

CONCLUSIONS: Cardiovascular diseases are still leading cause of death in BH, so we suggest deeper analysis of all guidelines, programs and interventions focused to decreasing CV mortality and making Government(s) expenditure in CV drugs more efficient.

PHP43

INTRODUCTION OF A PRESCRIPTION CHARGE ON THE COMMUNITY DRUG SCHEME IN IRELAND – WHAT IMPACT HAS IT HAD ON DRUG UTILISATION?

Usher C¹, Bennett K², Barry M¹

¹National Centre for Pharmacoeconomics, Dublin, Ireland, ²Trinity Centre for Health Sciences, Dublin, Ireland

OBJECTIVES: In October 2010, the Irish healthcare payer (i.e. the Health Service Executive, HSE) introduced a €0.50c charge on all prescription items dispensed under the General Medical Services (GMS) scheme, the largest of the community drug schemes in Ireland covering approximately 40% of the population. We investigated whether this charge was associated with changes in drug utilisation. **METHODS:** Monthly prescription dispensing was analysed from September 2009 to September 2010 (pre-intervention period) and then from November 2010 to March 2011 (post intervention period). In addition to utilization (prescription items) and cost information the database classifies drugs according to whether they are generic, off-patent or patent. The volume of drugs dispensed in each class was calculated and trends in utilisation and expenditure from the pre intervention period were compared with those in the post intervention period using segmented regression analysis. All analyses were performed using SAS (v9.1, SAS Institute Inc. Cary, US). Statistical significance at $p < 0.05$ is assumed throughout. **RESULTS:** No effect was noted following the introduction of the prescription charge on prescription items in the post intervention period. A decrease in ingredient cost was noted however, for generics in the month post the intervention ($p < 0.01$). A change in the overall trend for ingredient cost of off-patents was noted also in the post intervention period ($p < 0.05$). The intervention had no significant effect on utilization and expenditure of patented medicines. **CONCLUSIONS:** The study findings suggest that the recent introduction of a prescription charge has had no significant effect on utilization of prescription medicines, while decreased expenditures could be attributed to changes in the pricing mechanisms for generics and off-patents occurring around this time. Further analysis is warranted to determine if the effect on utilization is sustained over time.

PHP44

INAPPROPRIATE PRESCRIPTIONS BASED ON BEERS CRITERIA IN ELDERLY PATIENTS TREATED AT HOME

Imai H¹, Nakao H², Sata F²

¹National Institute of Public Health, Wako-shi, Saitama-ken, Japan, ²National Institute of Public Health, Wako-shi, Japan

OBJECTIVES: Various studies have been performed on potentially inappropriate medications (PIM) in the elderly. In developed countries, Beers criteria or Zhan criteria are widely utilized. We developed a Japanese version of Beers criteria and are using it in clinical practice. Almost no epidemiological surveys have been performed on PIM in Japan. However, it is clear that dangerous prescriptions including unnecessary and multidrug prescriptions are often written. The objective of this study is to clarify the prevalence of PIM in elderly people 65 or older treated at home. **METHODS:** The subjects were elderly people 65 or older under home care in the Tokyo area who were prescribed drugs in routine practice. The survey was conducted in 300 randomly sampled pharmacies. The survey forms were distributed to the pharmacists by mail. After the pharmacists entered the drug prescription information, they returned the forms by post. **RESULTS:** Replies were obtained from 130 pharmacies (recovery rate: 43.3%). The 84 patients included 30 men and 54 women with a mean age of 82. Medical conditions included hypertension (56%), cognitive impairment (21.4%), ischemic heart disease (16.7%) and diabetes (11.9%). Drugs prescribed based on the Japanese version of Beers criteria accounted for 52.4% and included famotidine (30%), digoxin (5%) and ticlopidine (3.3%). Drug types included peptic ulcer drugs (48.3%), vasodilators (8.3%) and anti-Parkinsonism agents (6.7%). **CONCLUSIONS:** In the first epidemiological survey on PIM in the elderly undergoing home care in Japan, PIM were evident in 52.4%, a high percentage compared data on PIM to date. Peptic ulcer drugs were the most common and prescriptions of ticlopidine were also high when compared with other countries. This survey had several limitations such as being limited to Tokyo and relatively few subjects. In the future, we hope to perform a survey with greater precision in more subjects in the future.

