fasalazine, Multi-Matrix System mesalamine [MMX], balsalazide disodium, mesalamine delayed release [MDR]) during 2007-2011. Patients were continuously enrolled in the 6-month pre- and 12-month post-initiation period. 5-ASA treatment persistence and adherence according to the initial prescription filled (index medication) were compared. Persistence was defined as the duration between initiation and discontinuation of therapy with a permissible gap <60 days, and analyzed using Kaplan-Meier survival analysis. Persistence rates at month 12 were calculated. Adherence was measured by medication possession ratio (MPR) for index drug, and proportion of days covered (PDC) for any 5-ASA. Analysis of covariance was used to compare MPR and PDC across index medication. Covariates included age, gender, insurance, residential region, comorbidities at index date, and use of immunosuppressive/biologic agents, rectal form of 5-ASA and access to specialist care post 12-month index date. **RESULTS:** A total of 5245 patients met selection criteria, 59% were on MDR, 17% MMX, 13% sulfasalazine, and 11% balsalazide. The median persistence days ranged from 151 [sulfasalazine] to 221 [MMX] days, P=0.001). Persistence rates at month 12 was highest for MMX (28%) compared to other 5-ASAs (24% MDR, 23% balsalazide, and 20% sulfasalazine, respectively, logrank P<0.001). Mean adjusted MPR/PDC ± standard error was significantly higher in the patients on MMX (0.48±0.02/0.53±0.02) than that of patients on other 5-ASAs (0.43±0.01/0.50±0.01 [MDR], 0.43±0.02/0.49±0.02 [balsalazide], and 0.39±0.02/0.47±0.02 [sulfasalazine], P<0.01/P<0.04). **CONCLUSIONS:** Patients on once-daily MMX were significantly more persistent and adherent with UC treatment than those on other 5-ASA index drugs although persistence and adherence with oral 5-ASAs in UC patients were suboptimal.

PHP37

PRESCRIPTION SWITCHING FROM ANGIOTENSIN-CONVERTING ENZYME INHIBITORS TO ANGIOTENSIN RECEPTOR BLOCKERS IN TAIWAN

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OBJECTIVES: Our previous study suggested that Taiwan's drug price adjustments result in prescription switching from cheaper angiotensin-converting enzyme inhibitors (ACEIs) to expensive angiotensin receptor blockers (ARBs), demonstrated by a macro level data that showed a decrease use in ACEIs and an increase use in ARBs after policy implementation and by a long-term increasing trend observed in annual prevalent ARB users that exceeded the cumulative incident ARB users. This study uses individual patient level data to examine the proportions of prescription switching from ACEIs to ARBs among the prevalent ARB users. **METHODS:** We identified 82,447 patients treated with ARBs between Feb 1998 and Dec 2008 from Taiwan's Longitudinal Health Insurance Database (LHID2005). We examined the monthly prevalent users of ARBs (from 2/1998 - 12/2008), the incident users of ARBs (who receive ARBs first time in a given month from Feb 1998 to Dec 2008 and did not receive ACEIs or ARBs in the preceding months from 1997 to 2008), and the ACEIs-to-ARBs switchers (who used ARBs in a given month and used ACEIs or both drugs [ACEIs in combination with ARBs] in last month during 2/1998 - 12/2008). **RESULTS:** The number of monthly prevalent ARB users increased from 4 to 32,292 from Feburary 1998 to December 2008. The growth of ARB prevalent users was mainly contributed by the incident ARB users and the ACEIs-to-ARBs switchers. The number of monthly incident ARB users increased from 2 to 562 and that of monthly ACEIs-to-ARBs switchers increased from 1 to 477 from February 1998 to December 2008. The number of ACEIs-to-ARBs switchers exceeds that of incident ARB users (average monthly ratio of the former to the latter is 1.25). **CONCLUSIONS:** Prescription switching from cheaper ACEIs to expensive ARBs based on individual patient level data is evident. Policy makers should be aware of this problem.

