OBJECTIVES: Diagnosis related groups (DRG) like financing method was introduced in Hungary in 1993 for acute care hospital activity. Due to the increased activity of the hospitals, an upper ceiling, the so-called performance volume limit (PVL) was introduced in acute care hospital financing in 2004. The aim of our study was to analyze the effect of performance volume limit on DRG based hospital financing on the example of a Hungarian tertiary teaching hospital, the Clinical Centre of the University of Pécs. METHODS: Data derived from the financial database of the National Health Insurance Fund Administration, the only health care financing agency in Hungary. We analyzed the hospital activity over the performance volume limit ceiling. We calculated the proportion of hospital activity over that ceiling measured by DRG cost-weights. The period 2004-2013 was involved into the study. RESULTS: The annual number of patients varied between 72671 (2007) and 82509 (2009) at the Clinical Centre of the University of Pécs. During the same period the annual performance volume limit for DRG costweights varied between 97784 and 116970. However due to the regulation of the upper ceiling of hospitals’ activity, 3.0 % (2007) to 14.9 % (2009) of that annual activity was reimbursed to the hospital. The average loss of reimbursement due to performance volume limit was 7.2 % of annual revenues between 2004-2013. CONCLUSIONS: The introduction of performance volume limit into the DRG based hospital financing resulted in a partial loss of hospitals’ revenues. Despite of in PVL the activity the hospital volume induced its output, thus the annual number of patients did not declined in this hospital.

HEALTH CARE USE & POLICY STUDIES – Disease Management

PHP4 CO-ADMINISTRATION OF TURMERIC POTENTIATES PREVENTIVE EFFECTIVE OF BLACK SEEDS IN METABOLIC SYNDROME Gilani AH, Amin F, Mehmood MH The Aga Khan University, Karachi, Pakistan

OBJECTIVES: The metabolic syndrome (MS), a combination of metabolic abnormalities including obesity, diabetes, dyslipidemia and hypertension is associated with an increased risk of cardiovascular disease. Acute and chronic complications associated with MS including herbs like Turmeric and Black seeds (Nigella sativa) can be used to prevent or as an adjuvant to control MS with fewer side-effects, better acceptability and cost effectiveness. This study determines if the co-administration of Turmeric potentiates the beneficial effects of black seeds on MS in rats. METHODS: Black seeds and Turmeric alone and in combination at different doses were administered to fructose-fed rats. Blood pressure, fasting sugar and lipid profile were measured before and after 3 and 6 weeks of treatment. In vivo and in vitro functional parameters were determined at 6 weeks of intervention. RESULTS: Black seeds at the dose of 0.6 g/kg prevented hypertension at week 3 of intervention, while at 6 weeks it prevented hypertension, hyperglycaemia, dyslipidaemia and endothelial dysfunction. Turmeric at 100 mg/kg prevented the anti-inflammatory action. The combination of 0.3 g/kg Black seeds and 1.5 g/kg Turmeric prevented hypertension and hypertriglyceridaemia at week 3 but provided a wide coverage at 6 weeks including in hypertension, hyperglycaemia, dyslipidaemia, hyperinsulinemia and endothelial dysfunction. CONCLUSIONS: This study showed that co-administration of Turmeric and Black seeds resulted in enhanced efficacy in correcting metabolic syndrome when compared with each component used alone, while the reduced dose of individual component when used in combination is likely to reduce the side effects.

PHP5 PHARMACOLOGICAL BASIS FOR THE MEDICINAL USE OF ALMONDS IN CARDIOVASCULAR DISORDERS Gilani AH1, Jamshed H2 1The Aga Khan University, Karachi, Pakistan, 2Department of Bioblogical and Biomedical Sciences, The Aga Khan University, Karachi, Pakistan