PHP45

PREDICTABILITY OF PHARMACEUTICAL SPENDING USING CLINICAL RISK GROUPS IN THE VALENCIAN COMMUNITY IN VALENCIA

Uso Talamantes R¹, Caballer Tarazona M¹, Buigues Pastor L¹, Trillo Mata JL¹, Guadalupe Olmeda N², Vivas Consuelo D²

¹Conselleria de Sanidad, Valencia, Spain, ²Universidad Politecnica de Valencia UPV, Valencia, Spain, Spain

BACKGROUND: The Valencian Community, with 5,000,000 inhabitants, is implementing a system of pharmaceutical management to reduce costs. This system is based on classifying patients in groups using the case mix system, Clinical Risk Groups. An electronic tool has been developed based on www to manage patients with chronic conditions and monitor pharmaceutical expenditure in primary health care. GPs receive a report on the real pharmaceutical cost that is being incurred and the optimum cost adjusted by CRG. **OBJECTIVES:** To evaluate the predictive ability of the Clinical Risk Group System in predicting pharmaceutical expenditure in the Valencian Community. **METHODS:** We ran a generalized linear

model to examine the predictive validity of the CRG system and report the correlation between the predicted and observed expenditures. We reported mean predictive ratios across medical condition and cost-defined groups. **RESULTS:** The CRG system predicted pharmaceutical expenditure with precision, excepting for groups 8 and 9 of ACRG3. A new weight adjusted model has been developed to better fit pharmaceutical expenditure in primary health care to the real situation in Valencia. **CONCLUSIONS:** In order to use the CRG system to estimate pharmaceutical expenditure in primary health care, the groups of greater clinical risk must be weight adjusted, as the pharmaceutical consumption of these groups is hospital-based.

PHP46

MARKET UPTAKE OF ORPHAN DRUGS – A EUROPEAN ANALYSIS

Picavet E¹, Cassiman D², Simoens S³

¹Katholieke Universiteit Leuven, Leuven, Vlaams-Brabant, Belgium, ²University Hospital Leuven, Leuven, Vlaams-Brabant, Belgium, ³K.U. Leuven, Leuven, Belgium

OBJECTIVES: The principle of equitable treatment establishes that everyone has the right of access to preventive health care and the right to benefit from medical treatment. Variations in market uptake of orphan drugs have important implications with respect to access to care and inequality of treatment. Therefore, the aim of this descriptive study is to examine the uptake of orphan drugs in Europe. **METHODS:** We analyzed both the sales and volume uptake from 17 orphan drugs in 24 European countries from 2001 until the beginning of 2010 using the IMS Health database. Countries were clustered based on differences in demographics, gross domestic product (GDP) and patent protection law. **RESULTS:** This study shows that there is a difference in the uptake of orphan drugs across European countries. Not only does the number of orphan drugs launched differ, the sales on orphan drugs and the share of orphan drugs sales on total market sales also vary strongly. Additionally, the volume uptake and the share spent on orphan drugs during the first year after the launch are highest in countries with high GDP and strong patent laws. **CONCLUSIONS:** The uptake of orphan drugs could be promoted through a variety of mechanisms such as the harmonization of European patent laws, the implementation of conditional reimbursement mechanisms, and the introduction of non-binding EU scientific assessment reports on the clinical added value of orphan drugs.

PHP47

EVALUATION OF GENERAL PUBLIC'S EXPENDITURE ON HEALTH PRODUCTS

Alhaddad MS¹, Hassali MA², Maghrabi I³

¹Taif University, Taif, Saudi Arabia, ²Universiti Sains Malaysia, Penang, Malaysia, ³Taif University, Taif, Saudi Arabia

OBJECTIVES: Most countries including Malaysia are facing escalating healthcare expenditures. The purpose of this study was to evaluate general public's expenditure on health products. **METHODS:** A cross-sectional study using convenience sampling technique was used in this study. 800 questionnaires were distributed to the general public in the state of Penang Malaysia. All data were analysed using descriptive and appropriate inferential statistics at alpha value of 0.05. **RESULTS:** A total of 56.73% of total 704 respondents felt that branded medicines were expensive or moderate, while 56.53% of them felt that the cost of generic medicines were moderate. In terms of private market, the costs of health products sold in community pharmacies were perceived to be cheaper as compared to private clinics and private hospitals. The mean of monthly expenditure per household on modern medicines, vitamins and non-herbal health supplements, and herbal products were RM 171.80, RM 125.41 and RM 61.03, respectively (1 USD = RM3.30). Respondents' age, gender, race and income were found significantly affecting on patients' responses. **CONCLUSIONS:** This study has highlighted the need to control the medicines prices in the private market especially in private clinics and private hospitals. There is a need to promote generic products and to educate patients about the evidence based medicine since a good proportion of their income is monthly spent on herbal products.