HEALTH CARE USE & POLICY STUDIES - Equity And Access

PHP38

PERSISTENT RACIAL AND ETHNIC DISPARITIES IN HEALTH CARE UTILIZATION – EVIDENCE FROM NATIONAL HEALTH INTERVIEW SURVEY

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OBJECTIVES: To evaluate the extent to which racial and ethnic disparities in health care utilization persist longitudinally. **METHODS:** We analyzed data from 2008 to 2010 National Health Interview Survey (NHIS) in the United States to examine insurance status and utilization of health care based on race/ethnicity (non-Hispanic White, Hispanic White, Black, Asian, and others). We used two outcome measures to define utilization of health care: at least one physician visit every two weeks, and the average number of physician visits every two weeks. We performed multiple linear regression and logistic regression with sampling weight adjustments for data analysis, stratified by dichotomous insurance status. Survey respondents with private or public insurance or both were considered insured; otherwise uninsured. All analyses were adjusted for age, education, gender, income-to-poverty ratio, self-reported health status, and activity limitation. **RESULTS:** Overall, insured rates decreased from 2008 to 2010 and the decreasing rate was significantly associated with race/ethnicity (p<0.01). Particularly, Asian had a faster decreasing rate compared with non-Hispanic white (p<0.05). The probability of having at least one physician visit every two weeks for insured adults slightly increased during 2008 and 2010, and was not significantly associated with race/ethnicity. However, insured Hispanic White and Asian Americans were still significantly less likely to have at least one physician visit every two weeks in comparison to non-Hispanic White (p<0.05). The average number of physician visits every two weeks for insured adults was significantly associated with year and race/ethnicity (p<0.01). Both outcome measures did not significantly change from 2008 to 2010 for uninsured adults. **CONCLUSIONS:** Reducing racial and ethnic disparities is an important priority in the United States. The results from NHIS show such disparities in health care utilization persist regardless of insurance status. More studies are needed to identify other factors associated with such disparities.

PHP39

PRESCRIPTION FILLING ON OUTPATIENT HEALTH CARE DEPARTMENTS: AN INDONESIA FAMILY LIFE SURVEY (IFLS) YEAR 2007 – 2008 BASED STUDY

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OBJECTIVES: To identify the rate of patient's prescription filling in outpatient health care departments in Indonesia, and to examine its related factor. **METHODS:** Secondary data from the 4thWave Indonesia Family Life Survey (IFLS, RAND Corp.) were used to obtain the Indonesia patients socio-economic characteristics including their behavior on filling prescription in outpatient health care departments. Factors related to prescription filling were identified from similar studies such as educational level, economic status, geographical status (urban-village, mainland-based), health insurance coverage, catastrophic health care costs, satisfaction from health care received, and morbidity (days of illness, illness condition). Statistical analyses such as univariate, bivariate, and multivariate analyses were performed in a cross-sectional study to identify and to examine the relationship between those factors with prescription filling rate. Meanwhile, interaction test also performed among variables in the multivariate model. **RESULTS:** Six hundred forty-one respondent data were eligible and used for analysis purposes. Results showed that 85,49% patients from outpatient health care department filled their prescriptions. Bivariate analysis showed that factors related to the prescription filling rate were educational level (p=0,031), economic status (p=0,085), geographical status (p=0,016 for urban-village, p=0,000 for mainland-based), and catastrophic outpatient health care costs (p=0,060). Meanwhile, multivariate analyses showed that only geographical status (p= 0,019 for urban-village) was significant. In terms of geographical status, patients who lived in Java Island had 1,6 times greater possibilities in prescription filling compared to patients who lived in other islands. No interaction identified between variables in the last multivariate model. **CONCLUSIONS:** Prescription filling in the outpatient health care department can be considered not optimum. Policy to enhance prescription filling in outpatient health care department should put an emphasize on geographical conditions of Indonesia which consists of thousand islands.

