfarin [in terms of high risk western medications, HRWM]) and selected common used CM (i.e., American ginseng, Asian ginseng, danshen, and dong quai), using the two-million National Health Insurance (NHI) Research Database in Taiwan. Both univariate and multivariate logistic regression analyses were conducted to identify the contributing factors (e.g., baseline demographics, comorbidities, health services utilizations) of potential major interactions incidence. **RESULTS:** While 14.7% of HRWM users (19,431/131,804) ever used those selected CM concurrently at anytime in 2007, 81.9% (15,919/19,431) of HRWM-CM concurrent users had been exposed to at least one combination of potential major interactions. Anticoagulants (i.e., heparin and warfarin) users were more likely to be prescribed with the selected CM with major interactions (86.7% and 86%, respectively). The concomitant use of aspirin with *dong quai or Asian ginseng* was more prevalent than others. The factors that statistically significantly associated with the incremental exposure of potential major interactions included female sex, age 45-84 years old, higher number of outpatient visits, distinct medications prescribed, and previous diagnosis of stroke. In contrast, those HRWM-CM users with high monthly income, enrolled in the West region of Taiwan NHI, and had previous history of acute respiratory infection were less likely to exposure to the major interactions of HRWM-CM use. **CONCLUSIONS:** The exposure of the major interactions with CM was relative prevalent among HRWM users in Taiwan. Further research is needed to investigate the outcomes associated with such combinations.

PCV13

PERCEPTIONS OF HEALTH DURING PREGNANCY INCREASE THE RISK OF CARDIOVASCULAR DISEASE

Zulkifly H[1], Dingle KD[2], Clavarino A[2]
[1]Universiti Teknologi MARA, Bandar Puncak Alam, Selangor, Malaysia, [2]University of Queensland, Woolloongabba, Queensland, Australia

OBJECTIVES: To examine the prospective association between perception of health during pregnancy and cardiovascular risk factor of mothers 21 years after the index pregnancy. **METHODS:** Data used were from the Mater University Study of Pregnancy (MUSP), a community- based prospective birth cohort study begun in Brisbane, Australia, in 1983. Logistic regression analyses were conducted. **RESULTS:** Data were available for 3692 women. Women who perceived themselves as not having a straight forward pregnancy had twice the odds (adjusted OR 2.0, 95% CI 1.1-3.8) of being diagnosed with heart disease 21 years after the index pregnancy as compared to women with a straight forward pregnancy. Apart from that, women who had complications (other than serious pregnancy complications) during the pregnancy were also at 30% increased odds (adjusted OR 1.3, 95% CI 1.0-1.6) of having hypertension 21 years later. **CONCLUSIONS:** As a whole, our study suggests that pregnant women who perceived that they had complications and did not have a straight forward pregnancy are likely to experience poorer cardiovascular outcomes 21 years after the pregnancy.

CARDIOVASCULAR DISORDERS - Cost Studies

PCV15

A COST-EFFECTIVENESS ANALYSIS BETWEEN AMLODIPINE AND ANGIOTENSIN II RECEPTOR BLOCKERS IN STROKE AND MYOCARDIAL INFARCTION PREVENTION AMONG HYPERTENSION PATIENTS IN CHINA

Wu Y[1], Li M[2], Xuan J[3], Zelt S[3], Yin H[4], Zhou Q[5], Zhang C[5], Huang M[6]
[1]Foshan Municipal Health Bureau, Foshan, Guangdong, China, [2]Johns Hopkins University, Baltimore, MD, USA, [3]Pfizer, New York, NY, USA, [4]Long Island University, Brooklyn, NY, USA, [5]Foshan First Hospital, Foshan, Guangdong, China, [6]Sun Yat-Sen University, Guangzhou, Guangdong, China