PHP48

CROATIAN PHARMACEUTICAL EXPENDITURE BEFORE AND AFTER HEALTHCARE REFORM – COMPARISON TO EU COUNTRIES

Pogorilic S, Vitezica P, Bolanca S

CARPC (Croatian Association of Research Based Pharmaceutical Companies), Zagreb, Croatia

OBJECTIVES: To assess the impact of pharmaceutical part of the health care reform in Croatia as compared with trends observed in EU countries. **METHODS:** Detailed historical pharmaceutical expenditure was analysed using MIDAS, an IMS Health proprietary database, as well as a variety of other published secondary data sources. Croatian trends have been compared with those of a number of benchmark countries, categorised either as Peer Countries (Slovakia, Czech, Hungary) and Aspirational Countries known to have systems that have been ensuring excellent health care outcomes (France, The Netherlands, Austria). **RESULTS:** Although total health expenditure in Croatia, as percentage of GDP is at EU level (7.8%), total pharmaceutical spend per capita is very low, 128€, with more than 80% coming from public funding. Pharmaceutical expenditure is not driving the overall health cost growth; in fact, pharmaceutical spend as a % of total health expenditure has been declining since 2003. The complex set of cost containment measures, including limitation of GP's prescriptions, imposed by Croatian Health Insurance Institute is the likely cause of this trend. The most relevant finding of this study is that Croatia has been historically very low in drug use in terms of 'volume per capita' compared to benchmark countries. In 2010 Croatian patients consumed approx. 20-25% less prescription medicines per capita than the average of peer and aspirational countries. **CONCLUSIONS:** If the observed trends are allowed to continue, it will be difficult for Croatia to keep pace with its peers in providing adequate phar-

maceutical health care standards and outcomes. Without close monitoring of key health care indicators and outcomes, volume (prescription) limitations introduced by the recent Healthcare Reform can have adverse and inevitable long term impact.

PHP49

THE PHARMACIST'S PERCEPTION OF THE SPLITTING EXTENDED RELEASE AND ENTERIC-COATED FORMULATION DRUGS

Jang HM, Lee EK

Sookmyung Women's University, Seoul, South Korea

OBJECTIVES: Extended release and enteric coated formulations make up 7.8% of all drugs, and the most frequently used drug is an agent affecting circulatory, digestive system. The objective of this study is to analyze of extended release and enteric coated drugs on pharmaceutical reimbursement item list in Korea and evaluate the dispensing of extended release and enteric coated drugs, which is enforced by the National Health Insurance. **METHODS:** The analysis used a questionnaires survey for 169 pharmacists in the hospital pharmacy and community pharmacy (Response rate: 73.8%). The questions include; prescribing change after enforcement by National Health Insurance, prescription correction, change of pharmacy works, expansion of the range of enforcement, provision of information and prescribing error prevention. The statistics methods use Chi-square, AVOVA, t-test, McNemar test by STATA/SE10. ($p < 0.05$). **RESULTS:** Of extended release and enteric coated formulations, 33.9% were not available in other dosage forms. After enforcement by National Health Insurance, the rate of splitting and crushing of extended release and enteric coated drugs decreased, but pharmacies in tertiary care hospitals had increased workload because of prescription corrections. Prescription was not changed, because patients take medicines for a long time. Most of pharmacists agreed on the expansion of drug range, but 65.7% of pharmacists wanted the enforcement only for hospitals. When pharmacists corrected their prescribing error, the biggest problem was a lack of other dosage forms. To prevent extended release and enteric coated from splitting and crushing, pharmacists want in the following ways; prescribing code prohibits into order computer system, warnings and alerts on prescribing, developing many other dosage forms. **CONCLUSIONS:** What is needed are medication-use system improvements and the creation of lists with suggestions for alternative products on the formulary. Also, pharmaceutical companies should make an effort to develop other dosage forms.

