were satisfied with their health coverage (3.78 ± 1.89). Respondents in this study had low physical (PC) (47.23 ± 9.69) and mental (MC) (47.11 ± 11.33) composite scores on the SF-12 scale. There was a significant correlation between involvement in activities to improve health and patient satisfaction scores. CONCLUSIONS: Consumers were highly motivated to improve their health. Health involvement could be used as a predictor of humanistic outcomes in future studies.

**PHP29**

**PREDICTIVE FACTORS OF INPATIENT DRUG COSTS IN A MOTHER-CHILD TEACHING HOSPITAL**

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**OBJECTIVE:** To identify predictive factors of inpatient drug costs in a 500-bed mother-child teaching hospital.

**METHODS:** All hospitalisations in 2000/2001 and 2001/2002 were evaluated. Categorical variables included were major category of diagnosis (MCD) (n = 25), severity index (n = 4), risk index (n = 4) and patient care units (n = 41). Continuous variables included were patient weight (kg), level of intensity of resources utilised (LIRU) and total inpatient drug costs/patient-year. Outliers were excluded: inpatient drug costs/patient-year greater than 5000 $CDN, LIRU > 50 and MCD with less than 10 patients per fiscal year. MCD were analysed as serial dichotomical variables. Data were extracted from the admission and the pharmacy software system.

**RESULTS:** Analysis were based on a cohort of 8479 patients in 2000/2001 and 7355 patients in 2001/2002. Cost was divided by patient’s body weight and log-transformed. A stepwise block multiple regression was processed in two blocks: a first block included LIRU, severity index and risk index and a second block added relevant MCD. Cumulative R² were respectively 15.7 and 19.4 for LIRU, 4.7 and 3.3 for severity index, 0.1 and 0.2 for risk index and 8.9 and 10.6 for a selection of relevant MCD. A third of total inpatient drug costs/patient-year can be explained by level of intensity of resources utilised, some major category of diagnosis, severity index and risk index.

**CONCLUSIONS:** There are limited information published on predictive factors of inpatient drug costs/patient-year in hospitals. Further analyses are required to build a useful and stronger model for planning and benchmarking drugs costs in hospitals.

**PHP30**

**RATES OF CONTINUATION OF NON FORMULARY MEDICATIONS FOR CHRONIC DISEASE SUFFERERS IN MULTI-TIERED PHARMACY BENEFIT PLANS**

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**OBJECTIVE:** Evaluate the impact of 3-tier pharmacy benefit structures on medication switching patterns.

**METHODS:** The study design was a “pre”-“test”-“post”-test quasi-experimental design with comparison groups using chronic disease sufferers from a health plan in the Western US. Individuals with 2 prescriptions for a non formulary medication (n = 1729) were classified by their pharmacy benefit group as: a) 2-tier moving to a 3-tier structure, (“converting” group); b) 2-tier staying in a 2-tier structure; and c) 3-tier staying in a 3-tier structure. The latter two were “comparison” groups. Two time periods were studies: the “pre” period before and the “post” period, after a change in pharmacy benefit structure. Cox regressions, adjusting for age, gender, chronic disease scores and pharmacy plan structure, assessed differences in the continuation rates of non formulary medications across all groups.

**RESULTS:** Over 60% switched to formulary alternatives when faced with increased co-payments, of which 43.3% switched to a brand alternative (p < 0.001). Less than 10% discontinued their medication. Cumulative continuation rate was higher for the converting group: 30.1% (95% CI 27.6%–34.1%) and similar for members in the two-tier comparison group: 26% (95% CI 21.2%–32.6%). Three-tier comparison group members were half as likely to continue their non formulary medications during the post period: 17.1% (95% CI 14.3%–20.4%).

**CONCLUSIONS:** Individuals confronted with increased co-payments due to the implementation of a three-tier plan often switched their medications to formulary alternatives. While this finding supports the general purpose of three-tier structures, of concern is the potential impact on individuals who discontinued their medications due to these changes.