OBJECTIVES: There were more than 200 million hypertension (HTN) patients in China. Uncontrolled HTN results in strokes, myocardial infarction (MI) and other complications, which are the leading cause of disability, death and severe economic consequence. We conducted an economic evaluation to determine the costs and quality-adjusted life years (QALYs) associated with Amlodipine (Norvasc) and the Angiotensin II Receptor Blockers (ARBs) in preventing stroke and MI among Chinese HTN patients. **METHODS:** A cost-utility analysis was conducted from the third-party payer perspective. A Markov model was constructed to estimate five year costs and health consequences (12-month cycles). For each arm, 10,000 patients were included for the simulation with Valsartan as comparator. Effectiveness data on incidence of stroke and MI were based on a published meta-analysis. Relative risks of stroke and MI were 0.84 and 0.83 respectively comparing Amlodipine and ARBs. Utility data were retrieved from the published literature. Costs of MI were retrieved from Chinese government reimbursement database. Costs of stroke were obtained from retrospective chart review and follow-up interviews in Chinese tertiary hospitals. Costs included costs of drugs, direct medical costs of hypertension management, stroke/MI treatment, and follow-up management. Discounting rate used for costs and QALYs was 3%. **RESULTS:** Total direct medical and drug costs of Amlodipine and Valsartan users are ¥111,731,716 and ¥132,058,611 respectively; total QALYs of Amlodipine and Valsartan users are 30,648.5 and 30,520.8, respectively. Amlodipine is dominant with lower costs and higher QALYs. This demonstrated that, compared with Valsartan, Amlodipine is a cost saving therapy with increased overall survival due to the reduction in stroke and MI events. When Ibersartan data were used in the comparison, the magnitude of cost saving changed but overall conclusion remained the same. **CONCLUSIONS:** Amolodipine is a cost saving therapy compared with ARBs in preventing stroke and MI for Chinese hypertension patients.

PCV16

ASSOCIATIONS BETWEEN PATIENT DEMOGRAPHICS, PHARMACOTHERAPY USE, AND COST, RESOURCE UTILIZATION, AND QUALITY-OF-LIFE BURDEN IN ADULT CARDIAC ARRHYTHMIA PATIENTS

Tang DH[1], Gilligan A[2]
[1]The University of Arizona, Tucson, AZ, USA, [2]University of Arizona, Tucson, AZ, USA

OBJECTIVES: To examine a cohort of patients with all forms of cardiac arrhythmia (CA) and identify factors associated with cost of care, health care resource utilization, antiarrhythmic agent use, and quality of life. **METHODS:** This retrospective database analysis utilized the household component data from 2004 to 2009 Agency for Healthcare Research and Quality Medical Panel Expenditure Survey. Patients aged ≥ 18 and had any form of CA (identified via ICD-9-CM codes 427.0-427.2, 427.31-427.32, 427.60-427.61, 427.69, 427.81, 427.89, 427.9, 785.0-785.1) were included. Primary independent variables of interest included age, gender, race/ethnicity, and pharmacotherapy use. Total annual health care expenditure, total annual prescribed medicine expenditure, physical and mental component summary scores (PCS and MCS) of the Short-Form 12 version 2 (SF-12), EuroQoL-5D (EQ-5D) utility scores (US version), proportion of patients using antiarrhythmic medications, number of prescribed medications associated with their cardiac arrhythmia, and proportion of patients with inpatient, outpatient, or emergency room visits were the primary outcomes of interest. Multivariate ordinary least squares (OLS) and generalized linear models (GLM) were used to analyze factors related to the aforementioned outcomes. To provide national estimates, all results were weighted and used standard errors (SE) calculated via Taylor-series approaches. **RESULTS:** Annually, 5,750,440 non-institutionalized US persons were estimated to suffer from cardiac arrhythmia between 2004 and 2009. Higher health care expenditure and utilization appeared in non-Hispanic whites and patients aged ≥ 65 ($p<0.05$). As compared to male patients, females had significantly higher prescribed medication expenditure, lower proportion of inpatient and emergency department visits related to arrhythmia, and lower PCS score ($p<0.05$). Patients on antiarrhythmics had significantly higher health care expenditures, lower proportion of emergency department visits related to arrhythmia, and higher MCS score ($p<0.05$) compared with their counterparts. **CONCLUSIONS:** Potential health disparities exist across age, gender, race, and antiarrhythmic use among CA patients.

PCV19

HOSPITALIZATION COSTS AND THEIR PREDICTORS IN PATIENTS WITH VENOUS THROMBOEMBOLISM IN CHINA

Wu J[1], Yang L[1], Zhu G[2]
[1]Peking University, Beijing, Beijing, China, [2]Bayer Healthcare Company Ltd., Beijing, Beijing, China

OBJECTIVES: Venous thromboembolism(VTE), a condition that includes deep vein thrombosis(DVT) and pulmonary embolism(PE) is associated with major morbidity and mortality and causes huge economic burden. The objective of this analysis was to determine the hospitalization costs and their predictors due to DVT/PE in China. **METHODS:** A total of 278 patients with DVT or PE were randomly selected by stratified two-stage sampling from the China Basic Medical Insurance Databases in 2009 and 2010. All information of patient demographic characters, length of stay, clinical and costs were collected for the analysis. The descriptive statistics was used to describe patients' demographic characters, the hospital stay and the hospital costs. Univariate and multivariable analyses were also used in the data analysis. **RESULTS:** Total 278 patients (mean age 64.4 years; 58.3% male) were evaluated, 61.9% of patients with DVT and 38.1% of patients with PE. The mean