PHP50

IRRATIONAL USE OF INJECTABLE FORM OF DEXAMETHASONE: A WARNING FOR HEALTH SYSTEM IN IRAN

Soleymani F¹, Haerizadeh M², Dinarvand R³

¹Tehran University of Medical Science, Tehran, Iran, ²Ministry of Health, Tehran, Iran, ³Tehran University of Medical Sciences, Tehran, Iran

OBJECTIVES: Irrational prescribing of injections is widespread in Iran. According to statistics of National Committee of Rational Drug Use (NCRUD), based on data from insured prescriptions, more than 40% of prescriptions have at least one injection in which injectable dosage form of dexamethasone is on the top of list. The aim of this study is to describe the prescribing pattern of dexamethasone in general practitioners' prescriptions from 2006 to 2009. **METHODS:** A retrospective cross-sectional study was done on insured prescription during 4 years. All insured prescriptions which were collected in special software called Rx Analyst during the study period in the NCRUD were reviewed for prescriptions included injectable dosage form of dexamethasone. **RESULTS:** A total of 150,630,381 Prescriptions were reviewed in which 73,808,887 were detected to be included at least one injection. Among prescriptions with injections, there were more than 30 percent of prescriptions which had at least one injection form of dexamethasone making it the first prescribed medicine by general practitioner. An overall increasing linear trend in prescribing pattern of injectable dosage form of dexamethasone was evident over the observation period. The percent of general practitioners' prescriptions which had injectable dosage form of dexamethasone is 15.46 in 2006, 15.93 in 2007, 16.64 in 2008 and 16.94 in 2009. **CONCLUSIONS:** Irrational prescribing pattern of dexamethasone injection is obviously determined according to the results of this study. It seems that general practitioners are trying to substitute pain relievers' drugs by injectable dosage form of dexamethasone. A multi-interventional policy is needed to correct the pattern use of dexamethasone.

PHP51

PILL BURDEN IN SOUTH AFRICAN PATIENTS WITH MULTIPLE RISK FACTORS FOR METABOLIC SYNDROME

Burger JR, Lubbe MS, Serfontein JHP

North-West University, Potchefstroom, South Africa

OBJECTIVES: Metabolic syndrome is a cluster of several common metabolic disturbances, including inter alia hypertension, hyperglycaemia and dyslipidaemia. Each of these risk factors requires multiple agents to reach desired therapeutic goals. The aim was to determine the average pill burden level in patients treated concurrently with antidiabetic-, antihypertensive- and lipid-lowering agents. **METHODS:** A retrospective, quantitative drug utilization review was conducted utilizing national medicine claims data obtained from a South African Pharmaceutical Benefit Management company for the period of January 1, 2008 to December 31, 2008. Average pill burden (AvPB) was calculated as the average number of tablets received per prescription over the study period divided by the number of days medication was supplied for. Combination products were counted once. As-needed-medication and other chronic medication were excluded from the analysis. Data for 17 866 patients were analysed using the SAS for Windows 9.1@ programme. **RESULTS:** Patients had an overall AvPB of 2.7 ± 1.20 per prescription, with a rate of 2.8 ± 1.21 among males ($n = 9 632$) vs. 2.6 ± 1.18 for females ($n = 8 234$). Patients aged 0-15 years ($n = 2$) had an AvPB of 1.2 ± 0.30 per prescription, vs. 2.3 ± 1.49 for those

aged 16-30 years ($n = 53$), 2.6 ± 1.11 for those 31-45 years ($n = 992$), 2.8 ± 1.18 for those 46-60 years ($n = 5 768$), 2.8 ± 1.23 for those 61-75 years ($n = 7 641$) and 2.5 ± 1.17 for those older than 75 years ($n = 3 410$). **CONCLUSIONS:** Metabolic syndrome patients are prescribed multiple drug therapies. Our results show that the average pill burden among private health care South African patients receiving antidiabetic-, antihypertensive- and lipid-lowering agents concurrently were the highest among men, and increased progressively with age to peak in those aged 61-75 years. Further studies are necessary to determine the influence of pill burden on adherence, drug interactions and treatment cost.