**HEALTHCARE POLICY—Healthcare Expenditure Studies (Including Productivity)**

**PHP31**

**WHAT WE HAVE MISUNDERSTOOD OF THE HIGH RATE OF OUT-OF-POCKET PAYMENTS IN HEALTH CARE SYSTEMS**

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**OBJECTIVE:** Among OECD countries Korea has the highest rate of out-of-pocket payments (OOP) in the health care system. This has been pointed out and suggested that it should be much lower. This study investi-
gates the rate of OOP in Korea. METHODS: Data from World Health Report 2002 are used to analyze the relation between per capita total health care expenditure (THE) of GDP and rates of OOP or rates of prepaid (i.e. tax, premium, etc). To explain why the rate of OOP is high in Korea, we compare price elasticity in demand for medical services between countries from previous studies. To argue that the OOP rate is not so serious currently and in the future, we show the trend of OOP rates in Korea for three decades. RESULTS: By comparing the relation between per capita THE of GDP and rates of OOP or rates of prepaid, we found the fact that the amount of THE of GDP or THE of GDP per capita would be same regardless of either high or low OOP rates, or high rates of OOP might spend less THE because it can prevent “moral hazard” in using medical services. This fact is support by the higher price elasticity in demand for medical services in Korea. In addition, we found that OOP rates came down from 85% (1970) to 41% (2000) out of THE in Korea and they have rapidly decreased due to the expansion of health care insurance and other factors. CONCLUSIONS: This shows that the OOP rate in Korea is not severe as worried. Rather, high rates of prepaid could spend more in THE. We also argue that adequate levels of OOP rates in health insurance systems could prevent unnecessary use of medical services, which follow to cost containment in THE. However, this could be a barrier to accessing medical care services for people on low incomes. Further studies on the trade-offs between the levels of “barriers” and “moral hazard” are suggested.

PHP32

A COMPARISON OF HEALTH CARE REIMBURSEMENT STRATEGIES: HOW ARE CHILDREN WITH CHRONIC CONDITIONS ENROLLED IN STATE PROGRAMS AFFECTED?

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OBJECTIVE: There is increasing concern that children with special health care needs may face restricted access to care due to potentially inadequate reimbursement to health plans and providers caring for them. We employed data from a State's Medicaid, Title V and Title XXI programs to analyze the implications of different reimbursement strategies. METHODS: Enrollment and claims data for 188,556 children with at least 6 (aged 1–19) or 3 (newborns) months continuous enrollment during 1999 were employed. Children were grouped into mutually exclusive Clinical Risk Group (CRG) categories (such as healthy, malignancies and catastrophic). Reimbursement models considered include demographics-adjusted capitation, health-status adjusted capitation, carve-outs and reinsurance for children with annual charges above a threshold. RESULTS: Premium estimates from demographics-adjusted capitation model showed little varia-

PHP33

RISK SHARING IN A STATE FUNDED HEALTH SERVICE: OUTCOMES GUARANTEE PROJECT

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OBJECTIVE: State funded healthcare systems, such as the UK, tend to be cautious with the diffusion of new drugs for fear of financial pressures. One way of controlling diffusion, while maximising the benefits for patients, is to set up an outcome guarantee. This presentation describes a case study using lipid lowering drugs, recently completed. METHODS: The key stakeholders were identified and each declared their interest on an agreed matrix. This formed the basis of an outcome guarantee contract. Near patient testing and audit nurses were used to identify at risk patients and enter them into an agreed care pathway. Patients were given lifestyle advice, re-tested and monitored every 3 months throughout the 18 months of the project. Results of treatment with lipid lowering drugs were measured against their claimed benefits and adjusted for concordance. If the drug under-performed, according to agreed criteria, the pharmaceutical company agreed to refund the cost of those drugs. RESULTS: The concept was readily accepted by the stakeholders. Two thousand at risk patients were identified from 1 primary care trust, of which 1400 were eligible to enter the outcome guarantee. Six hundred patients to date have completed the project. Final results are due in July. Of those who have completed the project, the majority have reached target level and no refund has been due. A qualitative evaluation of the stakeholders is currently under way and will be reporting in August 2002.