OBJECTIVES: Though almonds are shown to be effective in cardiovascular disorders (CVDs), there is limited information on the possible mode of action. This study aimed at exploring, in multiple rat models, the pharmacological basis for the medicinal use of almonds in CVDs. METHODS: Tyloxapol, high-fat diet (HFD) and fructose models were used. Group 1 in each study was normal control and group 2 and 3 were diseased groups. Almonds were given for four weeks to group 3 of each study, after which blood was collected for biochemical estimations. Liver from rats of tyloxapol study and thoracic aorta from rats of HFD study were isolated for enzyme assays and vascular reactivity. RESULTS: Almonds supplementation significantly (p < 0.05) prevented hyperglycemia in all the three rat models. In tyloxapol-induced hyperglycemia model, almond supplementation inhibited HMG-CoA activity. It also improved lipid profile and prevented HFD-induced increase in serum biomarkers of liver dysfunction (aminotransferases) and endothelial dysfunction (uric acid, phosphorus, alkaline phosphatase and gamma glutamyl transferase) as well as restored endothelial reactivity. Almonds also demoted the HFD-induced inhibition of endothelial nitric oxide synthase enzyme, thereby, promoting serum nitric oxide release. In the fiber-free while flour with fructose model, improvement in serum HDL was observed, in addition to improvement in other markers of lipid abnormality. CONCLUSIONS: Almond supplementation demonstrated cardio-protection and antidiyslipidemic effect mediated through multiple pathways including inhibition of cholesterol synthesis and restoration of hepatic and endothelial function, while the use of multiple animal models aided in gaining insights on some of the possible mechanism of actions.

PHP6 PHARMACEUTICAL PRICING AND MARKET COMPETITION: AN EMPIRICAL STUDY BASED ON ANTI-INFLAMMATORY DRUGS IN TIANJIN, CHINA Zhao MY, Wu LL, Ma LF 1Tianjin University, Tianjin, China

OBJECTIVES: To explore the impact of market competition on pharmaceutical prices, the study determined the determinants of pharmaceutical price in Chinese pharmaceutical market. METHODS: Anti-infective pharmaceutical data were extracted from inpatient claims in Tianjin Urban Employee Basic Medical Insurance (UEBMI) database from 2006 to 2010. Based on product-quarter data, a quasi-hedonic regression model was used. The quasi-hedonic regression model was specific to the products and manufacturers, with the exception of competition variables. Defined daily dose (DDD) was used as the standard quantity unit and the price per DDD was used as the price unit. RESULTS: Our results indicated that pharmaceutical prices were inversely related to the number of competitors, but positively related to the number of therapeutically competitive groups and the number of anti-infective drugs from the same manufacturer. The prices of patents drugs and the off-patent drugs from original manufacturer were significantly higher than the prices of generic drugs. We also found that the positive relationship between DDD and price, and the negative relationship between pack size and price which implied that manufacturers competed on volume discounts on large pack size. In addition, product age was inversely related to product price. In terms of manufacturers’ attributes, the results suggested that original manufacturers set higher prices than generic manufacturers. CONCLUSIONS: Generic market competition still plays an important role in determination of regulated pharmaceutical prices in China. The drug attributes, manufacturers’ attributes and market competition are jointly determined pharmaceutical price.

PHP7 PRICE COMPARISON BETWEEN THE ESSENTIAL AND NON-ESSENTIAL ANTI-INFLAMMATORY MEDICINES AMONG NATIONAL REIMBURSEMENT DRUG LIST IN CHINA Ma FT, Wu Y, Zhao MY Tianjin University, Tianjin, China