Health Care Use & Policy Studies – Equity And Access

PHP52

INEQUALITIES IN THE UTILIZATION OF HOME HOSPICE SERVICES IN HUNGARY

Turcsanyi K¹, Domján P¹, Pakai A¹, Gombos G¹, Ágoston I², Vas G², Molics B², éliás Z², Kriszbacher I², Boncz I²

¹University of Pécs, Zalaegerszeg, Hungary, ²University of Pécs, Pécs, Hungary

OBJECTIVES: Hospice service appeared in 1991, when Hungarian Hospice Foundation was established. More and more hospice institutions were started their works in this period, which type was home care, palliative hospital ward and complex, which provides both of them. In our study we are analyzing the spatial distribution of Hungarian hospice service. **METHODS:** In 2008, number and activities of hospice service was examined and we have been drawn attention for financial data by our survey with data of National Health Insurance Fund and Central Statistics Office. We analyzed the county and regional distribution of hospice services. **RESULTS:** Thirty hospice care providers were reimbursed by the National Health Insurance Fund Administration in 2008. The total number of nursing days were 53,113 in Hungary. The number of nursing days per 10,000 populations showed a significant difference across the regions with a national average of 52.88 days: Western Transdanubian Region (86.64), Northern-Hungarian Region (83.84), Southern-Transdanubian Region (81.28), Southern Great-Plain Region (77.31), Central-Transdanubian Region (59.62), Central Hungarian Region (32.23) and Northern Great-Plan Region (1.68). At county level we found similar within country differences with the highest value in Nógrád county (190.83 days/per 10,000 population) and the lowest in county Jász-Nagykun-Szolnok and Fejér (< 7 days/per 10,000 population). **CONCLUSIONS:** The regional differences in hospice care are high among Hungarian regions and counties. A further analysis is required to explore the reasons behind these huge differences.

PHP53

ASSESSMENT OF THE ATTITUDES OF THE GENERAL PUBLIC TOWARDS SUPPLEMENTARY CRITERIA TO BE USED IN P&R DECISION MAKING PROCESS IN POLAND

Kolasa K¹, Lees M²

¹Bristol-Myers Squibb, Warsaw, Poland, ²BMS, Uxbridge , UK

OBJECTIVES: To explore the attitudes of the general public towards the principle of QALY maximization in pricing and reimbursement decision-making process in Poland. **METHODS:** Cross sectional survey of a random representative sample of 1000 residents was performed. Face-to-face interviews were conducted using a structured questionnaire. The final format of the questionnaire included refinements based on a pilot survey. Respondents rated statements concerning attitudes to equity on a Likert scale. Two hypothetical experiments were designed to elicit preferences for QALY maximization. In the first experiment, responders had to allocate a given limited budget to 400 patients with non-fatal disease, 100 patients with fatal disease, or a combination of patients with fatal and non-fatal disease. The QALY gain per patient was assumed the same for both groups. In the second experiment, responders prioritized a given treatment to either 100 patients with eight years or 100 patients with two years of baseline life expectancy. The survival gain per patient resulting from the new treatment was eight years for first group and varied from two to eight years for the second group. **RESULTS:** The study indicated strong support for the statements about equity (42% agreed and 44% strongly agreed). In the first experiment, 75% chose to allocate budget to both groups of which 50% preferred equal distribution. In the second experiment, if survival gain per patient was equal for both groups, 57% chose treatment for group with shorter baseline life expectancy. If survival gain per patient was larger for group with longer baseline life expectancy, 49% still chose treatment for group with shorter life expectancy. **CONCLUSIONS:** General support for statements expressing equity was confirmed by two experiments. Instead of QALY maximization, a significant group of responders took into consideration needs of both patients' groups irrespective of costs and disease severity irrespective of QALY gain.

PHP54

PREDICTORS OF AVOIDABLE EMERGENCY ROOM VISITS AMONG HIGH COST MEDICAID ENROLLEES

Ganduglia C¹, Franzini L¹, Dunn K²

¹University of Texas Health Science Center Houston, School of Public Health, Houston, TX, USA,

²University of Texas Health Science Center Houston, School of Biomedical Informatics, Houston, TX, USA

OBJECTIVES: Research has shown that Medicaid enrollees in the USA are the most frequent users of the Emergency Department (ED) services. Several studies have demonstrated that a high proportion of the ED visits could be avoided. The purpose of this analysis is to examine the demographic and health system delivery characteristics that are associated with avoidable ED visits (AEDV) among a high risk, high cost Medicaid population between 2008 and 2009. **METHODS:** One year claims dataset of a sample of high cost, high risk Medicaid enrollees in Houston, Texas was used for the analysis. This was design following the Andersen-Aday theoretical