PHP40

EQUITY IN PHARMACEUTICAL PRICING AND REIMBURSEMENT: CROSSING THE INCOME DIVIDE IN ASIA PACIFIC

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OBJECTIVES: Providers of a new technology are increasingly obliged to give governments an insight into related costs and benefits, and its value for money. This necessitates the use of cost-effectiveness (CEA) and cost-utility data. A good health policy, however, must not only aim to be efficient but should also guarantee equity. **METHODS:** An analytic model has been developed to assess the ability to pay for 128 countries. The method introduces proportionality into pricing and reimbursement decisions across and within Asia Pacific countries by taking into account purchasing power parity measured at either the national or household level. Value-based pricing techniques are used in combination with national income parameters as defined in the Human Development Index together with health system variables. The resulting non-linear equity curve is a graphic representation of a price index calculated based on a country's national income. The ratio of wealth inversely reflects the theoretical discount rate that can be applied to each country compared to a high income reference country. The steepest discounts are reserved for the poorest countries, while for middle and high-income countries discounts will decrease as the country's wealth increases. **RESULTS:** The degree to which 'equitable pricing' offers a sustainable solution to the problem of access to medicines depends on: the economic development status of a country, the value of a particular medicine to its therapeutic class and the incidence of the disease, and the extent to which segmentation can be applied. **CONCLUSIONS:** Equitable, differentiated pricing can improve access to and affordability of medicines, particularly in low- and middle-income countries. The method is relevant for the Asia Pacific region confronted with disparity in the ability-to-pay (ATP) between countries, and between different population segments in the same country.

PHP41

RISK MANAGEMENT IN IRANIAN PHARMACEUTICAL COMPANIES TO ENSURE ACCESSIBILITY AND QUALITY OF MEDICINES

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OBJECTIVES: Medicine Quality and accessibility are two of the main objectives of health care systems. Pharmaceutical manufacturers have an important role to meet these goals. But they are faced with complicated environment and uncertainties whichcan affect ontheir performance and also accessibility and quality of medicines. Risk management is a new approach to assess and overcome these uncertainties. In this study we have tried to identify, assess and make mitigation strategies to manage risks which can affect on accessibility and quality of medicines in three Iranian pharmaceutical companies. **METHODS:** First: The literatures were reviewed for identification and categorization of potential risks. Second, a semi-structured questionnaire was developed to get expert opinions about prioritization of risks and mitigations strategies. Third: the questionnaires were filled by face to face interview with executive managers of three companies. **RESULTS:** Five

main categories of risks were identified which could affect on accessibility and quality named financial, supply, production, storage and logistic risks andin each category there were several uncertainties. Inflation rate, exchange rate, incorrect pricing, selection of suppliers, delay in shipment, policy issues, malfunction of machineries, untrained personnel and inappropriate condition of storage and distribution are some of risks in different categories. All of these risks had direct or indirect effect on quality or accessibility of medicines. **CONCLUSIONS:** Our study offers risk assessment methodology as a scientific way for identification of uncertainties which affect on quality and accessibility of medicines as two main objectives of national drug policy and also it demonstrated some proper strategies to mitigate them.

PHP42

DO MACROECONOMIC CONDITIONS EXPLAIN DRUG PRICE VARIATIONS ACROSS COUNTRIES? A CROSS-SECTIONAL ANALYSIS

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OBJECTIVES: We examine how much of the cross-country drug price differences can be explained by macroeconomic conditions (real GDP per capita, openness, population, and corruption). **METHODS:** We use the Pricentric® dataset of drug prices and analyze prices of 13 drug packs across 32 countries at various pack levels in 2009. The sample is selected by requiring each pack having observations for more than 20 countries and each country having observations for more than 20 packs. We gather data on real GDP per capita, openness, and population from the Penn World Table, and the Corruption Perceptions Index by Transparency International. The analysis has two parts. First, for each drug pack, we regress the log prices (ex-factory, public, etc) on the four macroeconomic variables. Second, to achieve better identification, we pool together all data and regress log prices on the macroeconomic variables and drug fixed effects. **RESULTS:** For 6 of the 13 packs we find that the four macroeconomic variables can explain the cross-country price variations well (with R-squared over 8%). For the other 7 drugs the fit is worse, but the signs of the coefficients among the 13 packs are in general consistent. The pooled regression shows the same conclusion that the macroeconomic variables have strong explanatory power. For the whole sample, a 1% increase in real GDP per capita correlates with a 0.15% increase in drug price. Openness has little impact, while population has a small but significant positive association. A 1% increase in the corruption index correlates with a 0.3% increase for all prices. **CONCLUSIONS:** Controlling for drug fixed effects, macroeconomic variables show statistically significant and economically large effects on drug pack prices. In particular, real GDP per capita and corruption perceptions have large positive impacts suggesting drugs cost more in either more developed countries or in more corrupted countries.