OBJECTIVES: To compare the price changes of the essential and the non-essential anti-infective medicines in Tianjin, China using index method. METHODS: Data were extracted from inpatient claims in Urban Employee Basic Medical Insurance database in Tianjin, China. Price indices from 2000 to 2010 were calculated by Fisher and chained Fisher index formulas by quarter. The quantity weight unit was defined daily dose (DDD) and the price unit was the price per DDD. Price indices were calculated both at molecule level (defined by active ingredient) and product level (defined by molecule, strength, preparation, and manufacturer). RESULTS: The data contained 41 molecules and 786 products among the essential anti-infective medicines, and 81 molecules and 636 products among the non-essential anti-infective medicines. For the essential anti-infective medicines, the price index at molecule level decreased to 0.90 (in chained Fisher index at molecule level) from 2006 Q1 to 2010 Q4, and the price index for the non-essential anti-infective medicines decreased to 0.73 (in chained Fisher index at molecule level) during the same period. For the essential and non-essential anti-infective, the prices of chained Fisher and unchanged counterparts were similar (10% vs. 10% for the essential and 28% vs. 27% for the non-essential at molecule level). The price indices at molecule level decreased slower than the counterparts at product level (10% vs. 24% for the essential and 28% vs. 27% for the non-essential at molecular level). CONCLUSIONS: The price of the essential and non-essential anti-infective medicines among national reimbursement drug list had decreased in Tianjin, China, but the price of the essential anti-infective medicines decreased slower than the non-essential anti-infective medicines.

PHP8 IMPACT OF DRUG POLICY ON IMPROVING ACCESS TO MEDICINES IN DELHI Bhoi N 1PE Global, DVD supported Health Sector Reform Programme, Bhukaneshwar, India

OBJECTIVES: To assess the impact of drug policy on improving access to essential medicines in Delhi. METHODS: The quantity of drugs procured from the Essential Drugs List (EDL) and outside the EDL, money spent on these, changes in stock out days for the key drugs. The implementation strategy includes elements of drug policy like use of EDL & STG, improved procurement system, training on drugs management & rational use of drugs. Retrospective data collected from stock registers. The data for two years before (1993-1994, 1994-1995) and two years after (2000-2001, 2001-2002) the drug policy was assessed. Data collected from two large public sector hospitals in Delhi that serve a large section of the population through convenient purposive sampling method. RESULTS: After the implementation of the drug policy, the availability of drugs increased by 25% in the large and 98% in the medium hospital. The drugs procured from the EDL increased from 62% to 78% in the large and 74% to 87% in the medium hospital. Of the total expenditure, the money spent on essential drugs increased from 73% to 85% in the large and 87% to 93% in the medium hospital, whereas money spent on nonessential drugs decreased from 27% to 15% in the large and 13% to 7% in the medium hospital. The average number of stock out days for key drugs decreased from 33 to 16 days in the large and from 33 days to 3 days in the medium hospital. The utilization pattern of health services by patients increased by 8% in the large and by 35% in the medium hospital. CONCLUSIONS: The implementation of the drug policy in the state of Delhi increased availability of essential drugs. This kind of intervention can serve on model for improving access to medicines by implementing an effective drug.

PHP9 THE IMPACT ON DRUG PRICE AND PATIENT SELECTION OF NATIONAL ESSENTIAL DRUG SYSTEM: EVIDENCE FROM INPATIENT RECORDS FROM INSURANCE REIMBURSEMENT DATA Bhoi N, Xu J 1Southwest University of Finance and Economics, Chengdu, China

OBJECTIVES: To assess the impact of drug policy on improving access to essential medicines. METHODS: Anti-infective pharmaceutical data were extracted from inpatient claims in Tianjin Urban Employee Basic Medical Insurance (UEBMI) database from 2006 to 2010. Based on product-quarter data, a quasi-hedonic regression model was used. The quasi-hedonic regression model was specific to the products and manufacturers, with the exception of competition variables. Defined daily dose (DDD) was used as the standard quantity unit and the price per DDD was used as the price unit. RESULTS: Our results indicated that pharmaceutical prices were inversely related to the number of competitors, but positively related to the number of therapeutically competitive groups and the number of anti-infective drugs from the same manufacturer. The prices of patents drugs and the off-patent drugs from original manufacturer were significantly higher than the prices of generic drugs. We also found that the positive relationship between DDD and price, and the negative relationship between pack size and price which implied that manufacturers competed on volume discounts on large pack size. In addition, product age was inversely related to product price. In terms of manufacturers’ attributes, the results suggested that original manufacturers set higher prices than generic manufacturers. CONCLUSIONS: Generic market competition still plays an important role in determination of regulated pharmaceutical prices in China. The drug attributes, manufacturers’ attributes and market competition are jointly determined pharmaceutical price.