PHP43

THE HIGH COST OF TREATING CANCER: DO MANUFACTURER PRICING POLICIES TAKE AFFORDABILITY INTO ACCOUNT?

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OBJECTIVES: In 2008, GLOBOCAN estimated ~2.8 million new cases of cancer in China, making up ~22% of all global cases. Although the Chinese government has initiated a number of reforms to improve patient care, oncology drug access remains a significant issue with medicines not being on national lists of essential or reimbursed drugs. In China, manufacturers often set the price of oncology drugs free of government mandates as these are not reimbursed. In contrast, in markets where governments fund cancer treatment (South Korea, Japan, Taiwan), all medicines are assessed and undergo price setting/negotiation. Given these dynamics and discussion by pharma companies to price medicines more in line with affordability, this research explores the price differences for oncology agents across different types of markets taking into account the purchasing power parity and level of patient access. **METHODS:** Review current prices of selected oncology agents and the level of patient access across the Asian markets. Compare uptake of drugs and identify drivers for access and uptake. Analyze prices relative to purchasing power parity and compare to US & EU. **RESULTS:** The price differential across Asian markets is correlated with lack of reimbursement, i.e., higher prices in countries where there is no likelihood of reimbursement. In contrast, in countries where these drugs are reimbursed, prices are tightly controlled and subject to regular price cuts. Affordability remains the major challenge for access to cancer drugs. **CONCLUSIONS:** Currently, innovative cancer drugs are outside the reach of most Chinese as drug prices are some of the highest in the world. As the government aims to reimburse more oncology therapies, it will need to agree with manufacturers on price levels. Asian markets with ability to secure patient access to medicines at regulated prices can be useful models for China as the government looks to improve the system.

HEALTH CARE USE & POLICY STUDIES - Formulary Development

PHP44

IMPLEMENTATION & EVALUATION OF ESSENTIAL MEDICINES LIST 2011 IN A RURAL RESOURCE LIMITED DISTRICT HOSPITAL IN INDIA

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OBJECTIVES: Our major objective of the study was to assess the budgetary outcome of implementing the first Hospital Essential Medicines List (HEML) 2011 with a revised purchase policy in a rural resource limited, district charity hospital in India. HEML was also compared with national and World Health Organization (WHO) EMLs. **METHODS:** Expenditure on medicines purchase for the year of 2010 was compared for the year 2011 (after the first HEML and revised purchase policy). Evaluations were done to compare the number of medicines, dosage forms and fixed drug combinations of tablets and injections. Microsoft Excel 2007 was used to process the results. **RESULTS:** There was approximately 40 % reduction in the money spent on medicines in 2011 when compared to 2010, which was approximately nine crores of Indian Rupees (approximately 1.7 Million US Dollars). The number of medicines in 2010 was 1627, which was reduced to 424 in HEML 2011. WHOEML 2011 has 350 and National Essential Drugs List (NEDL) 2011 of India has 348 medicines. While preparing the HEML, 31 tablets and 14 injections of two-drug fixed combinations were removed. The great reductions were; 51 ointments to 9, 69 drops to 5, 11 paste to 0, 21 solutions to 3 and 14 creams to 1. The dosage forms removed include elixir, insulin pen, gums, paste, paint, gargle, mouthwash. **CONCLUSIONS:** New purchasing policy and implementation of HEML were the crucial factors in the cost minimization, in our charitable hospital. The WHOEML 2011, NEML 2011 and the HEML 2011 were comparable with few exceptions. Health care policy makers should note that, use of WHOEML and NEML with local experience makes implementation of HEML more practical in the countries with limited professional resources.

HEALTH CARE USE & POLICY STUDIES - Health Care Costs & Management

PHP45

RELAPSE PREVENTION AFTER SWITCHING TO RISPERIDONE LONG-ACTING INGECTION: 6 MONTHS MIRROR IMAGE STUDY IN JAPAN

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Compliance is an important factor for successful clinical management of schizophrenia. Risperidone long-acting injection (RLAI) can improve compliance compared to oral atypical anti-psychotics and several studies found the use of RLAI was associated with reduced hospitalization. RLAI was introduced to Japanese practice from June 2009 and is currently only available atypical anti-psychotic depot medication. **OBJECTIVES:** To assess the impact of RLAI use on hospitalization as a proxy of relapse in daily practice among Japanese patients with schizophrenia. **METHODS:** Mirror image comparison of psychiatric related hospitalization was made for 6 months before (pre-RLAI) and 6 months after (post-RLAI) the initiation of RLAI. The data source was commercially available health insurance claims database (Japan Medical Data Center, Tokyo; January, 2009 to June, 2011). The inclusion criteria were patients (20-59 years of age) who were diagnosed with schizophrenia (ICD F20 to F29) and who had continuous enrollment of the Group health insurance for 6 months before and 6 months after the initiation of RLAI. Patients with long-term hospitalization (>6 months) were excluded. Additionally, study patients were restricted to have at least 3 month continuous treatment with RLAI. In the analysis the initiation of RLAI during hospitalization contributed to pre-RLAI hospitalization because previous treatment was considered as failure. **RESULTS:** A total of 25 patients from 58 patients who were initiated on RLAI met the inclusion criteria. Twenty patients started at outpatient visits and 21 patients continued the RLAI treatment after 6 months. Mean dose was 33.5mg. The proportion of patients requiring psychiatric hospitalization was changed from 28% to 8% between pre- and post-initiating RLAI ($P<001$). The total number of psychiatric hospitalization was reduced by 82% (11 vs. 2, $P=0.02$). **CONCLUSIONS:** Switching from oral antipsychotics to RLAI may impact on the reduction in hospitalization among Japanese schizophrenic patients. Further investigation is necessary.

PHP46

BURDEN OF HERPES ZOSTER IN POPULATION WITH COMPROMISED IMMUNE SYSTEM IN SOUTH KOREA

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OBJECTIVES: To estimate the annual prevalence, the related medical costs, and health care resource utilization of patients diagnosed as herpes zoster (HZ) and post-herpetic neuralgia (PHN), respectively, with different immune status in South Korea. **METHODS:** This study is a retrospective analysis using the Korean National Patients Sample 2009 database of the Health Insurance Review and Assessment Service (HIRA K-NPS). Results of the sample database were extrapolated to the total Korean population aged ≥ 40 years. HZ and PHN patients were identified from diagnostic codes, and categorized into three subgroups based on the severity of immune status; non-compromised, mild to moderate and severe status. Medical costs included all HZ- or PHN-related costs incurred at medical facilities and medication costs. **RESULTS:** The prevalence of HZ (or PHN) was 15.53 (or 2.13) per 1000 persons among those aged ≥ 40 years in South Korea. The annual medical costs per patient for HZ (or PHN) management were US$191 (or $177). The average number of outpatient visits, emergency department visits and hospital admissions of HZ (or PHN) patients were 3.75, 0.01, and 0.05 (4.44, 0.01, and 0.03) per annum, respectively. With regard to the severity of immunodeficiency, patients with severe conditions were related to higher prevalence rate, medical costs and health care utilization. **CONCLUSIONS:** HZ and PHN cause considerable disease burden in South Korea, especially among immunocompromised population. Considering rapidly aging population and increasing prevalence of immunosuppressive conditions, the disease burden is likely to increase. The findings of the present study can serve as important baseline data for policy decision making to reduce the burden, such as the development of a HZ vaccination recommendation.

PHP47

IMPACT OF ECONOMIC AND POLICY FACTORS ON CHINA'S HEALTH CARE EXPENDITURE

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